European Commission

My Region, My Europe, Our Future





Seventh report on economic, social and territorial cohesion





Regional and Urban Policy

My Region, My Europe, Our Future

Seventh report on economic, social and territorial cohesion

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Foreword





This report comes at a crucial time, following the European Commission's White paper on the future of Europe and the five related reflection papers, and ahead of next year's Commission's proposal for the next multi-annual financial framework. Now is the time to decide where cohesion policy should invest, what its investment priorities should be and how they can be implemented in a more flexible and efficient manner.

The Seventh Cohesion Report brings the necessary data and facts to check how cohesive, or divided, Europe is from an economic, social and territorial point of view; and by doing so, it helps us see with more clarity and objectivity what has been achieved and what needs to be done in the post-2020 financial period. In short, it sets the scene for shaping tomorrow's cohesion policy.

Though on average economic recovery seems to have taken root, GDP and employment have reached all-time highs and regional disparities are shrinking, all is not well. Looking at the situation more closely, we see that unemployment rates remain above the pre-crisis level in a number of areas while too many small and medium-sized enterprises are struggling to adapt to globalisation, digitalisation, green growth and technology change. Even in wealthier regions, poverty and social exclusion are still too high. At the same time, public investment remains low, especially in those countries and regions worst hit by the recent economic and financial crisis, to the point that cohesion funds are a lifeline for many of them.

The report also highlights that improving public administration can strengthen competitiveness, boost economic growth and increase the impact of investments, including those co-financed by cohesion policy. This is why it is important to continue to modernise public institutions and implement the necessary structural reforms to make them more efficient. Here again, cohesion policy, with its set of ex-ante conditions to fulfil before receiving grants and its focus on sound governance, helps improve public administration.

The report shows that to remain competitive, we need to anticipate market changes and our people have to have the skills required. The current economic recovery will not be sustainable unless there is investment in both physical and human capital to support long-term growth. This is also essential to achieve our social goals of fairness and equal opportunity, as set out in the European Pillar of Social Rights, which serves as a guide towards better working and living conditions throughout the EU.

The report shows, in addition and without any ambiguity, that cohesion policy provided much needed help to Member States and regional and local authorities in the midst of the worst economic crisis thanks to its long-term, stable and predictable investment. For the current financial period, cohesion policy will support 1.1 million SMEs, help more than 7.4 million unemployed people to find a job and 8.9 million people to gain new qualifications. It will invest €16 billion in the digital economy, expanding government online services and connecting close to 15 million households to broadband Internet. It will also invest in energy efficiency, protecting the environment, reducing social exclusion and improving public transport as well as the trans-European road and rail network.

In sum, the 2017 Cohesion Report shows how much cohesion policy is vital to Europe, its citizens, its economy and its cities and regions and that reconciling sustainable economic growth with social progress, as cohesion policy is helping to do, is as essential as ever.



Corina Crețu
European Commissioner
for Regional Policy



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European Commissioner
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and Inclusion

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Lexicon

Cohesion policy: Covers all the programmes supported by the following Funds: the European Social Fund (ESF), the European Regional Development Fund (ERDF) and the Cohesion Fund (CF).[1] It is also known as regional policy.

Structural Funds: The European Social Fund (ESF) and the European Regional Development Fund (ERDF).

Abbreviations

COH: Cohesion countries (EU-13 plus Greece and Portugal)

EAFRD: European Agricultural Fund for Rural Development

EMFF: European Maritime and Fisheries Fund

EFSI: European Fund for Strategic Investment

ERDF: European Regional Development Fund

ESF: European Social Fund

ESIF: European Structural and Investment Funds. Covers all programmes supported by ESF, ERDF, CF, EAFRD and EFF.

EU: European Union, formerly known as European Coal and Steel Community (ECSC), the European Economic Community (EEC) and the European Community (EC)

NSI: National Statistical Institute

OECD: Organisation for Economic Co-operation and Development

PPS: Purchasing Power Standards

For ease of reading, funds are consistently referred to by their current name even if some of these funds have changed name over time.

Member States and their abbreviation

BE Belgium

BG Bulgaria

CZ Czech Republic

DK Denmark

DE Germany

EE Estonia

IE Ireland

EL Greece

ES Spain

FR France

HR Croatia

IT Italy

CY Cyprus

LV Latvia

LT Lithuania

LU Luxembourg

HU Hungary

MT Malta

NL Netherlands

1 EAFRD and the Fisheries Fund have been considered part of Structural or Cohesion Policy during certain periods. But they will be treated separately in this report.

AT	Austria
PL	Poland
PT	Portugal
RO	Romania
SI	Slovenia
SK	Slovakia
FI	Finland
SE	Sweden
UK	United Kingdom

Geographical groupings

Member State groupings

By enlargement

For ease of reading, this report refers to the European Economic Community (EEC), the European Community (EC) as the European Union (EU).

EU-6:	The six initial Member States: BE, DE, FR, IT, LU and NL
EU-9:	EU-6 plus DK, IE and UK
EU-10:	EU-9 plus EL
EU-15:	EU-10 plus ES, AT, PT, SE, FI
EU-12:	All Member States that joined in 2004 and 2007: BG, CZ, EE, CY, LV, LT, HU, MT, PL, RO, SI, SK
EU-13:	EU-12 plus HR
EU-25:	EU-15 plus CZ, EE, CY, LV, LT, HU, MT, PL, SI, SK
EU-27:	EU-25 plus RO and BG
EU-28:	EU-27 plus HR

By geography

Eastern Member States: EE, LV, LT, PL, SK, CZ, SI, HU, RO, BG, HR

Southern Member States: PT, ES, IT, EL, MT, CY

Western Member States: EU-15

Nordic Member States: SE, DK, FI

Baltic States: EE, LV, LT

Benelux: BE, NL, LU

By level of development

Less developed Member States: (BG, EL, EE, HR, LT, LV, HU, PL, RO) (GDP per head below 75% of EU average in 2015)

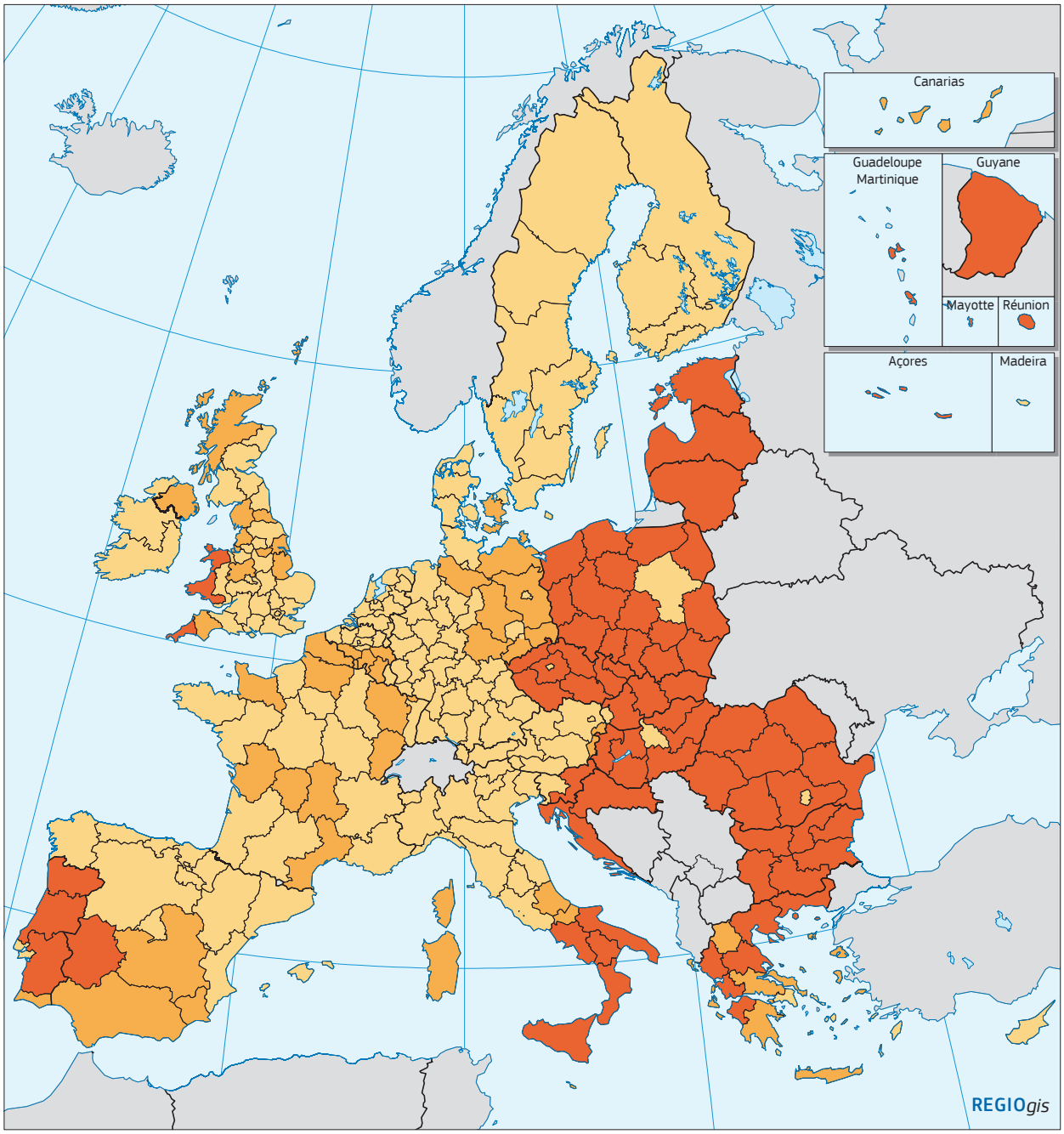
Moderately developed Member States: (CZ, CY, PT, SI, SK) (GDP per head between 75% and 90%)

Highly developed Member States: (BE, DK, DE, IE, ES, FR, IT, LU, MT, NL, AT, SE, FI, UK) (GDP per head above 90% of the EU average)

Types of NUTS 2 regions

Cohesion policy in the period 2014–2020 uses three categories of regions based on the GDP per head for the years 2007, 2008 and 2009 (see map).

Less-developed regions: GDP per head (PPS) below 75% of the EU-27 average



Structural Funds (ERDF and ESF) eligibility 2014–2020

Category

- Less developed regions (GDP/head < 75% of EU-27 average)
- Transition regions (GDP/head between >= 75% and < 90% of EU-27 average)
- More developed regions (GDP/head >= 90% of EU-27 average)

Source: DG REGIO

0 500 km

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Transition regions: GDP per head (PPS) between 75% to 90% of the EU-27 average

More-developed regions: GDP per head (PPS) above 90% of the EU-27 average

Capital city regions: these regions consist of one or more NUTS 2 regions and approximate the functional urban area of the national capital. In most cases, it consists of only one NUTS 2 region. The exceptions are: Berlin, Brussels, London, Prague and Vienna. Combining these regions ensures that the distortion in economic indicators caused by commuting is substantially reduced. These regions in most cases are different from the capital metropolitan regions.

Types of NUTS 3 regions

Metropolitan regions

This classification was developed in cooperation with the OECD and consists of NUTS 3 approximation of all functional urban areas of more than 250 000 as defined by the EU-OECD. Two types of metropolitan regions are identified: capital and other. The capital metropolitan regions contain the national capital.

Predominantly urban, intermediate, predominantly rural regions

This classification is based on the OECD classification, but revised by the Commission. A detailed methodology is included in the Eurostat Regional Yearbook 2010.

Border regions

Border regions are NUTS 3 regions which are eligible for cross-border cooperation programmes under the European Regional Development Fund regulation.

Types of municipalities

Degree of urbanisation

Cities: Local administrative units with more than 50% of their population in an urban centre;

Towns and suburbs: Local administrative units with more than 50% of their population in urban clusters but less than 50 % live in an urban centre;

Rural area: Local administrative units with more than 50% of their population in rural grid cells

For more information see:
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Degree_of_urbanisation_classification_-_2011_revision

http://ec.europa.eu/regional_policy/sources/docgener/work/2014_01_new_urban.pdf

Cities and commuting zones

Cities: Same definition as above

Commuting zones: Contiguous local administrative units with at least 15% of their working population commuting to a city.

For more information see:

http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/European_cities_%E2%80%93_the_EU-OECD_functional_urban_area_definition

http://ec.europa.eu/regional_policy/sources/docgener/focus/2012_01_city.pdf

Highlights

Introduction

This report fulfils two requirements:

1 It reports on how cohesion has evolved in EU regions over the recent past and assesses the impact on this of national policies, cohesion policy and other EU policies as required by the Treaty on the Functioning of the European Union[1]. The accompanying Staff Working Document (SWD) consists of 6 chapters: on economic development, social inclusion, sustainable development, improving institutions, national policies and cohesion, and the impact of cohesion policy. The impact of other EU policies is considered in the first four chapters.

2 It reviews the measures linking the effectiveness of the European Structural and Investment (ESI) Funds to sound economic governance, as required by the Regulation on Common Provisions with regard to the Structural Funds[2]. This review is summarised in section 9 below and set out in full in section 5.3 of the SWD.

1. Regional disparities are narrowing again

After the double dip recession in 2008 and 2011, the EU economy is now growing again. The crisis seriously affected almost all Member States. It halted the long-term reduction in disparities in GDP per head between Member States. With the beginning of the recovery, however, these disparities have started to shrink again with growth everywhere, and higher rates in countries with lower levels of GDP per head.

The first signs of narrowing disparities are also evident at regional level across the EU. From 2008 onwards, regional disparities in employment and unemployment rates widened along with those in GDP per head. In 2014, disparities in employment started to narrow, followed by disparities in GDP per head in 2015. Nevertheless, many regions still have a GDP per head and an employment rate below pre-crisis levels.

Between 2000 and 2015, GDP per head in many less developed regions converged towards the EU average through faster productivity growth, but they lost employment. The manufacturing sector in these regions has for the most part performed well, which has helped firms to compete both inside the Single Market and globally. To ensure that their convergence continues,

1 Hereinafter referred to as 'the Treaty', see Article 175 of the consolidated version, Official Journal C.326, 26/10/2012.

2 Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund (...) (OJ L 347, 20.12.2013, p. 320), see Article 23.

these regions will have to move up the value chain to activities with a higher skill, technology and innovation content, especially because globalisation and technological change[3] could quickly undermine their economic performance.

The regions with GDP per head well above the EU average have grown faster than the less developed ones through a combination of both productivity and employment growth. As most of the higher GDP per head regions contain a national capital or a large city, they benefit from agglomeration economies while a bigger labour market makes for a better matching of skills. The concentration of activities attracts specialised services and suppliers. Infrastructure investment in transport and ICT generates higher returns, while the spatial proximity of firms produces more innovation and knowledge spillovers. These benefits can be extended by improving links between large cities and their rural hinterland or between smaller cities, where the sharing of specialised services can give rise to economies of scale.

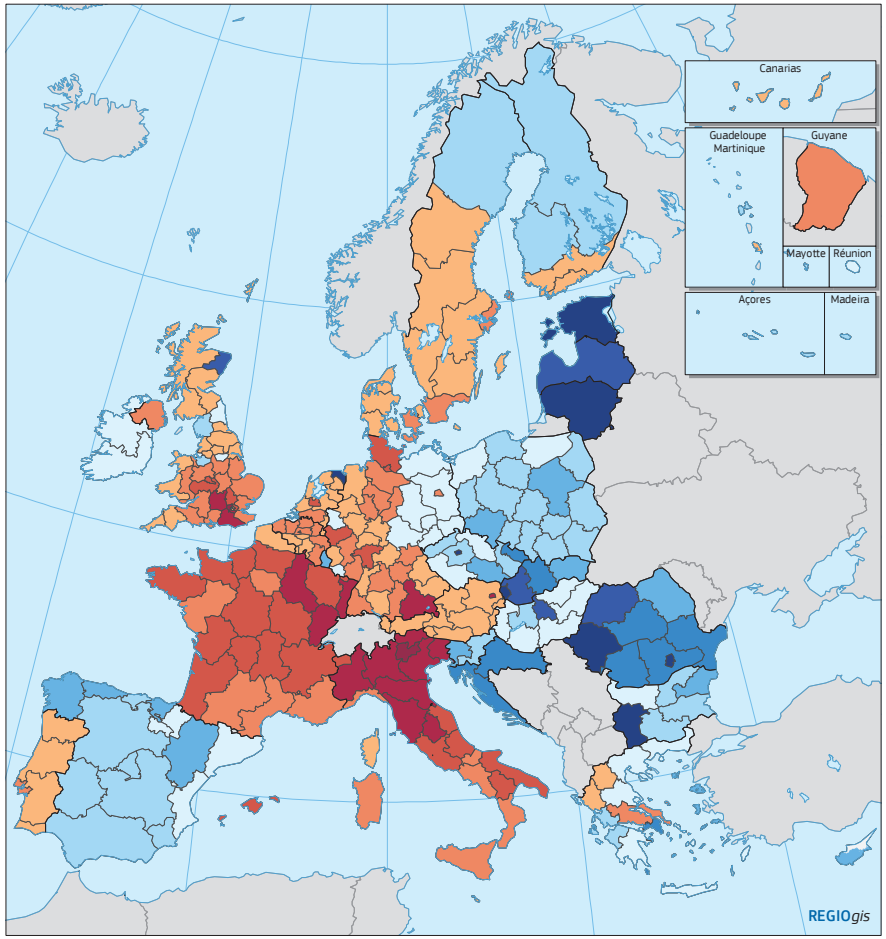
Several of the regions with a GDP per head close to the EU average, however, seem stuck in a 'middle-income trap'. On average, GDP per head growth from 2001 to 2015 was significantly below the EU average (see Maps 1 and 2). Their manufacturing sector is smaller and weaker than in regions with both a lower and higher GDP per head. Their costs tend to be too high to compete with the former and their regional innovation systems not strong enough to compete with the latter. To improve their performance, multiple changes need to happen at the same time: a stronger export-orientation, a shift into new sectors and activities, a boost to research and innovation, an increase in education and training and an improvement in the business environment. Globalisation has caused substantial job losses in many of the regions, but the provision of training alone to workers laid-off does not ensure new job creation and the structural transformation needed.

2. Employment has recovered, but unemployment is still above its pre-crisis level

In 2016, the employment rate of those aged 20–64 in the EU exceeded the pre-crisis level for the first time. At 71%, it is 1 percentage point higher than in 2008 but still well below the 75% target for 2020 set by the Europe 2020 strategy. The situation, however, varies markedly across the EU.

The unemployment rate across the EU has fallen from a high of 10.9% in 2013 to 8.6% in 2016 and 7.7% in 2017, still above the 7% it was in 2008. In some countries, the rate is lower than in 2008, but in others it is still at least 5 percentage points higher. Regional disparities in unemployment rates had not narrowed up to 2016, but they had largely ceased to widen. However, in particular people under 25 still face problems getting a job (see Map 3).

3 European Commission 'Reflection Paper on Harnessing Globalisation', COM(2017) 240 of 10 May 2017.



Map 1 Change in GDP per head index, 2000–2008

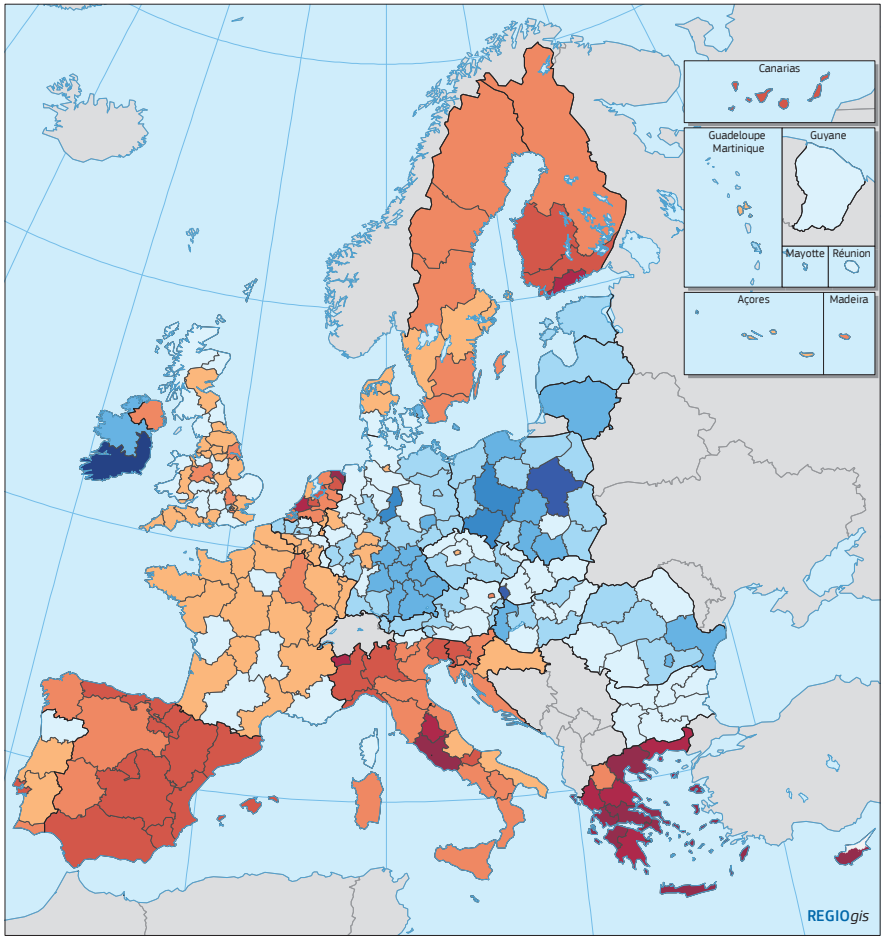
Index point difference

< -20	5 – 10
-20 – -15	10 – 15
-15 – -10	15 – 20
-10 – -5	20 – 25
-5 – 0	> 25
0 – 5	no data

EU-28 = 0
Source: Eurostat, DG REGIO

0 500 km

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Map 2 Change in GDP per head index, 2008–2015

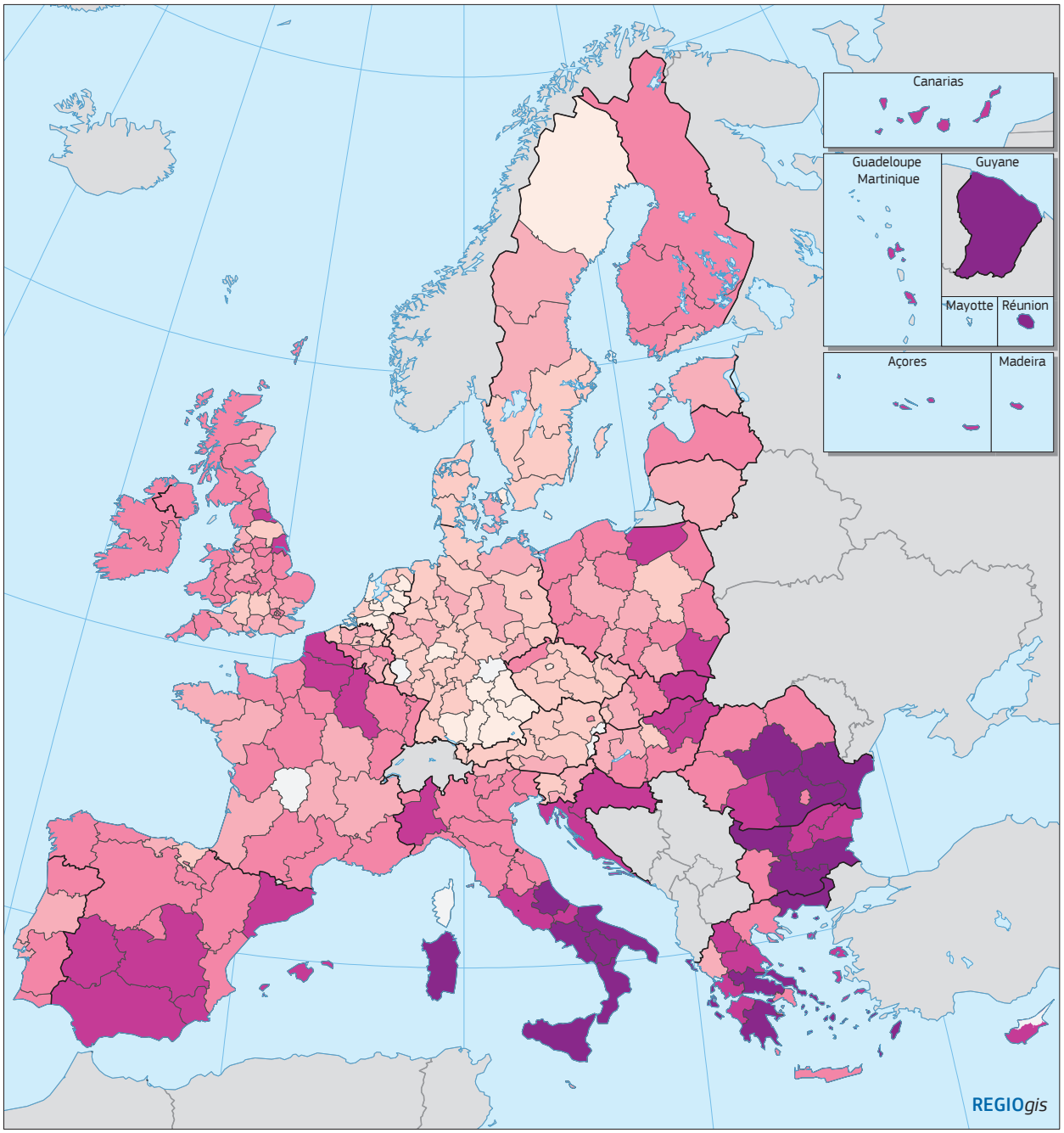
Index point difference

< -20	5 – 10
-20 – -15	10 – 15
-15 – -10	15 – 20
-10 – -5	20 – 25
-5 – 0	> 25
0 – 5	no data

EU-28 = 0
Source: Eurostat, DG REGIO

0 500 km

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Map 3 Young people (15–24) not in employment, education or training (NEET), 2016

% of population aged 15–24

- < 5
- 5 – 7.5
- 7.5 – 10
- 10 – 15
- 15 – 20
- > 20
- no data

EU-28 = 11.5
Source: Eurostat

0 500 km

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Although there was some move towards the Europe 2020 targets between 2010 and 2015, the rate of progress is not enough to achieve them by 2020. The more developed regions are closest to achieving them, but less developed regions made more progress towards them up to 2015. The transition regions (those in between) made almost no progress up to then and will be overtaken by the less developed regions by 2020 if the trends persist. Rural areas are furthest from meeting the EU targets, but they made more progress than the cities, towns and suburbs up to 2015.

3. Some regions have rapid population growth while others depopulate

For the first time, deaths outnumbered births in the EU in 2015, which strengthens the impact of migration and mobility on regional population (Map 4). The big differences in unemployment and income across the EU encourage people to move to find better job opportunities and/or escape unemployment and poverty. Movements have predominantly been from the EU-13 to the EU-15 and within the EU-13 from rural regions to capital and other large cities. In several regions, this has led to rapid changes in population, which has put pressure on public infrastructure and services either to up or downscale them.

In the recent past, the EU has also seen a rapid increase in people applying for asylum, reaching 1.2 million first-time applications in both 2015 and 2016. Ensuring that all refugees or migrants legally residing in the EU are effectively integrated is important for cohesion and future prosperity. Improving their skills to help them find a job, helping them to set up a business, providing them with better access to finance and tackling discrimination are all key to achieving this.

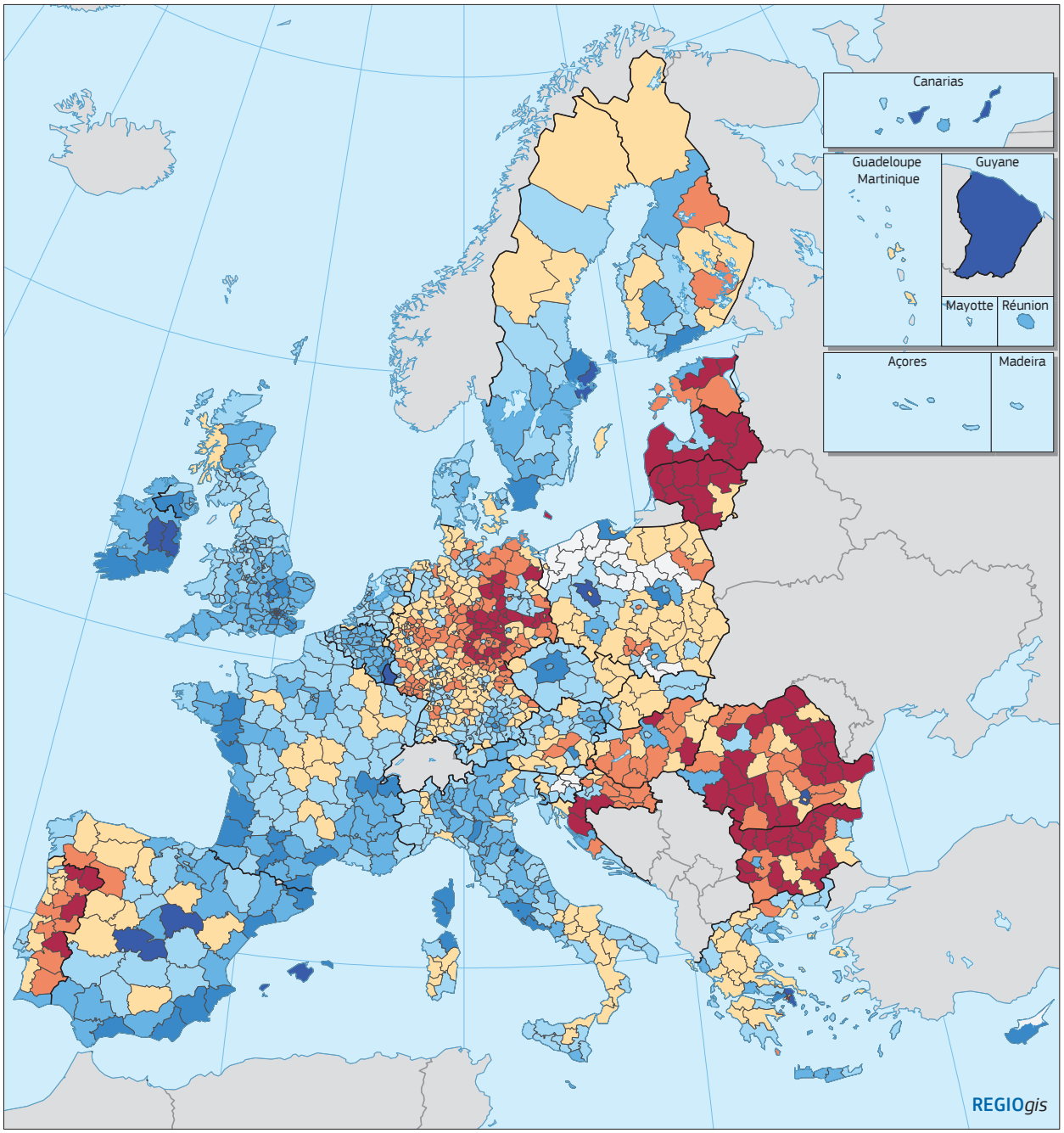
4. Cities combine opportunities with challenges

Despite the growing concentration of jobs in cities, the share of low work intensity households is the highest in EU-15 cities. The risk of poverty or social exclusion in the EU has fallen back to its pre-crisis level. In the EU-13, it is even lower than before the crisis, but in the EU-15 it remains higher than before in cities, towns and suburbs. This highlights the fact that pockets of poverty[4] exist even in relatively well-off cities.

Cities are more efficient in terms of energy and land-use[5] and offer the possibility of a low-carbon lifestyle. At the same time, air pollution with all its damaging effects on human health remains a concern in many European cities.

4 European Commission 'Reflection Paper on the Social Dimension of Europe', COM(2017) 206 of 26 April 2017.

5 European Commission and UN-Habitat (2016).



Map 4 Total population change in NUTS 3 regions, 2005–2015

Total change (%)

< -10	5 – 10
-10 – -5	10 – 15
-5 – 0	> 15
0 – 5	no data

EU-28 = 2.84
DK, DEA, DED, DEE: data before 2007 was extrapolated.
PL52: NUTS 2
Source: Eurostat, DG REGIO

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Integrated strategies can make a big impact in cities. For example, improving urban transport can reduce congestion, make firms more productive and connect deprived neighbourhoods. Institutes of higher education can help to integrate migrants, promote innovation and provide skills missing in the local labour market. Nature-based solutions, such as urban green spaces can improve quality of life, air quality and bio-diversity.

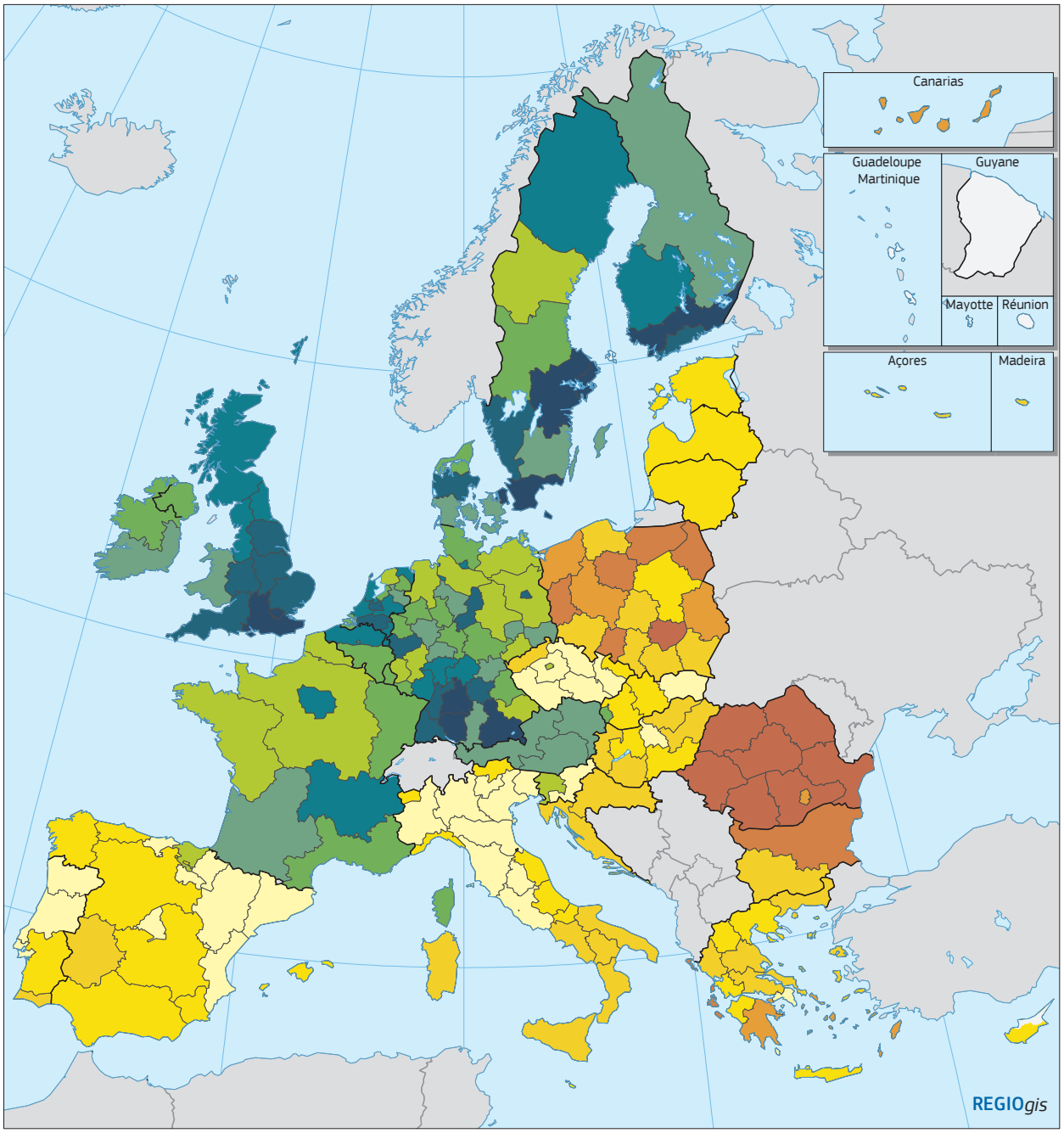
5. Investments in innovation, skills and infrastructure are insufficient

Overall, innovation in the EU remains highly concentrated in a limited number of regions (see Map 5). In north-western Member States, good interregional connections, a highly skilled labour force and an attractive business environment have allowed neighbouring regions to benefit from their proximity to the regions concerned. In southern and eastern Member States, the innovation performance is weaker and regions close to centres of innovation — mainly the capitals — do not benefit from their proximity. This calls for policies that connect firms, research centres and specialised business services across regions. Investing more in skills could help to improve economic growth by narrowing the skills gap and to reduce poverty, youth unemployment and social exclusion.

Public investment in the EU is still below its pre-crisis level with major gaps in some of the countries most affected by the crisis. More investment will be needed to complete the trans-European Transport network (TEN-T) and the connections to this. Basic broadband services are accessible to all households in the EU, but next generation access — which is much faster — is only available to 40% of rural residents compared to 90% of urban ones.

6. More investments needed in energy efficiency, renewables and low-carbon transport to reduce greenhouse gas emissions

Substantial progress has been made in limiting energy consumption and greenhouse gas emissions. Most Member States have either reached or are close to reaching their national 2020 targets for greenhouse gas emissions and renewable energy. This in part has been facilitated by the crisis reducing economic activity. The current recovery may, therefore, put these achievements in jeopardy. Reaching the more ambitious EU targets of a 40% reduction of greenhouse gas emissions and 27% share of renewable energy by 2030 will require greater effort. The recent climate agreement (COP21) also commits governments to assessing every 5 years whether more ambitious targets are needed.



Map 5 Regional innovation performance, 2017

Modest -
Modest
Modest +
Moderate -
Moderate
Moderate +
Strong -
Strong
Strong +
Leading -
Leading
Leading +

Source: European Commission – Regional Innovation Scoreboard 2017

0 500 km

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To reach the EU target for reducing greenhouse gas emissions, there is a need to shift towards more energy efficient and cleaner transport and to make more efficient use of existing transport infrastructure. Roads remain the predominant mode of transport for both passengers and freight and more needs to be done to increase the use of rail and waterways as well as public transport[6].

Climate change will have significant effects on many EU regions. It will give rise to changes in the environment which will often be costly to adapt to and which will necessitate substantial investment to make regions more resilient to the consequences.

The state of the environment in the EU has improved in recent years[7]. Nevertheless, key environmental objectives such as renewable energy, energy efficiency, air quality and, in some Member States, wastewater treatment remain unfulfilled.

7. Cooperating and overcoming obstacles across EU borders

The EU has always supported territorial cooperation which has played a crucial role both in mitigating the adverse effects of internal borders and in providing Europeans with innovative solutions as regards research, environmental issues, transport, education, energy, healthcare, security and training. Territorial cooperation can also help countries and regions to identify solutions to common problems including those linked to new global challenges.

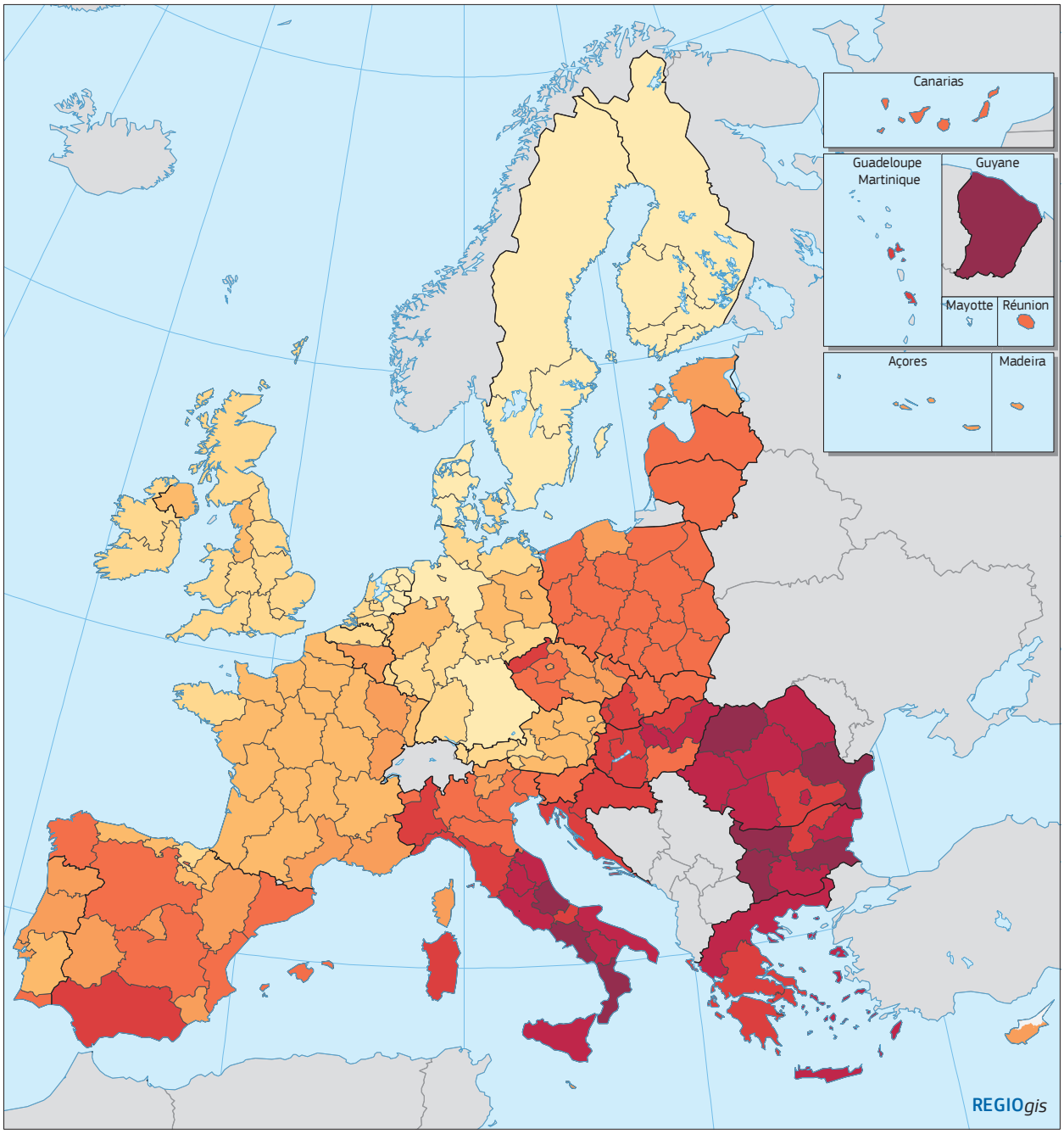
Cooperation programmes have contributed to enlarging the knowledge-based economy across Europe by increasing R&D capacity and transfers of know-how between regions, stimulating investment in SMEs and diversifying local economies. They have improved accessibility across borders, the joint management of natural resources and environmental protection.

However, despite the elimination of many institutional and regulatory barriers, borders continue to represent obstacles to the movement of goods, services, people, capital and ideas. Removal of such barriers could boost economic growth and improve access to services in the regions concerned, but it would also help European economies to fully reap the benefits of integration[8].

6 European Commission: 'Assessment of the progress made by Member States in 2014 towards the national energy efficiency targets for 2020', COM(2017) 56 of 1 February 2017.

7 European Environmental Agency (2015).

8 Politecnico di Milano (2017) Quantification of the effects of legal and administrative border obstacles in land border regions.



Map 6 European Quality of Government index, 2017

Standard deviation, range from poor quality (negative) to high quality (positive)

- < -1.75
- -1.75 – -1.25
- -1.25 – -0.75
- -0.75 – -0.25
- -0.25 – 0.25
- 0.25 – 0.75
- 0.75 – 1.25
- > 1.25
- no data

EU = 0
Source: World Bank data and a regional quality of government survey.

0 500 km

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8. Improving the quality of government and implementing structural reforms would boost growth

Low quality of government hinders economic development and reduces the impact of public investment, including that co-financed by cohesion policy (see Chapter 4). Government efficiency differs between Member States. There are also significant disparities within a number of them (see Map 6). Improving institutions would amplify the impact of cohesion policy.

Structural reforms that improve competition, the business environment, education and skills[9], labour markets and social protection systems can have major benefits in terms of productivity and employment growth. This is particularly relevant for regions and countries where productivity has barely improved over the past decade[10]. Reforms requiring mainly regulatory and administrative changes with no investment, however, are currently not linked to cohesion policy.

According to the Doing Business report[11], there are marked differences between how business-friendly Member States are. The state of the business environment can also vary within countries due to differences in the efficiency of local authorities.

Open and transparent public procurement is essential to promote development and reward the most efficient firms. However, the use of open procedures, the intensity of competition and the speed of decision-making as well as the risk of corruption varies markedly between regions.

To boost economic development and the impact of cohesion policy in EU regions, the efficiency and transparency of public institutions as well as the effectiveness of justice systems need to be improved. Reforms are also needed to reduce regulatory obstacles and improve the functioning of the labour market.

9. National public investment has not yet fully recovered

The EU economy is gradually recovering from a protracted period of crisis which featured a significant reduction in investment in many Member States and regions. Total investment as a share of GDP fell and has hardly grown since.

As the EU economy has recovered, government debt in Member States has started to decline from a peak of 87%, but is still well above its level in 2007 of 58%. As a result of pressure on public finances, public investment in the

9 European Commission 'A new skills agenda for Europe', COM(2016) 381 of 2 June 2016.

10 European Commission 'Competitiveness in low-income and low-growth regions — The lagging regions report', SWD(2017) 132 final of 10 April 2017.

11 World Bank. (2017a).

EU fell from 3.4% of GDP in 2008 to 2.7% in 2016. In a number of Member States, the reduction in growth-friendly expenditure has been substantial. Since most of these Members States have a GDP per head below the EU average, the reduction could put at risk disparities across the EU narrowing in the future.

Public investment was at the core of the negotiations on the current legal framework of the ESI Funds. One of the major objectives was to improve the consistency between the Funds and European economic governance with the aim of ensuring that the effectiveness of expenditure financed by them is underpinned by sound economic policies.

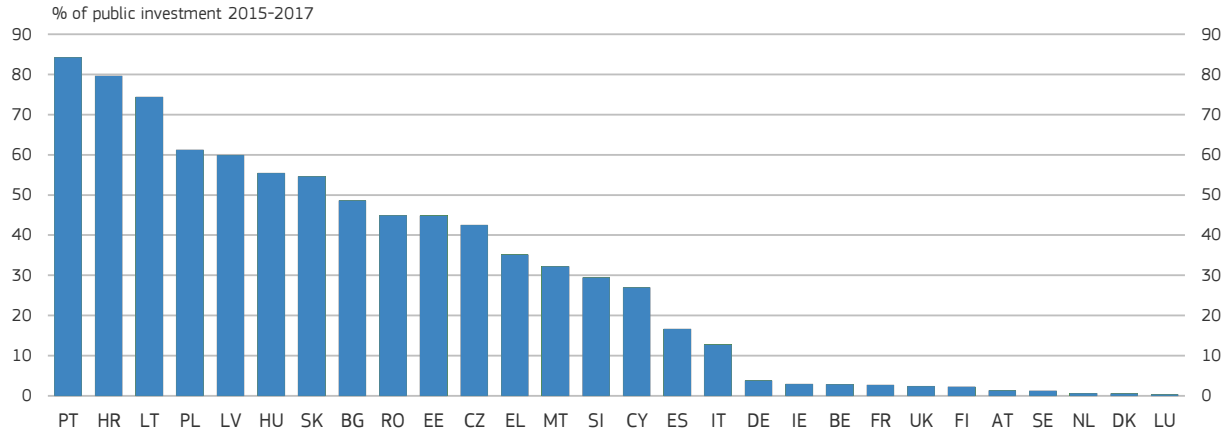
For this reason, Article 23 of Regulation (EU) No 1303/2013 provides the Commission with (i) the power to request changes in programmes to address economic policy priorities recommended by the Council and (ii) the obligation to suspend the funds in cases of non-effective action by the Member State to address an excessive government deficit or excessive macroeconomic imbalance. The SWD assesses the application of this article and explains why a legislative proposal to modify it is at this stage not deemed necessary by the Commission (see chapter 5).

10. Cohesion policy's key role in public investment reduced the impact of crisis

Cohesion policy is the EU's main investment policy, providing funding equivalent to 8.5% of government capital investment in the EU, a figure which rises to 41% for the EU-13 and to over 50% for a number of countries (see Figure 1).

This investment adds value at the European level by contributing to:

Figure 1 Cohesion policy funding as an estimated share of public investment, 2015-2017



Source: Eurostat, DG REGIO

- The **Treaty objective of reducing disparities**, notably in terms of income per head and living standards as well as social inclusion and employment opportunities.

- **European public goods** such as innovation and digital infrastructure, skills, addressing climate change, disaster risk reduction, energy and environmental transition, healthcare and social investment, public and smart transport.

- **Spill-over** benefits to non-cohesion countries from the increased trade generated and from cross-border, transnational and inter-regional programmes.

The strong EU added-value of cohesion policy was emphasised by many of the speakers at the Cohesion Forum in June 2017 who stressed that it helped less developed regions to catch up and all regions to invest in EU priorities and address new challenges.

The impact of cohesion policy on the EU economies is significant and the effects of investments build up over the long term. For the EU-12 countries (i.e. excluding Croatia), the QUEST model estimates that investment for the 2007–2013 period increased their GDP by 3% in 2015, and by a similar amount for the 2014–2020 period[12] in 2023.

This has contributed to a significant convergence of GDP per head in these countries[13]. In the EU-12, this increased from 54% of the EU average in 2006 to 67% in 2015. Moreover, the 2007–2013 programmes led directly to the creation of 1.2 million jobs in supported enterprises.

The non-cohesion countries also benefit from spillovers generated by investments in cohesion countries both directly (through selling investment goods) and indirectly (through higher income and therefore increased trade). By 2023, 2007–2013 programmes are estimated to add 0.12% to GDP in non-cohesion countries, a quarter of which is due to spillovers from spending in cohesion countries. This effect is particularly pronounced for Austria and Germany because of their close trading links.

The 2014–2020 programmes plan to support 1.1 million SMEs, leading directly to the creation of a further 420 000 new jobs[14]. The programmes plan to help more than 7.4 million unemployed people to find a job and to help another 2.2 million people within six months of completing training co-funded

12 This time for the EU-13, i.e. including Croatia.

13 In purchasing power standards. 2006 was chosen as the baseline year, since it was the year preceding the 2007–2013 programmes, as well as the year preceding the accession of Bulgaria and Romania. 2015 was the latest year for these data series at the time of publication.

14 The number of new jobs of this period is lower compared to last period because a) innovative, sustainable and high added value jobs are targeted and b) the number at the end of the period is typically considerably higher than the number estimated at the start of the period. See Communication 'Strengthening Innovation in Europe's Regions Strategies for resilient, inclusive and sustainable growth', COM(2017) 376 final of 18 July 2017.

by the programmes. In addition, the programmes will help over 8.9 million people gain new qualifications.

Significant funding is being invested in the digital economy, where €16 billion is earmarked for the development of e-government, ICT services and applications for SMEs, high speed broadband, smart grids and intelligent energy distribution systems, and large scale data centres. Such investment is expected to provide 14.5 million additional households with broadband access.

Cohesion policy is making a substantial investment in environmental protection and energy efficiency. An extra 17 million people are planned to be connected to wastewater treatment facilities, and 3.3 million more to smart grids, while 870 000 households will be helped to reduce their energy consumption.

Moreover, investment in transport will remove bottlenecks, reduce travel times and lead to more urban trams and metros. The programmes plan to renovate more than 4 600 km of TEN-T railway lines, construct 2 000 km of new TEN-T roads and construct or improve 750 km tram and metro lines.

Cohesion policy is also making a substantial investment in social infrastructure. Some 6.8 million children will gain access to new or modernised schools and childcare facilities and 42 million people to improved healthcare services.

Territorial cooperation programmes are expected to see 240 000 people participate in cross-border mobility initiatives and 6 900 businesses and 1 400 research institutions in research projects.

Several measures to improve the quality of investments have been introduced for the 2014–2020 period:

- **Ex ante conditionalities**, which are preconditions attached to the programmes and which tackle the major systemic bottlenecks hindering effective public investment. These have led to the speeding up of ongoing reforms and the initiation of additional reforms. They have also strengthened the administrative capacity to implement EU rules relating to public procurement, state aid, environmental legislation and anti-discrimination[15].

- **Smart specialisation**, which is the most comprehensive decentralised, innovation and industrial policy in Europe today. It brings together the key players — the research community, business, higher education, public authorities and civil society — to target support in line with local potential and market opportunities. The goal is to achieve critical mass, innovation and a move up the value chain.

- A stronger **focus on results,** which means that programmes must set specific objectives, translated into clear result indicators with targets and benchmarks. Regular reports show whether the programmes are achieving

15 European Commission (2017e).

their goals and key indicators can be tracked online on an open data platform to check their progress. There is also a performance reserve which can be released if pre-set targets are met.

The funding allocated to projects selected by the 2014–2020 programmes up to July 2017, amounts to 39% of the total available. Though this is similar to the previous period, implementation has been slow which suggests that simplification and capacity concerns need to be further addressed. It is still too early to monitor progress towards achieving targets which will only become apparent once more projects have been completed.

11. Cohesion policy and the future of Europe

The White Paper on the Future of Europe[16] launched a debate on which direction the EU should take in the coming years. Together with its 5 reflection papers, it covers three main linked questions relating to cohesion policy:

1 Where should it invest?
2 What should the investment priorities be?
3 How should the policy be implemented?

These questions are summarised below in relation to the challenges identified in the present report. Two important agreements which cohesion policy needs to take account of are the COP21 agreement on climate change and the UN Sustainable Development Goals for 2030.

The Commission's reflection paper on the future of EU[17] finances poses the question of whether cohesion policy should invest outside less developed regions and cross-border ones.

From its inception, cohesion policy has had a particular focus on less developed regions and territorial cooperation. It has also invested in other areas that are mentioned in the Treaty, such as areas undergoing industrial transition, rural areas and the outermost regions. It has invested too in areas of high unemployment and deprived urban areas. For the last two programming periods, cohesion policy has covered all regions.

The present report shows that the impact of globalisation, migration, poverty and a lack of innovation, climate change, energy transition and pollution is not limited to less developed regions.

Future funding for cross border cooperation should continue to focus on areas of particular EU value-added and resolve cross-border problems, such as gaps and missing links in different policy fields, including transport. Finally, the

16 European Commission 'White paper on the Future of Europe Reflections and scenarios for the EU-27 by 2025', COM(2017) 2025 of 1 March 2017.

17 European Commission 'Reflection paper on the future of EU finances', COM(2017) 358 of 28 June 2017.

pooling of joint public services in neighbouring border regions and institution-building needs could also be taken into account[18].

The reflection paper on EU finances states, more generally, that all EU funding needs to focus on areas where the highest EU value-added can be achieved. Social inclusion, employment, skills, research and innovation, climate change, energy and environmental transition are identified as the areas which cohesion policy needs to focus on. In addition, the reflection paper highlights other areas where cohesion policy has a positive impact, such as support for SMEs, healthcare and social infrastructure, transport and digital infrastructure. Last but not least, it underlines the need to address migration and globalisation.

Both the reflection paper and the present report argue that poor institutional quality reduces competitiveness, the impact of investment and economic growth. Improving the quality of government, implementing structural reforms and strengthening administrative capacity should be further emphasised. They stress that the link with economic governance and the European Semester may need to be strengthened to ensure that the system is simpler, transparent and provides positive incentives to implement concrete reforms to foster convergence. This may require new approaches, for example through better coordination of available instruments and closer involvement of the Commission. The lagging regions initiative[19] contained several successful elements which could be extended. The need to improve institutions is also demonstrated by calls to make the disbursement of EU funds conditional on legislation and institutions adhering to common EU values.

In addition to the issues raised above about the territorial coverage and investment priorities, the reflection paper considers a number of options to improve the implementation of cohesion policy:

- A single set of rules for existing funds, would ensure more coherent investment and make it easier for beneficiaries. Coherence could also be improved by a single rule book for cohesion policy and other funding instruments with programmes or projects of the same type. This should lead to stronger complementarity between cohesion policy and innovation or infrastructure funding.

- The system of allocation of the funds could be revised by adding criteria linked to the challenges the EU faces, from demographics and unemployment to social inclusion and migration, from innovation to climate change.

- The levels of national co-financing for cohesion policy could be increased to better align them for different countries and regions and to increase the sense of ownership in the policy.

18 European Commission 'Boosting growth and cohesion in EU border regions', COM(2017) 534 of 20 September 2017.

19 European Commission (2017a).

- An unallocated proportion of funding could make cohesion policy more flexible and able to respond to new challenges more quickly.

- Faster implementation and a smoother transition between programming periods could be achieved by changes, such as stricter decommitment rules, shortening procedures for closing programmes and speeding up the processes for appointing the management authorities and for programming and making them more flexible.

- Complementarity between financial instruments could be enhanced. Upstream coordination, the same rules and clearer demarcation of interventions could ensure complementarity between the European Fund for Strategic Investment, the new pan-European Venture Capital Fund and the loan, guarantee and equity instruments managed by Member States under cohesion policy.

- Finally, the policy has become increasingly complex to manage. Therefore, a much more radical approach to simplifying implementation is needed.

Next, cohesion policy stakeholders and the general public will be invited to participate in the public consultation as part of the impact assessment. In May 2018, the Commission plans to adopt the proposal for the multi-annual financial framework, followed by the proposals for cohesion policy post 2020.

chapter 1

Economic cohesion

- After the double dip recession in 2008 and 2011, the EU economy is now growing again, with growth being particularly high in low-income countries.
- The crisis reversed the long-term trend towards a narrowing of regional disparities in GDP per head and employment. However, the first signs of convergence resuming are evident, though in many regions GDP per head and employment remain below their pre-crisis levels.
- GDP per head in the less developed regions is converging towards the EU average through both faster productivity growth and increased employment.
- The regions with high GDP per head have grown faster than the EU average, in part because they have benefited from the agglomeration economies from the national capital or a large city being located there. These benefits can be further extended by improving links between a large city and its rural hinterland or between smaller cities to enable specialised services to be shared and economies of scale to be realised.
- The regions with a GDP per head between 75% and 120% of the EU average seem stuck in a 'middle-income trap.' Between 2000 and 2015, their GDP per head growth was far below the EU average. Their manufacturing sectors are smaller and weaker than those in regions with a lower or higher GDP per head. Their costs are too high and their innovation systems not strong enough to be competitive at the global level.
- Innovation in the EU remains highly concentrated. In north-western EU countries States, however, good regional connections, a skilled labour force and an attractive business environment have enabled surrounding regions to benefit from proximity to highly innovative ones. In southern and eastern EU countries, the most innovative regions are less strong and, accordingly, other regions close to them enjoy little benefit.

Chapter 1

Economic cohesion

1. Introduction

Regional economic divergence has become a threat to economic progress in the EU (Iammarino et al., 2017) at a time when globalisation poses new challenges to economic cohesion. While the evidence suggests that the EU economy as a whole has benefited and continues to benefit from globalisation, these benefits are not automatically and evenly transmitted to all European regions (European Commission, 2017c).

Cohesion Policy has invested heavily in reducing economic disparities across EU regions. It has co-financed investment in innovation, education and digital and transport networks, so helping to create a single market that boosts growth, productivity and specialisation in areas of comparative advantage in all regions. As such, it strengthens the position of EU enterprises in global markets where they have to compete with both firms from low-cost locations and highly innovative ones.

The crisis has been highly disruptive in many parts of the EU. It has reversed the long-term trend towards a narrowing of regional disparities. It has led to reductions in economic activity and employment in many Member States. However, the first signs of the convergence process resuming can be detected. Nevertheless, many regions still have a GDP per head and employment rate below their pre-crisis level.

Cohesion Policy has made a substantial contribution to economic cohesion. In the years between 2007 and 2014, around 400 000 SMEs received support under cohesion policy and more than 1 million new jobs were directly created. Nevertheless economic disparities still remain, requiring substantial amounts of investment beyond the present programming period if they are to be reduced.

This chapter describes recent trends in economic cohesion in regions and cities in the EU. It covers the differential trends in GDP per head across the EU and in the impact of globalisation as well as the factors underlying regional competitiveness, such as the extent of tertiary education, entrepreneurship, innovation and digital and transport networks. It also presents an aggregate indicator, the Regional Competitiveness Index, intended to summarise the different dimensions of competitiveness of EU regions.

The main concern throughout is to highlight the performance of the less developed regions and of different types of area, cities and rural areas, in particular.

2. Economic trends among EU regions and Member States

2.1 Convergence back on track

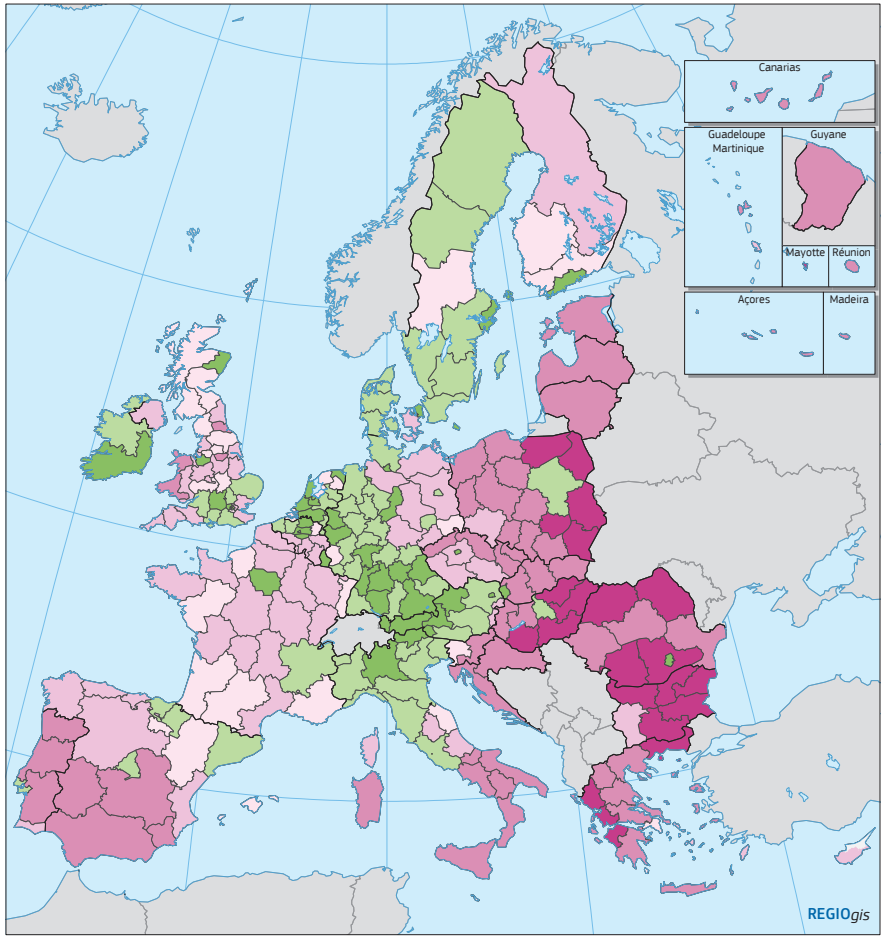
In 2015, more than one in four EU residents (27%) lived in a (NUTS 2) region with a GDP per head, in PPS terms[1], below 75% of the EU average (Map 1.1).

Most of them are located in central and eastern EU Member States, Greece, Portugal, Spain, and southern Italy. They also include most of the outermost regions.[2] In Bulgaria and Romania, GDP per head is below 50% of the EU average in all regions, except for the capital city regions of Yugozapaden and Bucureşti-Ilfov.

Between 2000 and 2015, GDP per head increased relative to the EU average in all the regions in the central and eastern Member States (Map 1.2).

1 Gross Domestic Product (GDP) per head in Purchasing Power Standards is the total value of all goods and services produced per inhabitant. Purchasing Power Standards (PPS) adjusts for differences between countries in purchasing power due to differences in price levels.

2 The European Union includes 9 outermost regions, which are a long way from the European continent. They are: Guadeloupe, La Réunion, Mayotte, French Guiana, Martinique and Saint-Martin (France); Madeira and Azores (Portugal) and Canary Islands (Spain).



Map 1.1 GDP per head (PPS), 2015

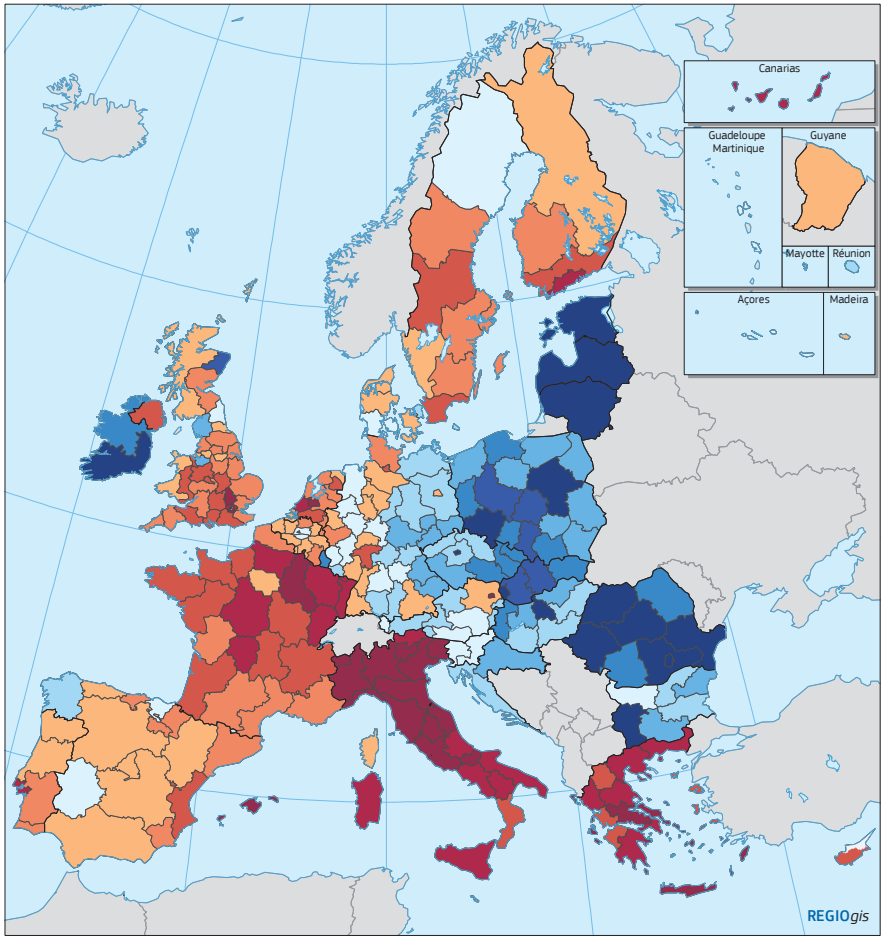
Index, EU-28 = 100

- < 50
- 50 – 75
- 75 – 90
- 90 – 100
- 100 – 125
- >= 125

Values for the two regions in Ireland for 2015 have been estimated from the 2014 figures on the basis of the changes in the national figure.
Source: Eurostat, DG REGIO

0 500 km

© EuroGeographics Association for the administrative boundaries



Map 1.2 Change in GDP per head, 2000–2015

Index point difference

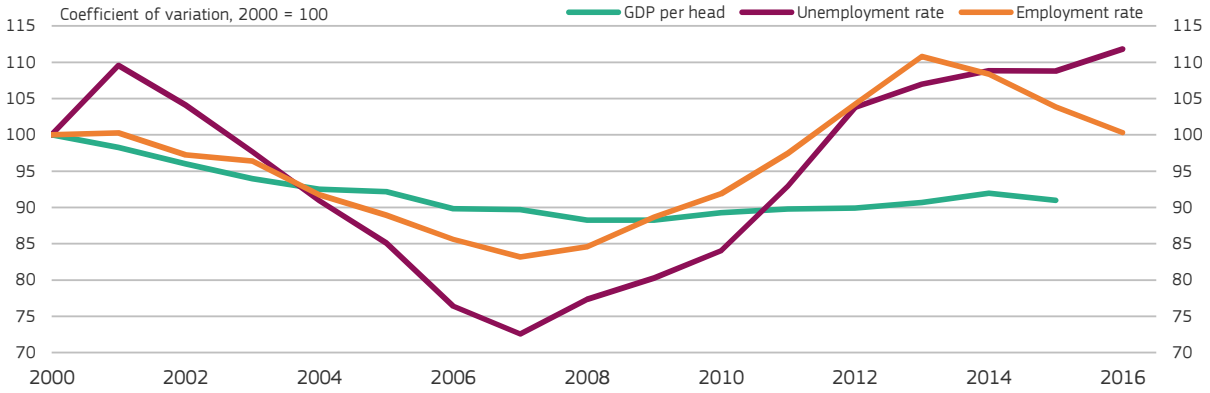
- < -20
- -20 – -15
- -15 – -10
- -10 – -5
- -5 – 0
- 0 – 5
- 5 – 10
- 10 – 15
- 15 – 20
- 20 – 25
- > 25
- no data

EU-28 = 0
Source: Eurostat, DG REGIO

0 500 km

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Figure 1.1 Coefficient of variation of GDP per head, employment rate (20-64) and unemployment rate in EU-28 NUTS 2 regions, 2000-2016 (indices, 2000=100)



The coefficient of the variation is weighted by the population of each region
Source: Eurostat, DG REGIO calculations

Growth was particularly high over the period in the capital city regions in Romania (from 56% of the EU average to 136%) and Bulgaria (from 38% to 76% of EU average in 2015).

In Greece, the situation deteriorated. In 2008, three of the 13 regions had a GDP per head above 75% of the EU average, in 2015, just two — the capital city region Attiki (95%) and Notio Aigaio, the southern Aegean islands (75%).

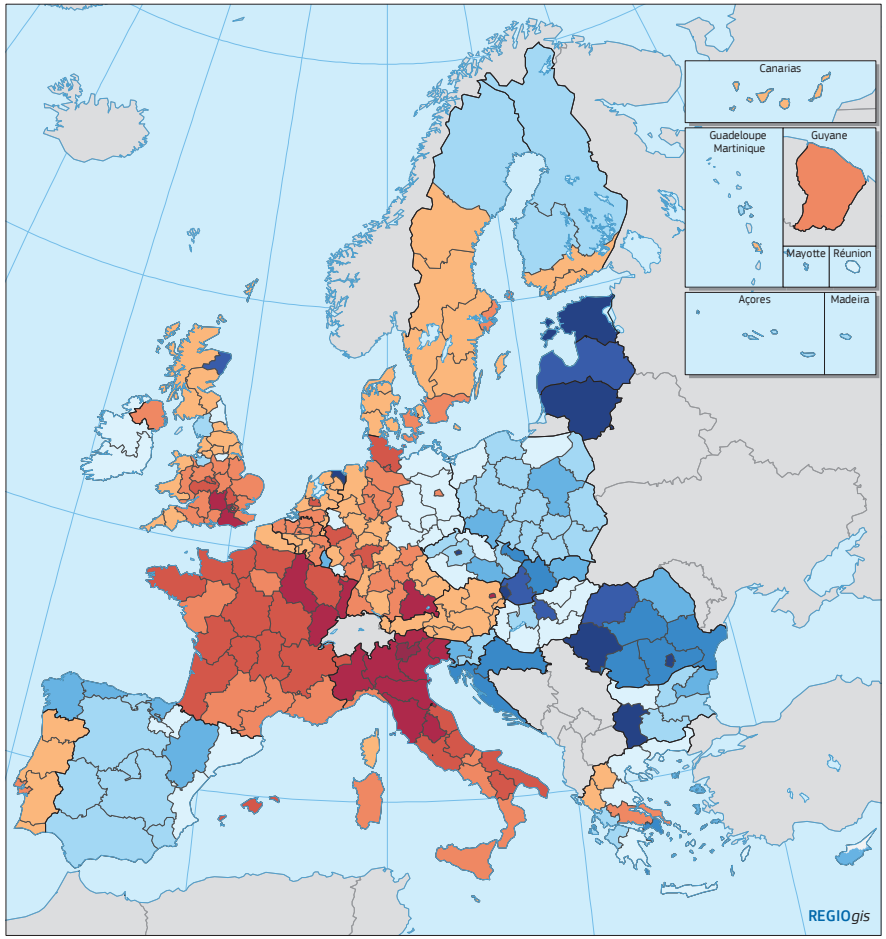
In Portugal, only two regions in 2015 had a GDP per head above the 75% threshold, Lisbon (103%) and Algarve (79%), in both substantially lower than in 2008 before the crisis.

There are signs that the long-run process of regional convergence, which was interrupted by the economic crisis, has resumed. Prior to the crisis, disparities in GDP per head in the EU were shrinking (the coefficient of variation falling by 12% between 2000 and 2008), mainly due to regions with the lowest levels of GDP per head growing faster than average (Figure 1.1). In the crisis years, between 2008 and 2014, however, regional disparities widened slightly (the coefficient of variation increased by 4% between 2008 and 2014, but remained well below the level in 2000). In 2015, disparities started to narrow again, though it is too early to say if this will be sustained.

Regional disparities in employment rates narrowed from 2013, though this was preceded by a significant increase as the result of the crisis and disparities in 2016 were much wider than in 2008. By contrast, reflecting the increased participation in the labour market, disparities in regional unemployment rates continued to widen, though at a slower pace than before 2012.

Between 2000 and 2008, all the regions in the EU-13 except Malta converged to the EU average (Map 1.3), with big strides (more than 20 index points) in the capital regions of Bulgaria, the Czech Republic, Hungary, Romania and Slovakia as well as in the Baltic States. Most of the Greek regions converged, while the Italian regions and mainland Portugal diverged.

Between 2008 and 2015, all the regions in the EU-13 converged except Cyprus and Praha. (Map 1.4). The Baltic States who were hit hard by the crisis still converged. Greek regions experienced big reductions in their GDP per head relative to the EU average, more than reversing the convergence achieved between 2000 and 2008. Almost all Portuguese and Italian regions continued to diverge. Spain was also affected by the crisis and diverged, but not to the same extent as Greece.



Map 1.3 Change in GDP per head index, 2000–2008

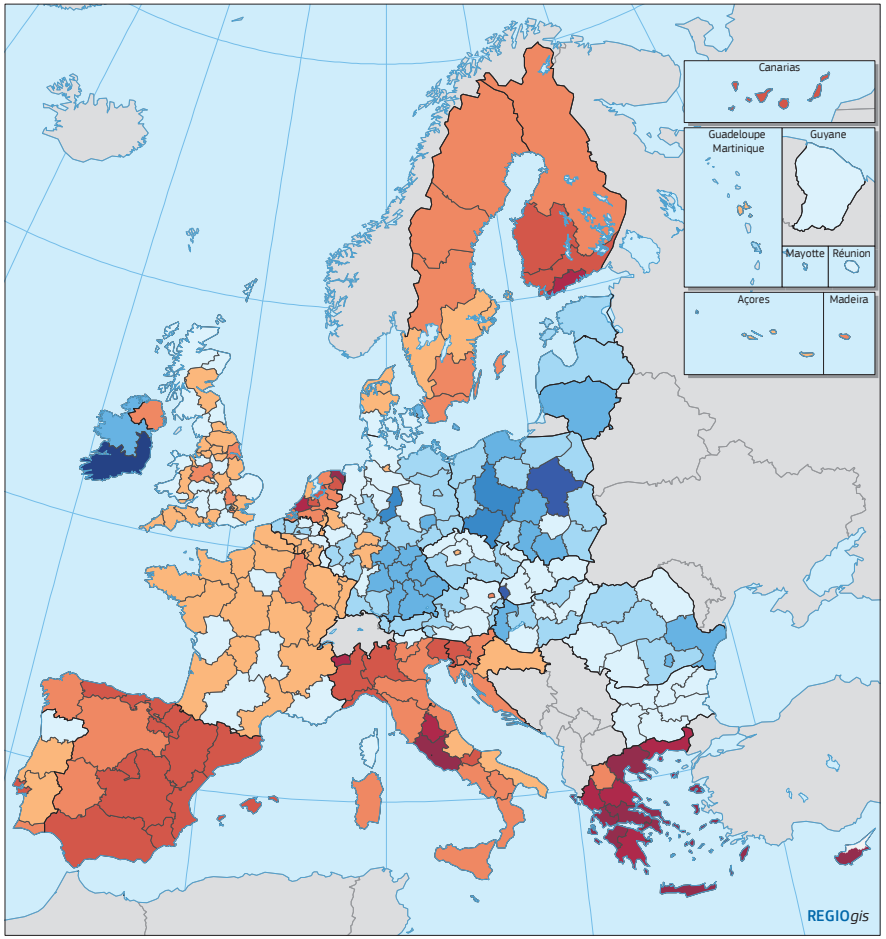
Index point difference

< -20	5 – 10
-20 – -15	10 – 15
-15 – -10	15 – 20
-10 – -5	20 – 25
-5 – 0	> 25
0 – 5	no data

EU-28 = 0
Source: Eurostat, DG REGIO

0 500 km

© EuroGeographics Association for the administrative boundaries



Map 1.4 Change in GDP per head index, 2008–2015

Index point difference

< -20	5 – 10
-20 – -15	10 – 15
-15 – -10	15 – 20
-10 – -5	20 – 25
-5 – 0	> 25
0 – 5	no data

EU-28 = 0
Source: Eurostat, DG REGIO

0 500 km

© EuroGeographics Association for the administrative boundaries

Overall, the biggest relative increases in GDP per head between 2000 and 2015 occurred in the EU-13, while the biggest reductions were in Greece and Italy, in the latter both before and after the crisis (Map 1.2). But a few regions in Belgium, the Netherlands, France and the UK also experienced big falls.

Mainstream economic growth theories predict that the lower the initial GDP per head the higher growth will be. Indeed, growth was higher than average in both the less developed and transition regions (located mostly in less developed and moderately developed Member States,[3] Figure 1.2), with GDP per head in regions in less developed and moderately developed Member States growing at a faster pace than the EU average.

The economic and financial crisis led to a reduction in GDP per head between 2009 and 2015 in around 40% of regions, located mainly in Ireland, Italy, Spain, Portugal and Greece; in most Greek regions, the reduction amounting to over 3% a year. The process of convergence was halted with several of the less developed and transition regions growing more slowly than the EU average (Figure 1.3).

From 2000 onwards convergence was mainly driven by the catching up of the less developed economies. GDP per head, therefore, grew faster in real terms in the less developed Member States than in others over the period 2001–2016, except in 2010 and 2011, and it is forecast to continue to do so in 2017 and 2018 (Figure 1.4).

From 2011 to 2013 the average growth rate in the moderately developed Member States was below that in the highly developed Member States, i.e. diverging. Only in 2014 did it overtake the rate in the highly developed Member States and growth in their GDP per head is forecast to be around 2.5% in both 2017 and 2018 (as against 3.5% in less developed Member States).

EU outermost regions

The European Union includes 9 outermost regions, which are geographically remote from the continent and located in the Caribbean basin, the Macaronesia area and the Indian Ocean. They are governed by the provisions of the Treaties and are an integral part of the Union.

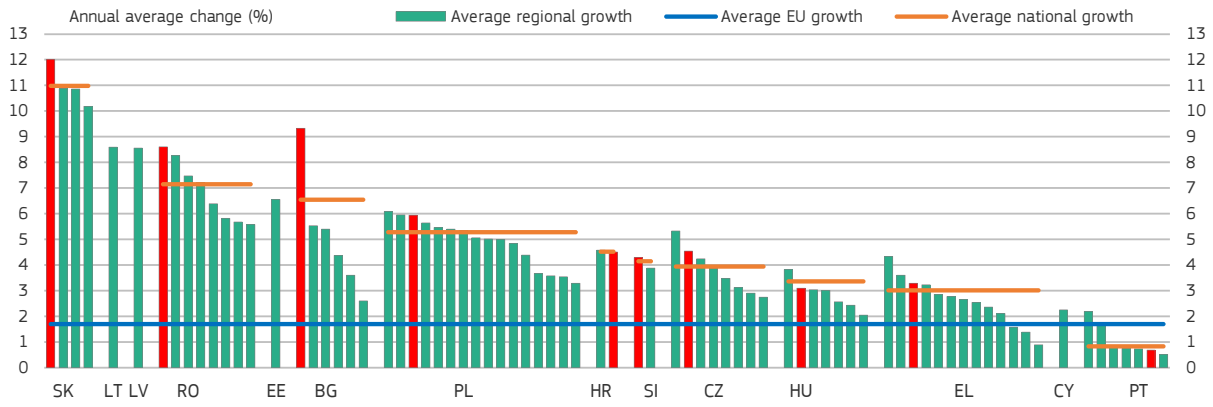
Around 5 million people live in the outermost regions. Some of them have significant population growth due to inward migration and the average age for most of them is much lower than in their respective countries on the mainland.

The outermost regions have a level of GDP per head below the EU average. In Mayotte, with a population of around 213 000, it is barely a quarter of the average. They also have high unemployment, higher than on the mainland, particularly among young people (15–24), the rate being around 47% in Guadeloupe, 51% in the Canary Islands, and 55% in Mayotte. They represent an asset for the EU in many areas, in biodiversity, climate change adaptation and mitigation, green growth and the circular economy and are actively involved in many areas of research, such as renewable energy, marine science and space. However, because of their remoteness, their difficult topography and climate, their small markets and the fact that 8 of them are islands, they have a special status under the Treaty (under Article 349 of the TFEU). This distinguishes them from other regions in the EU and from the Overseas Countries and Territories (OCTs) that are associated to the Union.

In the Autumn 2017, the Commission will adopt a new strategy for them, inspired by the work of the 4th Forum on the Outermost Regions held in March 2017 and by the proposals submitted by them, the Member States concerned and the European Parliament.

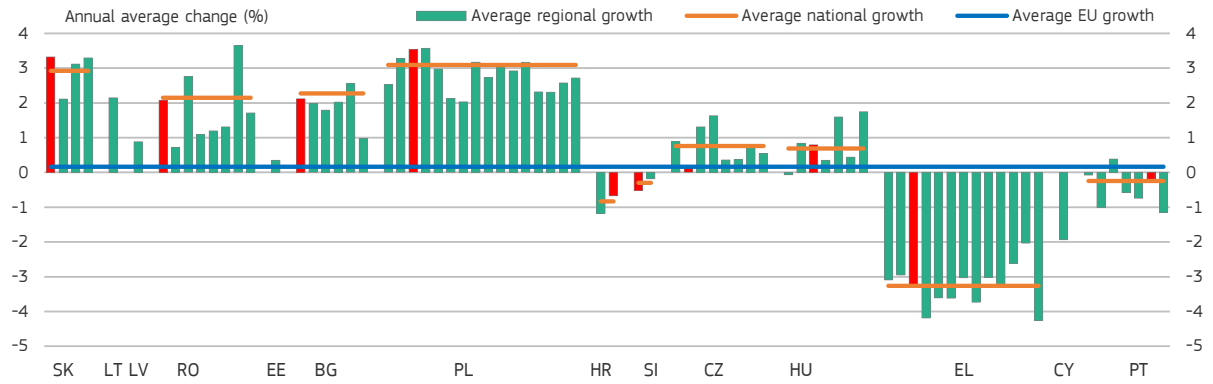
3 See the Lexicon section for the list of less developed and moderately developed Member States.

Figure 1.2 Growth rates of GDP per head of regions in less developed and moderately developed Member States, 2001-2008



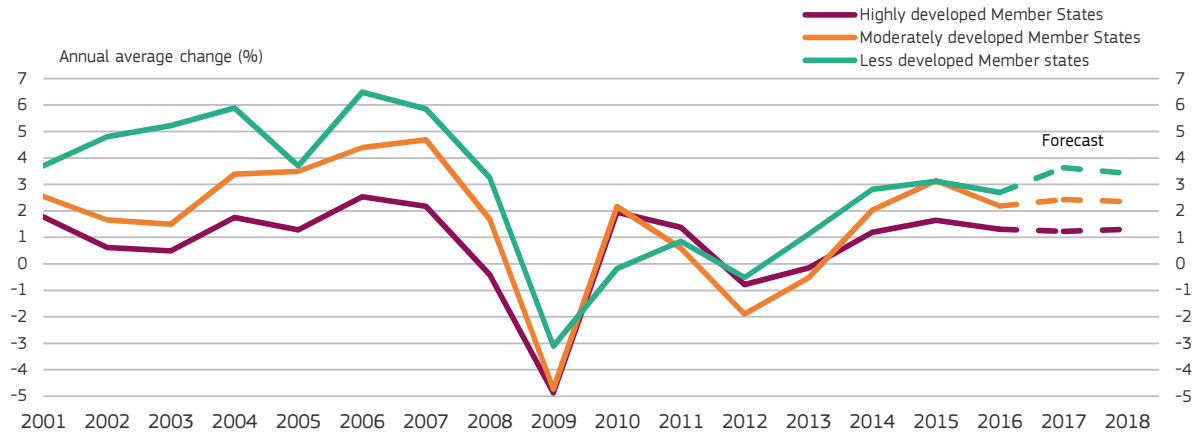
PL: 2004-2008; capital regions are indicated in red. Regions are ranked by growth rates for the period 2001-2008.
Source: Eurostat, DG REGIO calculations

Figure 1.3 Growth rates of GDP per head of regions in less developed and moderately developed Member States, 2009-2015



Capital regions are indicated in red. Regions are ranked by growth rates for the period 2001-2008.
Source: Eurostat, DG REGIO calculations

Figure 1.4 Growth of GDP per head in real terms, EU-28, 2001-2018



Source: EUROSTAT, DG ECFIN, DG REGIO calculations

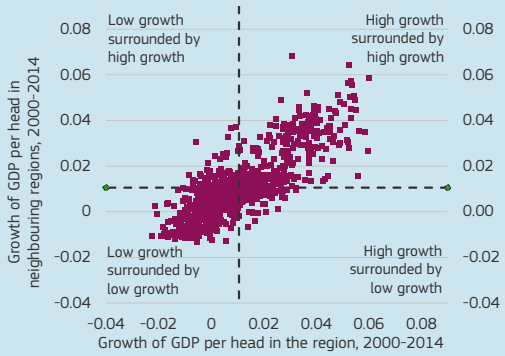
Determinants of GDP growth across NUTS 3 regions

According to mainstream economics, initial socio-economic conditions are major determinants of growth of GDP per head in a given period. This relationship is examined below for the years 2000–2014. For more details on this analysis see Lavalle et al. (2017).

Determinants of GDP growth and the role of spatial spill-overs

Spatial spill-overs are the effect of economic growth in one region on growth in neighbouring ones. This can be positive, so that growth in regions close to each other is self-reinforcing, or negative, so that a region grows at the expense of surrounding ones. Figure 1.5 shows that regions in the EU with high growth rates are predominantly surrounded by other high-growth regions, in that there is a relative concentration of such regions in the top right quadrant (and relatively few in the bottom right quadrant). At the same time, regions with low growth are mostly surrounded by other low-growth ones, with most of them in the bottom-left quadrant rather than the top left.

Figure 1.5 Spatial spill-overs of economic growth between regions in the EU, 2000-2014



Source: Lavalle et al. (2017)

The relationship between regional growth and initial conditions is examined on the basis of a spatial lag model, which assumes that economic growth in a region is determined by the average growth in surrounding ones together with a set of additional factors which explain differences in growth between regions. Formally, the model is defined as:

$$Y=\rho WY+X\beta+u$$

where Y is the growth rate of GDP per head, X is a set of regional-specific features and W is a matrix describing the spatial link between regions. Specifically, two regions are considered neighbours if they are within 150 minutes of travel time by road (based on the JRC-Trans Tools model).

The *direct effect* in the table below measures the impact of the explanatory variables on the region itself, the indirect effect, the impact of the explanatory variables in neighbouring regions on the region, which, accordingly, captures spatial spill-over effects.

Table 1.1 Estimation results ('+' is a positive impact;'–' is a negative impact)

Dependent variable: growth of GDP per head 2000–2014

Variable	Direct effect	Indirect effect	Direct effect	Indirect effect
Initial GDP per head in 2000_2 (log)	–	–	–	–
Share of population aged 25–64 with upper secondary education in 2000	+	+	+	+
Share of population aged 25–64 with tertiary education in 2000	+	+	+	+
Agglomeration 2000	+	+	+	+
Share of employment in tradable sectors in 2000	+	+		
Share of employment in non-tradable sectors in 2000			–	–
GDP per head growth in neighbouring regions	+	+		
R^2	0.80	0.80		

All the coefficients are statistically different from zero at the 1%, 5% or 10% level. The share of employment in tradable and non-tradable sectors cannot be included in the same regression because they sum to 1.

The main results can be summarised as follows:

Spatial spill-overs between regions are of major importance. Around half of the growth in a region over the period is explained by growth occurring in neighbouring ones.

Less developed economies are catching up. GDP per head in the initial year has a negative impact, implying that less developed regions tended to grow faster than more developed ones and will eventually catch up with the more developed ones.

Upper secondary and tertiary education are strong drivers of growth. Highly-educated people can move or commute to neighbouring regions or work in companies that are linked to others in these regions, so increasing their growth.

Agglomeration economies are confirmed as a driver of economic growth. Agglomeration means economies of scale, higher probability of innovation and concentration of high level services that are fundamental for growth. In addition, agglomeration produces a direct and an indirect effect on growth due to greater interaction between firms as well as people.

Tradable sectors have a positive impact on economic growth. In this case the channels of the indirect effect might be related to commuting or subcontracting relationships.

According to a European Commission reflection paper (European Commission, 2017c), globalisation has a highly differentiated impact on EU regions. While some are well positioned to take advantage of the new opportunities it offers, others are hit by job losses, stagnating wages and shrinking market shares due to low-cost competitors moving into more technologically advanced sectors.

The best response to globalisation is a continuous effort to move up the value chain. This requires innovation, entrepreneurship, knowledge transfer and continuous upgrading of the skills of the labour force. Regions that are innovative and have a large share of high-skilled jobs and a highly educated work force are less likely to be hit hard by heavy job losses than others.

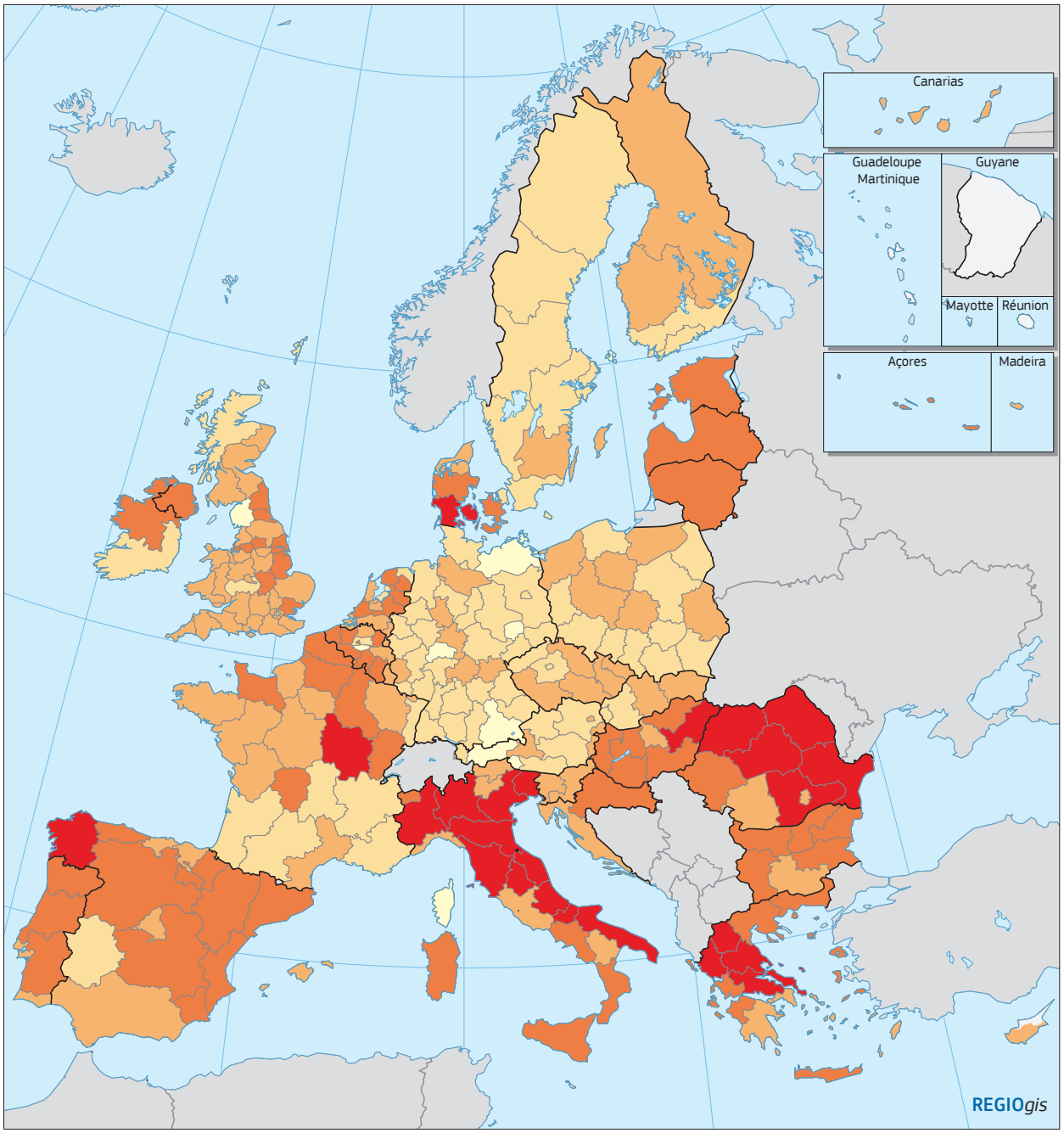
There are four important risk factors linked to globalisation and technological change: (1) a large share of employment in low-tech manufacturing, (2) rapidly increasing unit labour costs in manufacturing over the past decade which may compromise competitiveness and reduce market share, (3) a large share of working-age population with low educational attainment, and (4) a decline in employment in industry between 2000 and 2014 (Map 1.5). Some 9% of EU regions, located in 7 different Member States, are at risk from globalisation by being exposed to up to four of these factors. Most are located in southern or central and eastern Europe, though there are also high risk regions in Denmark, France, Ireland and the UK. In many Member States, the situation is diverse with some regions being subject to three or four risks and others only one or none at all. These risks may diminish over time, though probably only slowly since changes in innovation or education attainment levels take time to be accomplished.

2.2 Less developed regions maintain a strong manufacturing sector, but their agriculture needs to modernise

In 1995, industry, excluding construction (i.e. mainly manufacturing), accounted for around 21% of both total employment and gross value-added (GVA) in the EU. The rise of services, automation in manufacturing and the relocation of parts of it to emerging economies has led to a steady reduction in both shares since then, to 19% in the case of GVA and 16% in the case of employment (Figure 1.6).

In less developed regions, the share of both GVA and employment in industry is, on average, larger than in the more developed and transition ones[4]. Moreover, the share of GVA increased over the period (from 21% to 24%) while the share of employment declined — though by less than in other

4 See Lexicon for a definition of 'less developed', 'transition' and 'more developed' regions.



Map 1.5 Risk factors linked to globalisation and technological change

Number of risk factors out of 4 (see footnote)

0 3
1 4
2

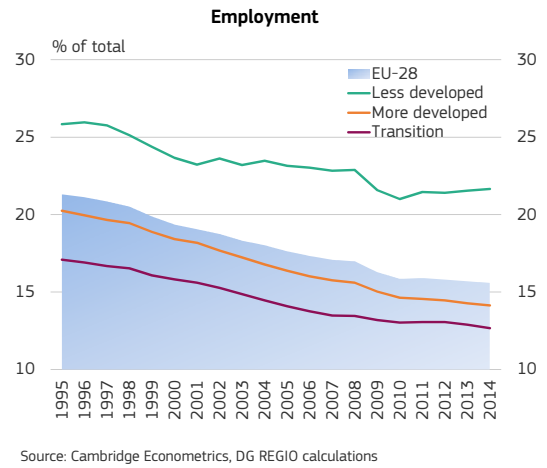
A risk factor is defined as a negative value for the first indicator and a value above the EU regions average for the next indicators:
- Employment growth in the industry between 2000 and 2014;
- Share in employment of low-technology manufacturing, 2016;
- Share of people between 25 and 64 with a low educational attainment, 2016;
- Change in manufacturing ULC between 2003 and 2014.

Source: Eurostat, DG REGIO calculations

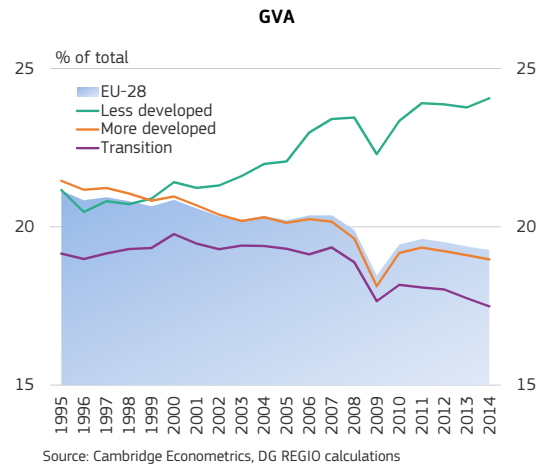
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Figure 1.6 Employment and GVA shares in industry (excluding construction) 1995–2014



Source: Cambridge Econometrics, DG REGIO calculations



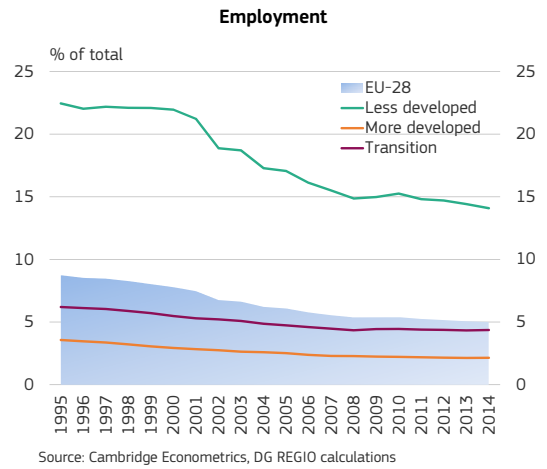
Source: Cambridge Econometrics, DG REGIO calculations

regions — implying an increase in productivity in industry relative to other sectors.

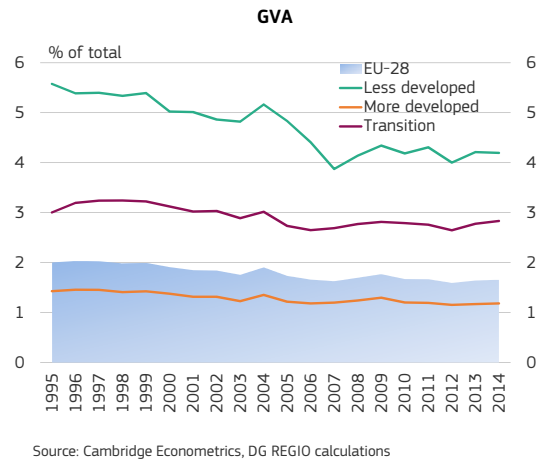
The reduction in the share of employment in agriculture in the EU over the 20 year-period was substantial, especially in less developed regions. In 1995, it accounted for around 9% of total employment and by 2012, the share had fallen to 5% when, because of low productivity — partly reflecting subsistence farming in EU-13 countries — the share of GVA was under 2% (Figure 1.7). In less developed regions, the share fell from 22% to 14% between 1995 and 2014 and, as productivity increases, it is likely that it will fall further.

As the number of jobs in less productive segments of agriculture and industry declines, more jobs may be created in services and more advanced areas of industry and agriculture. Regions can indeed choose not to abandon agriculture and industry. Within global value chains, economies can increase their productivity by upgrading to higher value segments within the same sector (Shepherd, 2013). In addition, automation has made labour costs less relevant and may bring back some manufacturing firms to the EU, but the jobs they will offer will be different from those that were moved away in past years (European Commission, 2017c, OECD, 2016a; and Eurofound, 2016). Training may help workers losing their jobs to gain new ones as

Figure 1.7 Employment and GVA shares in agriculture 1995–2014



Source: Cambridge Econometrics, DG REGIO calculations



Source: Cambridge Econometrics, DG REGIO calculations

The EU Common Agricultural Policy and the LEADER approach

The EU Common Agricultural Policy (CAP) addresses matters of high societal value in relation to agriculture and rural areas. About half of the EU's territory is farmed and the primary agricultural sector accounts for a 5% share in total employment, with 11 million farms providing work for roughly 22 million people. Together with food processing, food retail and food services, agriculture makes up a sector providing nearly 44 million jobs. The CAP contributes to smart, sustainable and inclusive growth in the EU through a range of policy tools which provide support to agriculture, food and forestry sectors as well as other entities operating in rural areas such as non-agricultural businesses, NGOs and local authorities.

The CAP is aimed at improving the economic viability and sustainability of farming and rural businesses through support to knowledge transfer and innovation, investment in green technologies, training, entrepreneurship and networking as well as access to essential services and the social inclusion of migrants and Roma. It also ensures, a basic level of income support to farmers and helps them run their businesses in a sustainable way by fostering the preservation of natural resources and environmentally sustainable land management.

The CAP is composed of two strands, financed, by the European Agricultural Guarantee Fund (EAGF) and the European Agricultural Fund for Rural Development (EAFRD), the two amounting to €408.3 billion in the 2014–2020 period.

Rural development policy is part of the Common Strategic Framework (CSF) for Cohesion Policy 2014–2020. Its objective is to enhance the economic resilience of the farm sector and non-agricultural businesses by supporting investments, knowledge-building and various forms of cooperation and innovation in the rural areas. Rural development also provides for payments to farmers who commit themselves to provide public goods through environment and climate-related actions going beyond mandatory requirements.

In the 2014–2020 programming period, rural development plays an important role in making rural areas a better place to live and work, and in promoting a more inclusive society. A wide range of measures contributes to EU cohesion objectives, including operations facilitating diversification and creation of new small enterprises, job creation, and enhancing accessibility to ICT in rural areas or fostering local development.

LEADER is a local development programme which for 20 years has involved local communities in the design and implementation of policies and resource allocation for the development of rural areas. For the 2014–2020 period almost €6.9 billion (7% of the EAFRD) has been allocated to the programme. LEADER operates through Local Action Groups (LAGs) which are intended to be inclusive and outward looking in order to involve both key stakeholders in the area and marginalised groups. In 2014–2020, 2 536 LAGs will be set up across the EU with the aim of implementing local development strategies which, among other outcomes, are expected to create 46 000 new jobs.

the structure of economic activity shifts, but there is a limit to what it can achieve.

3. Productivity in less developed Member States is catching up

Less developed Member States tend to have a different economic structure than the others, with more employment in agriculture and industry (Table 1.2)[5]. In 2016, the share of employment in agriculture was 11 percentage points higher in less developed Member States than in highly developed Member States (13% *versus* 2%). In 2016, the share of their employment in industry was around 21% (i.e. the same as in less developed regions), and 7 percentage points larger than in highly developed Member States (14% as in more developed regions).

5 This section analyses data at the country level because of the unavailability of regional data on sectoral employment for 2015 and 2016 and partly for 2014.

Table 1.2 Employment and GVA by NACE sector and group of Member States, shares in 2016 and changes 2001–2008 and 2009–2016

	Less developed	Moderately developed	Highly developed	EU-28	Less developed	Moderately developed	Highly developed	EU-28
Share in 2016 (%)								
A: Agriculture, forestry and fishing	13.3	5.6	2.4	4.5	3.5	2.5	1.3	1.5
B-E: Industry (except construction)	20.6	23.0	13.5	15.3	23.0	24.6	18.8	19.3
F: Construction	6.8	7.0	6.2	6.3	6.0	5.3	5.0	5.1
G-J: Wholesale and retail trade; et al.	26.8	27.4	27.9	27.7	27.7	26.1	24.5	24.8
K-N: Financial and insurance activities; et al	9.6	13.2	18.2	16.4	21.8	22.0	27.9	27.2
O-U: Public administration; et al.	22.9	23.7	31.9	29.7	18.0	19.5	22.6	22.1
Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Annual average % change 2001-2008								
A: Agriculture, forestry and fishing	-4.9	-2.2	-1.6	-3.6	1.2	0.9	0.6	0.7
B-E: Industry (except construction)	0.1	-0.6	-1.0	-0.7	4.8	5.1	1.2	1.5
F: Construction	5.9	0.5	1.5	2.1	4.8	1.6	1.0	1.3
G-J: Wholesale and retail trade; et al.	2.3	1.9	1.2	1.4	5.1	3.4	2.5	2.8
K-N: Financial and insurance activities; et al	3.9	2.8	2.8	2.9	4.9	3.2	2.3	2.6
O-U: Public administration; et al.	1.0	1.0	1.4	1.3	2.4	1.4	1.4	1.4
Total	**0.4**	**0.7**	**1.1**	**0.9**	**4.4**	**3.3**	**1.9**	**2.1**
Annual average % change 2009-2016								
A: Agriculture, forestry and fishing	-3.1	-2.4	-0.8	-2.1	0.0	1.9	-0.4	-0.1
B-E: Industry (except construction)	-1.3	-0.7	-1.2	-1.2	1.6	0.9	0.3	0.4
F: Construction	-2.7	-3.5	-2.1	-2.3	-1.7	-4.0	-1.9	-1.9
G-J: Wholesale and retail trade; et al.	0.2	0.2	0.3	0.3	0.5	0.8	1.0	1.0
K-N: Financial and insurance activities; et al	2.2	1.3	1.2	1.3	1.5	0.8	0.9	0.9
O-U: Public administration; et al.	0.6	0.3	0.8	0.8	-0.4	0.1	0.7	0.7
Total	**-0.5**	**-0.3**	**0.2**	**0.0**	**0.6**	**0.4**	**0.6**	**0.6**

Green bars indicate positive changes, red bars indicate negative changes.

Less developed: BG, EL, EE, HR, LV, LT, HU, PL, RO; Moderately developed: CZ, CY, PT, SK, SI; Highly developed: BE, DK, IE, ES, FR, DE, IT, LU, MT, NL, AT, FI, SE, UK.

Source: EUROSTAT, DG REGIO calculations

Both agriculture and industry lost employment between 2001 and 2008 and between 2009 and 2016. The pattern for agriculture was the same: the less developed Member States had the fastest reduction in agricultural employment, followed by the moderately developed, with the slowest reduction in the highly developed Member States. GVA in agriculture on the other hand grew fastest in the less developed Members States between 2001 and 2008, but it did not grow at all between 2009 and 2016.

Industrial employment remained constant in the less developed Member States between 2001 and 2008, while it shrank in the other groups of Member States. Joining the EU and the single market has created more potential for specialisation in higher value-added sectors, so less developed Member States may have been able to maintain a larger share of employment in industry because the balance between labour costs, productivity and accessibility represented an attractive location for manufacturers. Industrial GVA in less developed Member States grew three times faster than in highly developed Member States between 2001 and 2008 and four times faster between 2009 and 2016.

Employment and GVA in construction grew quickly, especially in the less developed countries in the run-up to the crisis and fell sharply between 2009 and 2016 in all three country groups.

Over the period 2001–2008, GVA in industry in these countries increased by more than in other sectors, by much the same as in the business and financial sector (K-N). It increased even over the crisis years, 2009 to 2013, whereas it declined in both moderately developed and highly developed Member States.

By contrast, shares of employment and GVA in the business and financial sector in the less developed Member States, which used to be small, increased towards those in the highly developed countries. The impact of the crisis was limited, both employ-

The European Maritime and Fisheries Fund

The European Maritime and Fisheries Fund (EMFF), which has a budget of €6.4 billion budget for the period 2014–2020, underpins the new Common Fisheries Policy and supports the diversification of local maritime economies and their sustainable development.

Due to the specific scope of the EMFF, support is concentrated in coastal areas and major freshwater sites.

The ex post evaluation of the 2007–2013 programmes indicates the following main achievements:

- EFF support amounted to around 20% of EU fleet investment over the programming period and strengthened competitiveness by removing unprofitable vessels and by helping to modernise the remaining fleet and landing sites.
- Investment in the aquaculture sector was supported during the financial crisis, so helping to slow down (or reverse in some Member States) a downward trend in employment in the sector.
- EFF financing helped to maintain the competitiveness of the fish processing industry through around 8 000 operations across the EU involving some 2 700 beneficiaries.
- Support led to the creation of around 17 000 new jobs (10 000 in marketing and processing) over the period and the maintenance of many more. It also helped to improve the quality of jobs and working conditions through investment in safety equipment as well as in aquaculture, processing, and fishing ports.

Decomposing growth in GVA per head

Growth in GVA per head can be broken down into three main components: changes in productivity (GVA per person employed), changes in the employment rate (employment relative to population of working age, 15–64) and changes in the share of working age population in the total population. Accordingly, the following identity holds:

$$\frac{\text{GVA}}{\text{Total population}} = \frac{\text{GVA}}{\text{Employment}} \times \frac{\text{Employment}}{\text{Working age population}} \times \frac{\text{Working age population}}{\text{Total population}}$$

The same identity can be expressed in terms of changes: The change in GVA per head is the sum of the changes in productivity, in the employment rate and in the share of working age population.

ment and GVA continuing to grow after 2008 but at slower rates than between 2000 and 2008.

The restructuring and modernisation of agriculture is still ongoing in the less developed Member States. In 2016, it accounted for 13% of employment — as against only 2% in the highly developed Member States — but for only 3.5% of GVA. Both shares are tending to decline as restructuring takes place and, along with the shares in moderately developing countries, are converging towards those in highly developed countries[6].

3.1 Productivity and employment contribute to the economic recovery in the EU

In the years before the crisis, from 2001 to 2008, GVA per head in the EU grew by 1.7% a year in real terms, fuelled primarily by productivity growth of 1.2% a year, with increases in the employment rate adding another 0.6% a year (Table 1.3). Productivity growth was also the main source of growth in GVA per head in less developed Member States, though both were substantially higher than the EU average, especially productivity growth (4% a year).

Between 2009 and 2016, GVA per head in the EU grew slightly (by 0.3% a year), productivity grew faster (by 0.6% a year) and the employment rate by less (0.2% a year), while the share of working-age population declined (by 0.4% a year) as opposed to it remaining unchanged as it did between 2001 and 2008. The number of Member States with a declining share of working-age population increased markedly between the two periods, from 8 to 27, Luxembourg being the only exception.

Over the 2009–2016 period, the less developed Member States had the highest growth in GVA per head (0.9% a year), mainly driven by an increase in productivity (1.2% a year), with only a slight increase in the employment rate (0.1% a year) but offset by a reduction in the share of working-age population (0.4% a year). The moderately and highly developed Member States followed a similar pattern, but with lower growth in GVA per head (0.4% and 0.2% a year, respectively) and productivity (0.7% and 0.4% a year).

Between 2009 and 2016, GVA per head grew in all of the less developed Member States except Greece (where it fell by 3.2% a year) and Croatia (by 0.7% a year). Productivity growth was relatively high (between 1.4% and 2.8%) in five of the nine countries, but employment rates either fell or increased only slightly, except in Lithuania and Hungary.

Among the five moderately developed countries, GVA per head declined in Cyprus (by 1.8% a year), Portugal (by 0.2% a year) and Slovenia (by 0.3% a year) mainly due to a fall in employment rates.

Among the highly developed countries, only Italy and Finland had a decline in GVA per head (1% a

6 However, in some Member States agriculture has a social function as it absorbs labour in times of crises. Of course, this social cushioning muddles the real productivity figures of the sector.

Table 1.3 Decomposition of annual average change in GVA per head, 2001–2008 and 2009–2016

Average annual change (%)	2001-2008 GVA per head	2001-2008 Productivity	2001-2008 Employment rate	2001-2008 Share of working-age population	2009-2016 GVA per head	2009-2016 Productivity	2009-2016 Employment rate	2009-2016 Share of working-age population
EU-28	**1.7**	**1.2**	**0.6**	**0.0**	**0.3**	**0.6**	**0.2**	**-0.4**
Less Developed	**4.8**	**4.0**	**0.5**	**0.3**	**0.9**	**1.2**	**0.1**	**-0.4**
Greece	3.0	1.8	1.4	-0.2	-3.2	-1.3	-1.4	-0.4
Hungary	3.5	3.7	-0.3	0.1	1.1	-0.1	1.4	-0.3
Poland	4.1	3.1	0.5	0.5	2.9	2.8	0.7	-0.5
Croatia	4.7	2.7	1.6	0.3	-0.7	0.2	-0.9	0.0
Estonia	6.5	4.7	1.7	0.1	0.7	0.8	0.4	-0.5
Bulgaria	7.1	3.8	3.0	0.2	1.8	2.4	0.1	-0.7
Romania	7.7	8.4	-0.7	0.0	1.6	2.4	-0.5	-0.3
Latvia	8.5	5.6	2.5	0.2	1.3	2.1	-0.2	-0.6
Lithuania	8.6	7.1	1.1	0.3	2.2	1.4	1.0	-0.2
Moderately developed	**3.0**	**2.5**	**0.4**	**0.1**	**0.4**	**0.7**	**0.1**	**-0.5**
Portugal	0.8	1.1	-0.1	-0.1	-0.2	0.7	-0.6	-0.3
Cyprus	2.3	0.7	1.0	0.5	-1.8	-0.1	-1.7	-0.1
Slovenia	4.1	3.2	1.0	-0.1	-0.3	0.4	-0.3	-0.5
Czech Rep.	4.3	3.6	0.5	0.2	0.7	0.7	0.8	-0.8
Slovakia	6.3	5.0	0.8	0.5	1.7	1.4	0.6	-0.3
Highly developed	**1.3**	**0.8**	**0.6**	**-0.1**	**0.2**	**0.4**	**0.1**	**-0.3**
Italy	0.4	-0.3	1.2	-0.5	-1.0	-0.5	-0.4	-0.1
Denmark	0.8	0.3	0.7	-0.2	0.0	0.8	-0.5	-0.3
France	1.0	1.0	0.0	0.0	0.2	0.4	0.1	-0.4
Belgium	1.5	1.0	0.4	0.0	0.2	0.2	0.1	-0.2
Netherlands	1.6	1.0	0.7	-0.1	0.2	0.6	-0.1	-0.4
Spain	1.6	0.1	1.5	0.0	-0.3	1.3	-1.2	-0.4
UK	1.7	1.3	0.1	0.2	0.4	0.2	0.5	-0.4
Germany	1.7	1.3	0.6	-0.2	0.6	0.1	0.9	-0.4
Austria	1.8	1.2	0.6	0.0	-0.1	-0.2	0.3	-0.1
Malta	1.8	1.2	-0.1	0.7	2.9	0.8	2.7	-0.6
Luxembourg	1.9	-0.2	2.0	0.2	0.1	0.1	-0.2	0.2
Ireland	2.0	1.2	0.4	0.4	3.9	4.9	-0.5	-0.5
Sweden	2.1	1.8	0.0	0.3	0.8	0.8	0.5	-0.6
Finland	2.4	1.4	1.1	-0.1	-1.2	-0.5	0.0	-0.6

Green bars indicate positive changes, red bars indicate negative changes.

Source: EUROSTAT, DG REGIO calculations; for Malta, real GDP was used instead of real GVA

Regions with expanding non-tradable sectors were harder hit by the 2007–2008 crisis.

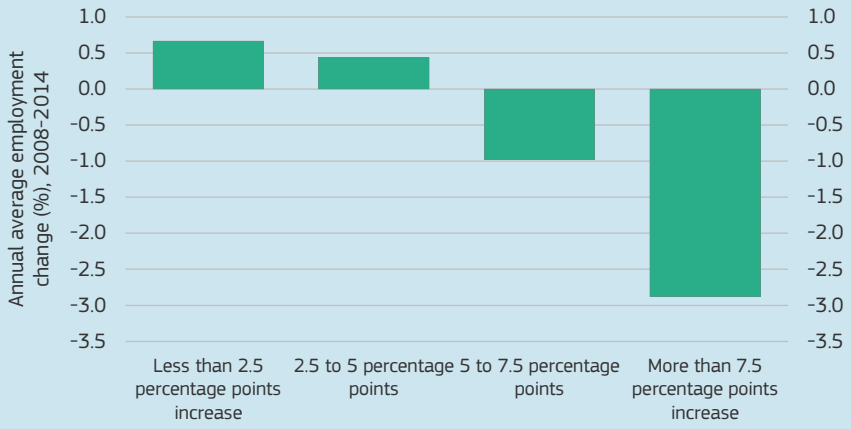
In the years following the 2007–2008 financial crisis, many regions experienced a continuous decline in employment. In the Norte region of Portugal, for example, 150 000 fewer people were employed in 2015 than in 2008 as the total number in work fell from 1.72 million to 1.57 million. Norte is not alone in this. 349 large OECD (territorial level 2, TL2) regions, 46% had lower employment in 2015 than in 2008.

A variety of factors contribute to this lack of resilience to the crisis. Recent analysis indicates that the strong presence of tradable sectors supports the catching up of regions in terms of productivity (OECD, 2016c). But such sectors are also more exposed to global developments and more vulnerable to shocks. Accordingly, there is a question over whether a strong focus on tradable sectors creates risks that could be avoided by a focus on sectors that only serve the local economy.

In practice, employment after 2008 declined by more in regions in which non-tradable sectors expanded relative to tradable ones over the years 2000–2007 than in others (Figure 1.8). This may seem surprising, but non tradable activities are not independent of global developments. Indeed, they are very much dependent on what happens to the tradable sector since much of their sales either go to this sector or are affected by its performance. For example, estimates for Sweden indicate that for each job created in manufacturing between 0.4 and 0.8 jobs are created in non-tradable services, while estimates for the United States suggest a local job multiplier of up to 1.6 (Moretti, 2010; Moretti and Thulin, 2013). Moreover, whereas non-tradable sectors have to rely on local demand to pick up after a recession, tradable sectors have the possibility of developing new markets where demand is expanding.

(This box is based on a contribution from OECD.)

Figure 1.8 Annual average employment growth in 2008-14 and the change in the share of total employment in non-tradable sectors 2000-2007 in 19 OECD countries



Data for 203 territorial level 2 (TL2) regions in 19 OECD countries: Austria, Australia, Belgium, Bulgaria, Czech Republic, Denmark, Finland, Greece, Ireland, Italy, the Netherlands, Portugal, Romania, Slovenia, Slovak Republic, Spain, Sweden, the UK and the US.
Source: OECD (2016c) and OECD Regional Statistics Database.

Table 1.4 Changes in GDP per head, productivity and employment per head by metropolitan region, 2001–2008, and 2009–2014

	2001-2008			2009-2014		
Average annual change (%)	GDP per head	Productivity	Employment per head	GDP per head	Productivity	Employment per head
EU-15						
Capital metropolitan regions	1.5	1.1	0.4	-0.1	0.5	-0.7
Other metropolitan regions	1.2	0.7	0.5	-0.3	0.2	-0.6
Non-metropolitan regions	1.2	0.7	0.5	-0.5	0.2	-0.6
Total	**1.3**	**0.8**	**0.5**	**-0.3**	**0.3**	**-0.6**
EU-13						
Capital metropolitan regions	5.6	3.3	2.3	0.2	0.6	-0.5
Other metropolitan regions	4.7	4.1	0.6	1.9	2.2	-0.3
Non-metropolitan regions	4.8	4.5	0.2	1.1	1.7	-0.6
Total	**5.1**	**4.3**	**0.8**	**1.1**	**1.6**	**-0.5**
EU-28						
Capital metropolitan regions	2.0	1.1	0.9	-0.1	0.6	-0.6
Other metropolitan regions	1.5	0.9	0.6	-0.2	0.4	-0.5
Non-metropolitan regions	1.7	1.3	0.4	-0.2	0.4	-0.6
Total	**1.7**	**1.1**	**0.6**	**-0.1**	**0.5**	**-0.6**

Green bars indicate positive changes, red bars indicate negative changes.
Source: EUROSTAT, DG REGIO calculations

year) between 2009 and 2016. Both experienced a reduction in productivity and the employment rate fell as well in Italy.

3.2 Capital metropolitan regions more prone to boom and bust than other regions

In 2014, metropolitan (metro) regions accounted for 58% of population in the EU, 61% of employment and 67% of GDP.

Accordingly, they are major centres of employment and business activity with higher productivity than elsewhere.

In both the EU-15 and EU-13, real GDP per head in metro regions grew faster than in other regions in the pre-crisis years between 2001 and 2008 (Table 1.4). Growth rates in capital city regions were especially high, mainly fuelled by higher productivity growth in the EU-15 and higher employment growth in the EU-13.

The crisis had a different effect on the metro regions in the EU-15 than on those in the EU-13. In the EU-15, GDP per head in the capital metro regions declined at the same rate as in other regions between 2009 and 2014. In the EU-13, it was rather stable in the capital metro regions, whereas it grew in the other regions, mainly fuelled by increases in productivity. In both the EU-13 and EU-15, there was a reduction in employment in all types of regions.

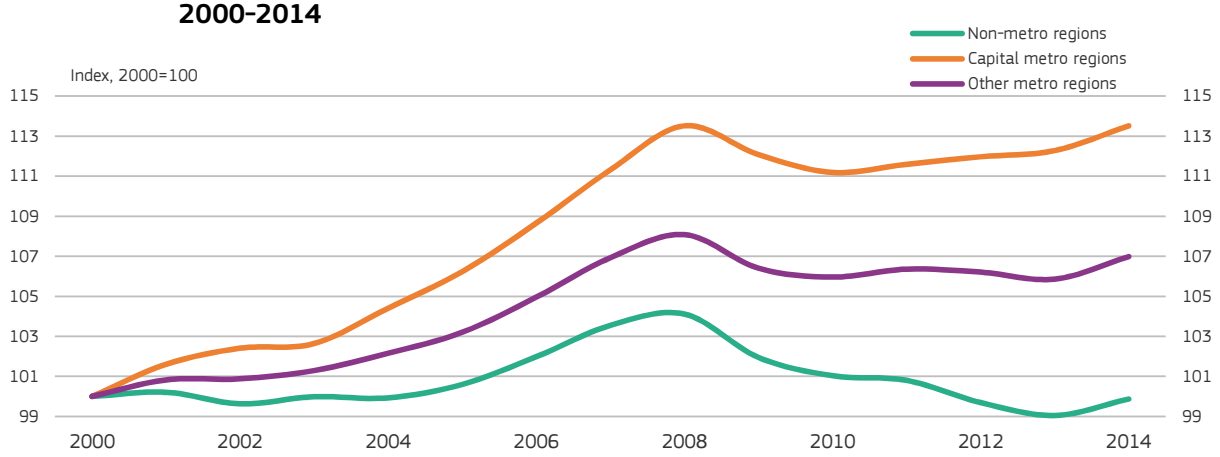
Metro regions

Metro regions are NUTS 3 regions, or groupings of NUTS 3 regions, representing all functional urban areas of more than 250 000 inhabitants. The typology distinguishes three types of metro regions: capital city regions; second-tier metro regions and smaller metro regions.

The capital city region includes the national capital. Second-tier metro regions are the group of largest cities in the country excluding the capital. As it is not possible to use a fixed population threshold to distinguish these regions from smaller metro ones (i.e. the remaining metro regions), a natural break is used instead.

For more details:
http://ec.europa.eu/eurostat/statistics-explained/index.php/Territorial_typologies_for_European_cities_and_metropolitan_regions

Figure 1.9 Evolution of total employment (number employed) in metro regions, 2000-2014



Source: Lavalle et al. (2017)

In the EU-13, growth of GDP per head in non-capital metro regions over the period 2009–2014 was, on average, twice the EU-13 average as a result of high productivity growth while employment remained unchanged. Whether this launches a period of higher growth outside the capital regions, so a narrowing of the gap in GDP per head with the latter, remains to be seen.

Employment in both metro and non-metro regions generally increased between 2000 and 2008, though at a faster rate in capital city regions than others and by more in other metro regions than non-metro ones (Figure 1.9). In the next two years, it declined markedly in all regions, but it then began to recover in the capital city regions, continuing to grow up to 2014 when the number employed was much the same as before the crisis. In the other metro regions, recovery was more hesitant and by 2014, employment was still below the level in 2008. In the non-metro regions, employment continued to decline up to 2013 and began to increase only in 2014.

3.3 GDP growth in rural and intermediate regions proved to be more resilient during the crisis years

Between 2001 and 2008, real GDP per head in rural regions in the EU-28 grew by 1.9% a year, slightly higher than in other types of region (Table 1.5). At the same time, productivity grew faster, while employment relative to population rose more slowly.

In the EU-15, GDP per head grew in all types of region, fuelled in equal parts by increases in productivity and the employment rate, though in rural regions more by productivity.

In the EU-13, in the years before the crisis, economic growth was mainly driven by increases in productivity, especially in rural regions, where increases were accompanied by a decline in employment. The two may be linked, insofar as higher productivity growth was due to catching up in the use of technology and more efficient methods of working, including in agriculture, which in turn led to a reduction in employment.

The crisis had a different effect on rural regions than others, since construction and industry were most affected and these are less present in rural areas. Accordingly, the reduction in GDP per head between 2009 and 2014 was less pronounced in rural regions than in urban ones, particularly in the EU-15. In the EU-13, GDP per head grew over this period in all types of region and at much the same rate, but in all cases by much less than before the crisis.

Table 1.5 Real GDP per head, productivity and employment per head growth by urban-rural typology, 2001–2008, and 2009–2014

	2001-2008			2009-2014					
Average annual change (%)	GDP per head	Productivity	Employment per head	GDP per head	Productivity	Employment per head	GDP per head (PPS) index EU-28 = 100			GDP per head (PPS) index EU-15/13 = 100		
EU-15							**2000**	**2008**	**2014**	**2000**	**2008**	**2014**
Urban	1.4	0.8	0.5	-0.3	0.4	-0.7	132	125	122	113	113	112
Intermediate	1.2	0.7	0.5	-0.4	0.2	-0.6	106	100	98	91	90	90
Rural	1.2	0.9	0.4	-0.1	0.3	-0.4	93	88	88	80	79	81
Total	**1.3**	**0.8**	**0.5**	**-0.3**	**0.3**	**-0.6**	**117**	**111**	**109**	**100**	**100**	**100**
EU-13												
Urban	5.7	3.8	1.9	1.1	1.1	-0.1	73	102	113	164	171	170
Intermediate	4.8	3.8	0.9	1.1	1.8	-0.7	41	53	59	92	89	88
Rural	4.8	5.0	-0.2	1.0	1.6	-0.6	33	43	48	73	72	71
Total	**5.1**	**4.3**	**0.8**	**1.1**	**1.6**	**-0.5**	**45**	**60**	**67**	**100**	**100**	**100**
EU-28												
Urban	1.6	0.9	0.7	-0.2	0.4	-0.6	125	123	121			
Intermediate	1.7	1.1	0.6	-0.2	0.5	-0.6	88	88	88			
Rural	1.9	1.7	0.2	0.1	0.6	-0.5	69	71	73			
Total	**1.7**	**1.1**	**0.6**	**-0.1**	**0.4**	**-0.6**	**100**	**100**	**100**			

Green bars indicate positive changes, red bars indicate negative changes.

Source: EUROSTAT, DG REGIO calculations

Degree of urbanisation and urban-rural typology

Since the 5th Cohesion Report, the European Commission has developed two typologies of local areas which are linked to two typologies of regions.

The new measure of the degree of urbanisation is linked to the division of regions into predominantly urban, intermediate and predominantly rural. 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 population 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 unit level 2) as follows:

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

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

- predominantly urban:, less than 20% of the population living in rural grid cells;
- intermediate: between 20% and 50% of the population living in rural grid cells;
- predominantly rural: at least 50% of the population living in rural grid cells.

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

For more details:
http://ec.europa.eu/eurostat/statistics-explained/index.php/Urban-rural_typology

Employment declined in all types of region, but more in urban and intermediate ones in the EU-15 and in urban and rural ones in the EU-13.

Productivity continued to grow in both the EU-15 and EU-13 and, as in the pre-crisis period, by more in the latter than the former, though the difference in rates was much smaller.

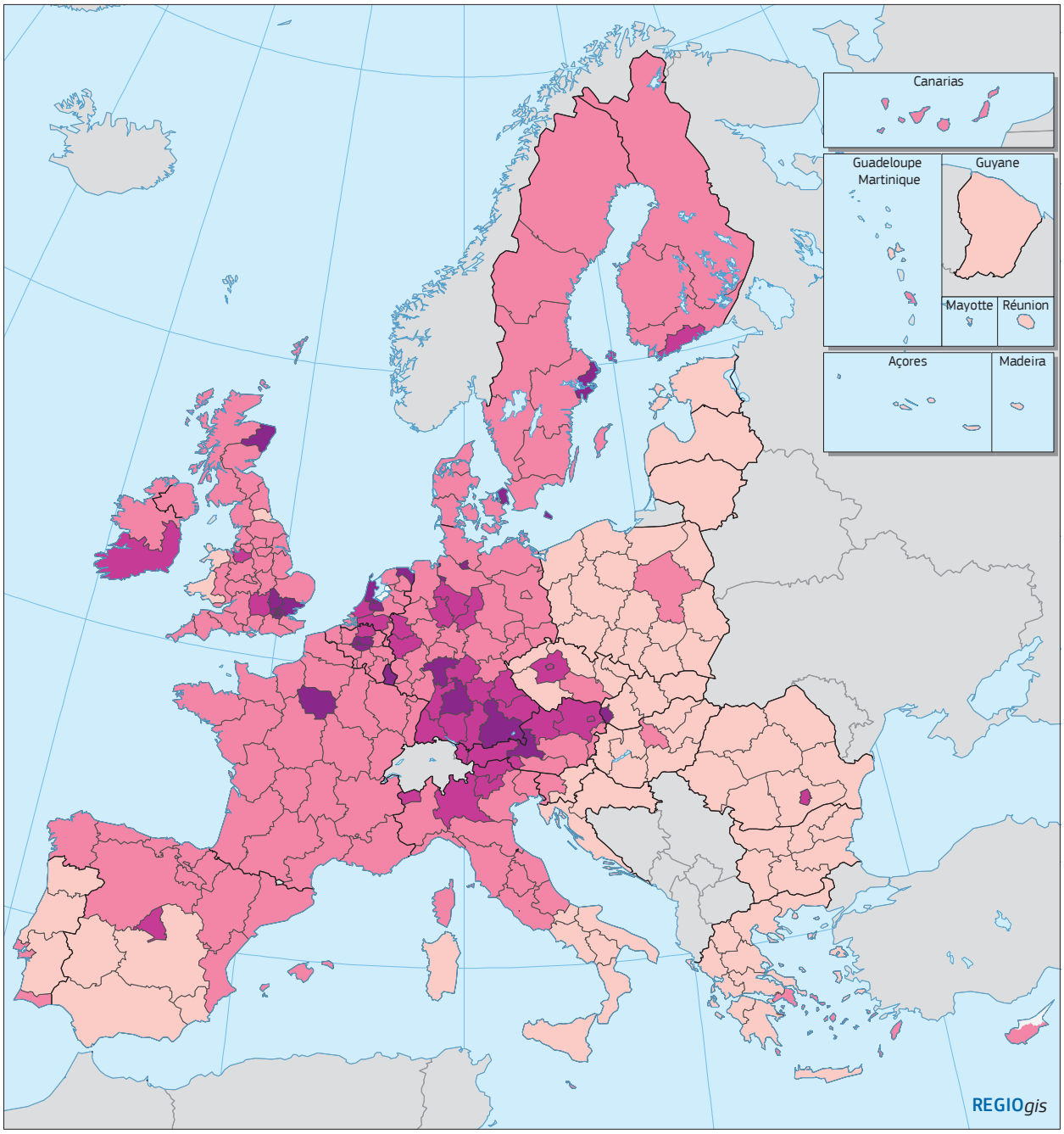
In 2014, GDP per head in rural regions in the EU-15 was, on average, some 72% less than in urban ones, while in the EU-13, the difference was much wider, the level in urban regions being only 42% of that in rural ones.

4. The economic development clubs of European regions and the middle-income trap[7]

Economy-wide forces together with differences in the characteristics of economies mean that it is possible to divide countries, regions and cities by their level of economic development. They can be said to belong to different 'development clubs', each of them characterised not only by different income levels but also by different structural features, such as the education level of the population, infrastructure endowment, innovation capacity and institutional quality.

Clubs differ systematically across these dimensions and for each club there are specific needs and challenges related to its starting point. Grouping

7 Simona Iammarino, Andrés Rodríguez-Pose and Michael Storper contributed substantially to the content of this section.



Map 1.6 The Economic Development Clubs of European Regions

Low
Medium
High
Very high
no data

Low = GDP per head (PPS) below 75% of EU average in 2013
Medium = GDP per head (PPS) between 75% and 120% of EU average in 2013
High = GDP per head (PPS) between 120% and 150% of EU average in 2013
Very high = GDP per head (PPS) above 150% of EU average in 2013
Source: DG REGIO

0 500 km

© EuroGeographics Association for the administrative boundaries

Income clubs of EU regions

1. Very high income group: those with GDP per head in PPS of 150% or more of the EU average in 2013.
2. High income group; those with GDP per head of 120–149% of the EU average.
3. Medium income group; those with GDP per head of 75–120% of the EU average.
4. Low income group, those with GDP per head of below 75% of the EU average.

EU regions into income clubs is a way of generating insights into economic development and provides a distinctive perspective on regional policy. It brings out the uneven path of regional development that occurs and helps to identify means of overcoming the barriers to development in lagging regions. For this purposes, EU NUTS 2 regions can be divided into four groups according to their GDP per head in 2013 (see box below).

Most of the very high and high income regions are located in a band from London through the Benelux and Germany down to northern Italy, with a few capital city regions outside this area (Map 1.6). There are two other broad areas, a large middle income part in the west of the EU and a low income part in the south and the east.

The very high income club is dominated by a few very large urbanised or capital city regions, and by a number of smaller but highly urbanised interconnected ones (e.g. Rhine-Ruhr in Germany or Randstad in the Netherlands), specialised in the production of high-quality goods and services.

The high income regions share many characteristics with the very high income ones but tend to be less city-centred. The medium income club is vast and consists mainly of regions in the north-west of Europe outside the very high and high income clubs. The low income club is concentrated in the east and south of the EU.

Total population change varies with the club gradient, with people moving to higher income regions and away from low income ones. Many high income regions experienced high rates of population increase over the period 2001–2015, except for those in Germany (Table 1.6). In many low income regions in the east and south of the EU as well as in declining industrial parts of north eastern France and northern England, population declined. While some low income regions experienced population growth over the period, these tend to be those with extensive amenities and a low cost of living.

Examining the labour market in the different clubs provides further insights. Employment declined between 2001 and 2014 while it increased in the other regions, especially in the very high income ones (Table 1.6). The share of employment in industry (excluding construction) is largest in low income regions. In all clubs, however, employment in industry declined over the period, the more so in

Table 1.6 European regions, by income club: some stylised facts

Income club	Growth of GDP per head, average annual rate (2001–2015) %	Population change (2001–2015) %	Employment average annual change (2001–2014) %	Employment in Industry (2014) %	Employment average annual change in Industry (2001–2014) %	Unemployment rate, (2016) %	Patent applications per million inhabitants (average 2010–2011)
Very high	1.4	10.7	0.8	12.3	-1.2	5.8	254
High	0.9	7.3	0.5	16.9	-0.8	5.9	232
Medium	1.0	6.2	0.3	14.4	-1.5	8.4	103
Low	1.7	-2.0	-0.6	20.3	-1.0	11.6	8
EU-28	**1.3**	**4.4**	**0.1**	**16.1**	**-1.2**	**8.5**	**113**

Source: EUROSTAT, Cambridge Econometrics, DG REGIO calculations based on the latest available data.

the middle income ones. Low income regions have the highest unemployment.

Patenting activity, which is an indicator of innovation, is highly concentrated in very high and high income regions.

Very high and low income regions experienced the highest growth in GDP per head over the years 2001–2015. In the former, this is mainly due to their level of competitiveness and specialisation in the production of high-quality goods and services, while low income regions are catching up, taking advantage of their ability to mobilise low-cost capital and labour to capture activities for which this gives them a competitive edge. Middle-income regions had the lowest growth and face a particular challenge — the so-called 'middle-income trap' — because they are neither very low-cost nor are they particularly innovative or productive. Their manufacturing sector tends to be smaller and weaker than in regions with either a higher GDP per head or lower one (Figure 1.10) and their costs are too high to compete with the former, their innovation systems not strong enough to compete with the latter.

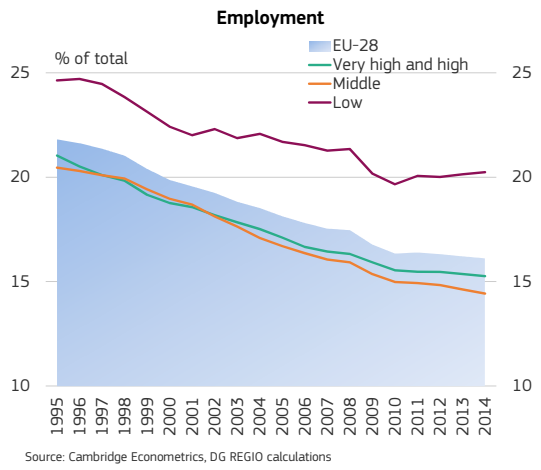
The main challenges for regions in each club can be summarised as follows:

1. Very high income club: many of these regions are attracting population, though some of them have high unemployment rates and have underperformed since the beginning of the economic crisis (Dijkstra et al., 2015). The main need is to keep pace with global competitors. They need to maintain their specialisation in high-wage activities and their comparative advantage by continuing to push the boundaries of innovation and technology.

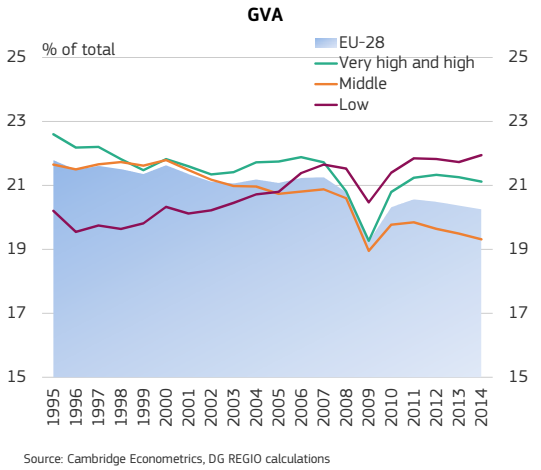
2. High income club: regions in this group share many characteristics with the very-high income ones. Their employment rates are high and the challenge is to remain innovative, but they are more vulnerable to competition from the lower income regions. They are particularly vulnerable to standardisation of what they produce, which can allow firms to move to regions with lower costs and less skilled labour. Their challenge is to innovate in their areas of specialisation and to expand into high value-added activities related to this.

3. Medium income club: this is a large group consisting of two sub-groups, each with specific challenges. One consists of regions that have lost manufacturing jobs and in which the education level of the work force is below that in higher income regions. In general, they are fragile economically because of this. The other consists of regions experiencing population growth, but mainly of older people who move there because of the

Figure 1.10 Employment and GVA shares in industry (excluding construction), by regional income club, 1995–2014



Source: Cambridge Econometrics, DG REGIO calculations



Source: Cambridge Econometrics, DG REGIO calculations

local amenities and low cost of living. Such inward movement mainly stimulates employment in non-tradeable local services, which gives rise to limited skill development, innovation capacity and export capability. Regions, in both sub-groups, risk falling into a 'middle-income trap'. As productivity and wages rise, they become less attractive for labour-intensive, low-skilled activities. Moving up the value chain requires higher investment per worker than in earlier stages of development, because of the need for a better educated labour force and new business models. To become attractive for higher value-added activities, regions have to improve the quality of their institutions and business ecosystem, become more innovative and improve the skill sets of their labour forces through better education and training.

4. Low income club: these regions suffer from having low levels of technology and business organisation and a work force with limited skills, but they have the advantage of offering low cost land and labour. They tend to lose talented people and well-educated young people to higher-income regions, while at the same time being unable to attract firms and talent from outside, so encouraging an outward movement of population.

5. Competitiveness of EU regions

5.1 Firms in EU capital metro regions tend to be larger and to grow at a faster pace

In the 2014–2020 period, Cohesion Policy is focused heavily on supporting smart growth with particular emphasis on innovation and high growth firms and with programmes aimed at increasing the innovative capacity of SMEs. In previous periods too, a substantial share of Cohesion Policy funding was devoted to improving the business environment and supporting entrepreneurship. In the 2007–2013 programming period, for example, some €47.5 billion, 24% of the total ERDF, was allocated to support of SMEs[8].

Business demography Statistics

Business demography indicators at regional level are useful to show where firms are located in the EU and their dynamics, in terms of births, deaths and growth. In this section, a set of such indicators are examined: firm density (expressed as the number of firms relative to population), employees per firm, birth rates (firms created in a region relative to total population), death rates (firms going out of business relative to total population), and the proportion of high growth firms.

The source of data is the Employer Business Demography Statistics (for firms with at least one employee) for 2014 (or the closest year available with non-provisional data) for the total business economy of NACE Rev.2, except insurance activities of holding companies (sector K642).

For more details see: http://ec.europa.eu/eurostat/statistics-explained/index.php/Structural_business_statistics_at_regional_level

In 2014, the largest number of firms with at least one employee[9] relative to population was in capital metro regions in most countries (the exceptions are France, Italy, Austria, and Spain — Figure 1.11). There are, however, large variations across regions in the same Member State, particularly in Romania, Slovakia and Hungary. Firms, especially large firms, may locate in more urbanised areas to benefit from agglomeration economies, the three main sources of these being matching, sharing and learning (Puga, 2010). Cities, therefore, tend to have larger labour markets allowing a better matching between labour demand and supply, a better sharing of inputs, such as infrastructure, in the production process and more people working and living in close proximity, enabling them to learn more easily from each other.

8 European Commission (2016j).

9 The terminology employer firms will be used throughout the chapter to indicate firms employing at least one employee.

Figure 1.11 Firm density by metro region, 2014

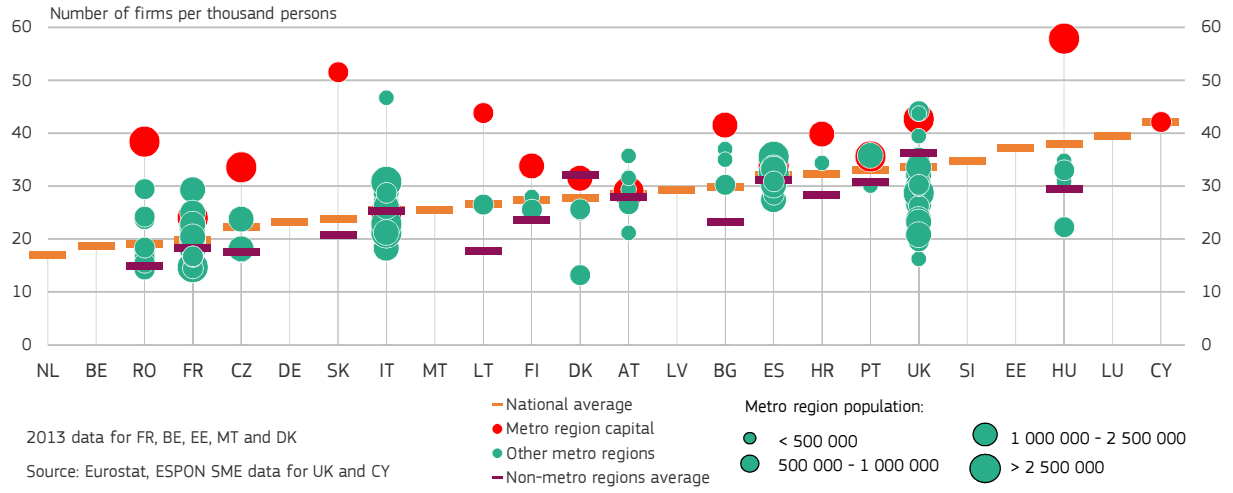
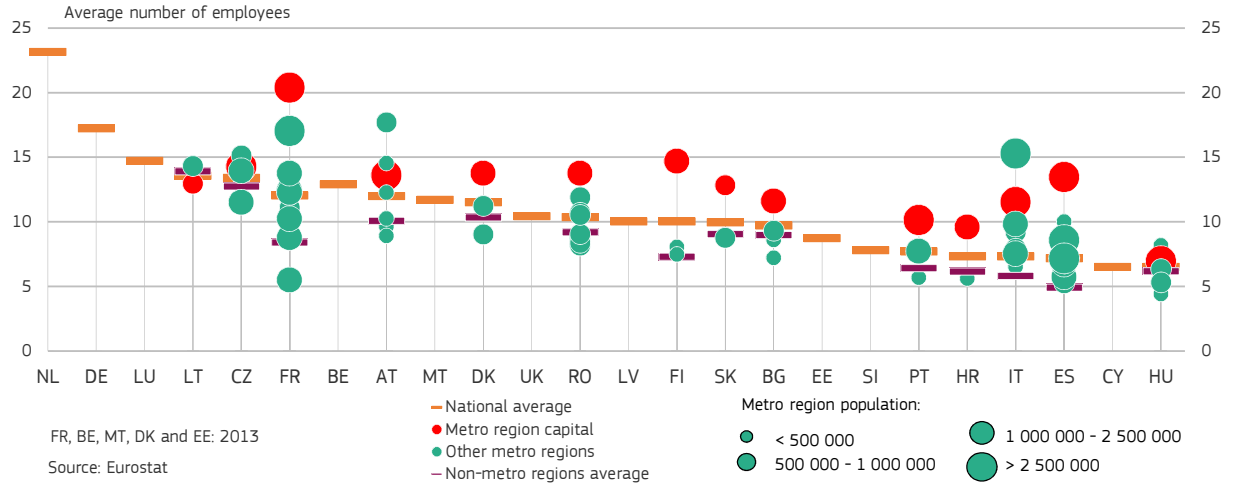


Figure 1.12 Employees per firm by metro region, 2014



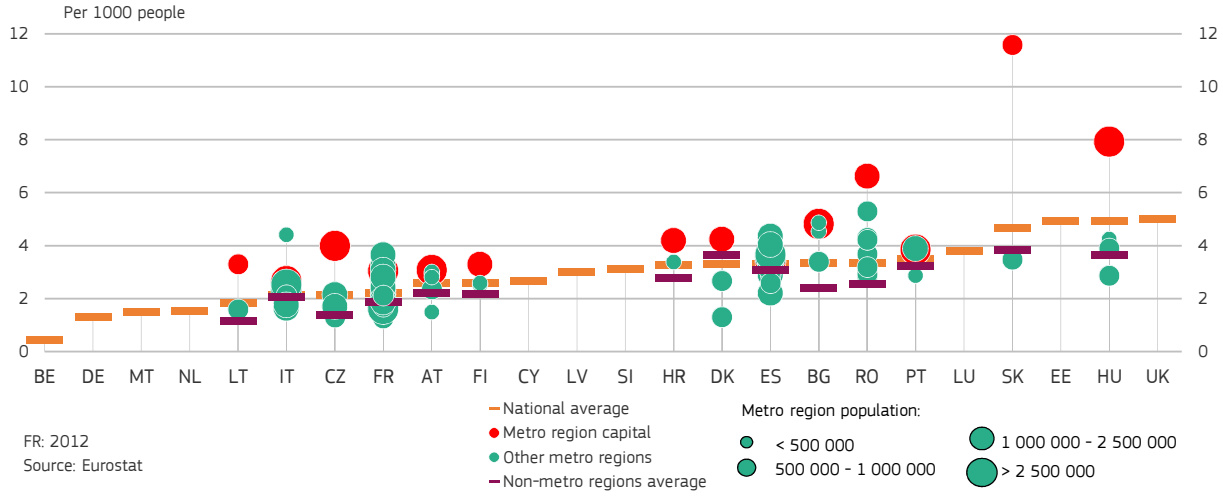
At the same time, firms operating in urban areas face more competition, since larger markets attract more firms. This tends to result in less competitive firms being forced out of business (Melitz and Ottaviano, 2008; Combes et al., 2012). The data, indeed, show that firms in metro regions, particularly in capital city ones, are on average, larger in terms of employment than those in non-metro regions, apart from in Latvia and Hungary (Figure 1.12)[10].

10 Some care is needed in interpreting this result. Some large enterprises may be composed of multiple local units which may be located in different regions, but with their employment registered in the head office, often located in the capital of a country. This may inflate the number of employees that are counted as working in the capital city.

The birth of enterprises is one of the main drivers of job creation and economic development. Young enterprises are often innovative and tend to increase the competitiveness of a region both directly and indirectly by pushing competitors to become more efficient.

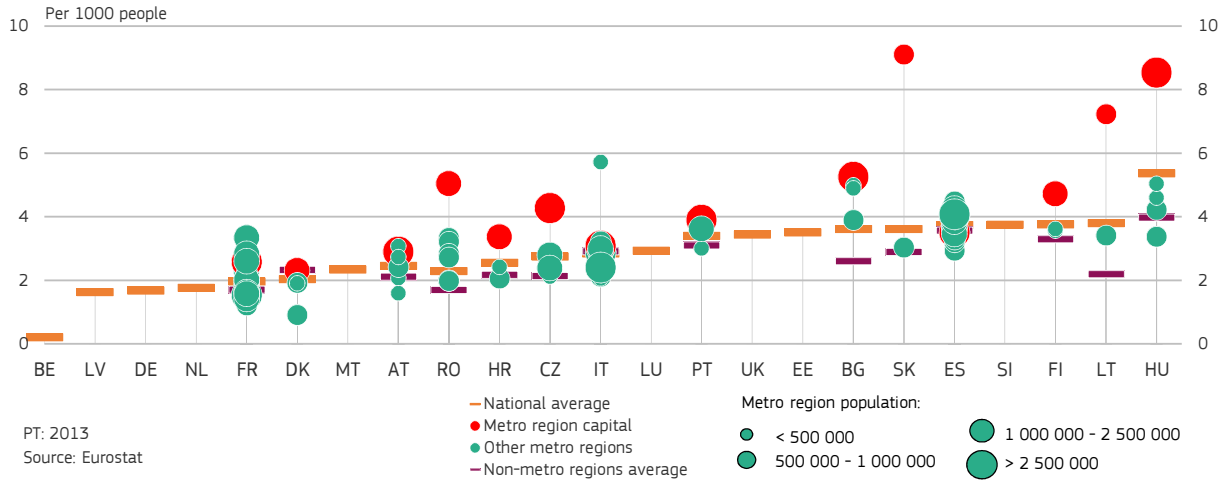
In 2013, (the latest year for which data are available) newly-created enterprises were more numerous in capital metro regions, both in more developed and less developed Member States, except in Spain and Italy, the highest birth rates being in Bratislava and Budapest (Figure 1.13).

Figure 1.13 Enterprise birth rate by metro region, 2013



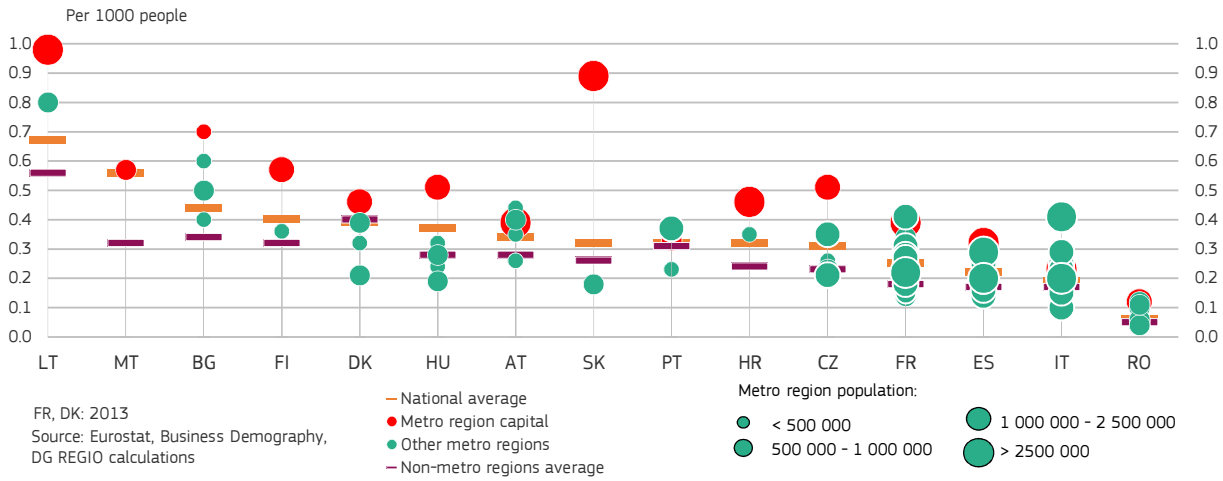
FR: 2012
Source: Eurostat

Figure 1.14 Death rate of enterprises by metro region, 2012



PT: 2013
Source: Eurostat

Figure 1.15 Number of high growth firms by metro region, 2014



FR, DK: 2013
Source: Eurostat, Business Demography, DG REGIO calculations

Entrepreneurship is crucial for regional development, but start-ups and 'scale-ups' face particular financing constraints

Start-ups and 'scale-ups' (firms expanding) need capital. However, EU start-ups have more difficulty in obtaining venture capital than their US counterparts. EU scale-ups have even more difficulty to grow and remain independent than US firms. An additional problem is that venture capital is usually concentrated in few places (and often in the capital city), though there are exceptions, such as the UK where it is more widely available, partly due to the support from regional development funds.

To boost investment opportunities from venture capital and make funding more accessible to small and innovative enterprises, the Commission launched a pan-European Venture Capital Fund-of-Funds under the Start-Up and Scale-Up Initiative (COM(2016)733). This complements other financial instruments under the EU programme for the Competitiveness of Enterprises and SMEs (COSME) and Horizon 2020's InnovFin, to facilitate the access of SMEs to guarantees, loans and equity capital through local financial institutions in the Member States.

To help start-ups and scale-ups, and building on the Single Digital Gateway and existing national and European contact points, the Enterprise Europe Network will make available 'Scale-up Advisors' in all regions to provide advice on relevant national and European regulations, funding and partnering opportunities and how to participate in cross-border public procurement.

High birth rates often go together with high death rates (Figure 1.14), as in Bratislava and Budapest. However, some regions have high rates of start-up but low death rates, as in Copenhagen, hinting at local features which nurture the birth of new enterprises while also keeping them profitable.

High growth enterprises (those growing by 10% a year or more)[11] play an important role in the economic growth of cities and regions through their contribution to productivity and innovation (Acs et al., 2008).

In 2014, high growth firms were found mainly in metro regions, except in Portugal and Italy, though there were marked variations in their incidence within countries (Figure 1.15). In a number of Member States — Slovakia, Hungary and the Czech Republic in particular — the large variation between regions is due mainly to the large number of high-growth firms operating in the capital metro region[12].

5.2 Innovation remains spatially concentrated

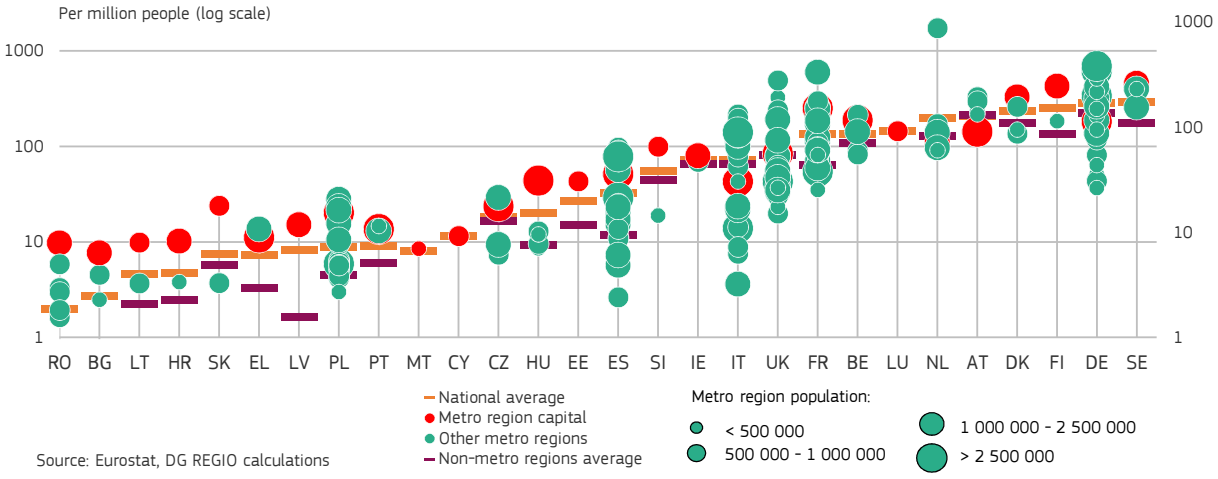
As widely documented in the economic literature, research and innovation play a crucial role in determining the economic performance of countries and regions. Innovation, understood in the broad sense to include product, process, market and organisational innovation, is identified as one of the major engines of economic growth, employment and environmental 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 to maintaining the competitiveness of firms. This is particularly true for firms in the EU which have increasingly to compete with firms located in emerging economies in less developed parts of

11 High growth enterprises are those in which employment increased by 10% a year or more over a three-year period and which had at least 10 employees at the beginning of the period.

12 As indicated above, perhaps at least partly because of employment in local units being registered in the head office.

Figure 1.16 Patents by metro region, 2009-2011



Source: Eurostat, DG REGIO calculations

the world. The latter are not only catching up fast in terms of technology but they also still benefit from cheaper labour due in part to lower labour standards, a lack of social protection for workers and lower income expectations, though low labour costs tend to be offset by lower productivity. From this perspective, innovation, including the capacity to assimilate innovation produced elsewhere, is an important condition for maintaining the specific features of the European social model. In addition, contrary to growth from restructuring, growth from innovation is in principle without bounds, which is why it is central to sustaining growth over the long term.

Measuring innovation is difficult, the number of patent applications being one of the few indicators available and the one most commonly used. Although it is imperfect because it covers only innovations which are patentable[13] and, in the case of the EU, only those registered at the European Patent Office, there is a lack of alternatives. Over the two years 2010 and 2011 (the last data available), an average of some 113 patent applications per million people was made to the European Patent Office (Map 1.7). While there are large variations in applications across regions, there is a clear spatial pattern, with those with most applications — i.e. the most innovative — being located mostly in the Netherlands, Germany, Austria, Denmark and Sweden. At the NUTS 3 level, Eindhoven, in the Netherlands, had the highest number of applications (1 731 per million inhabitants in the period), followed by Heidenheim in Germany (1 049) and Rheintal-Bodenseegebiet in Austria (832).

Metropolitan areas tend to offer an environment which is particularly conducive to the introduction of new ideas, products and processes. A vast body of literature explains why urban areas are likely to be more innovative than others, such as the presence of a creative and skilled work force, specialised clusters of economic activity, universities and research institutes[14].

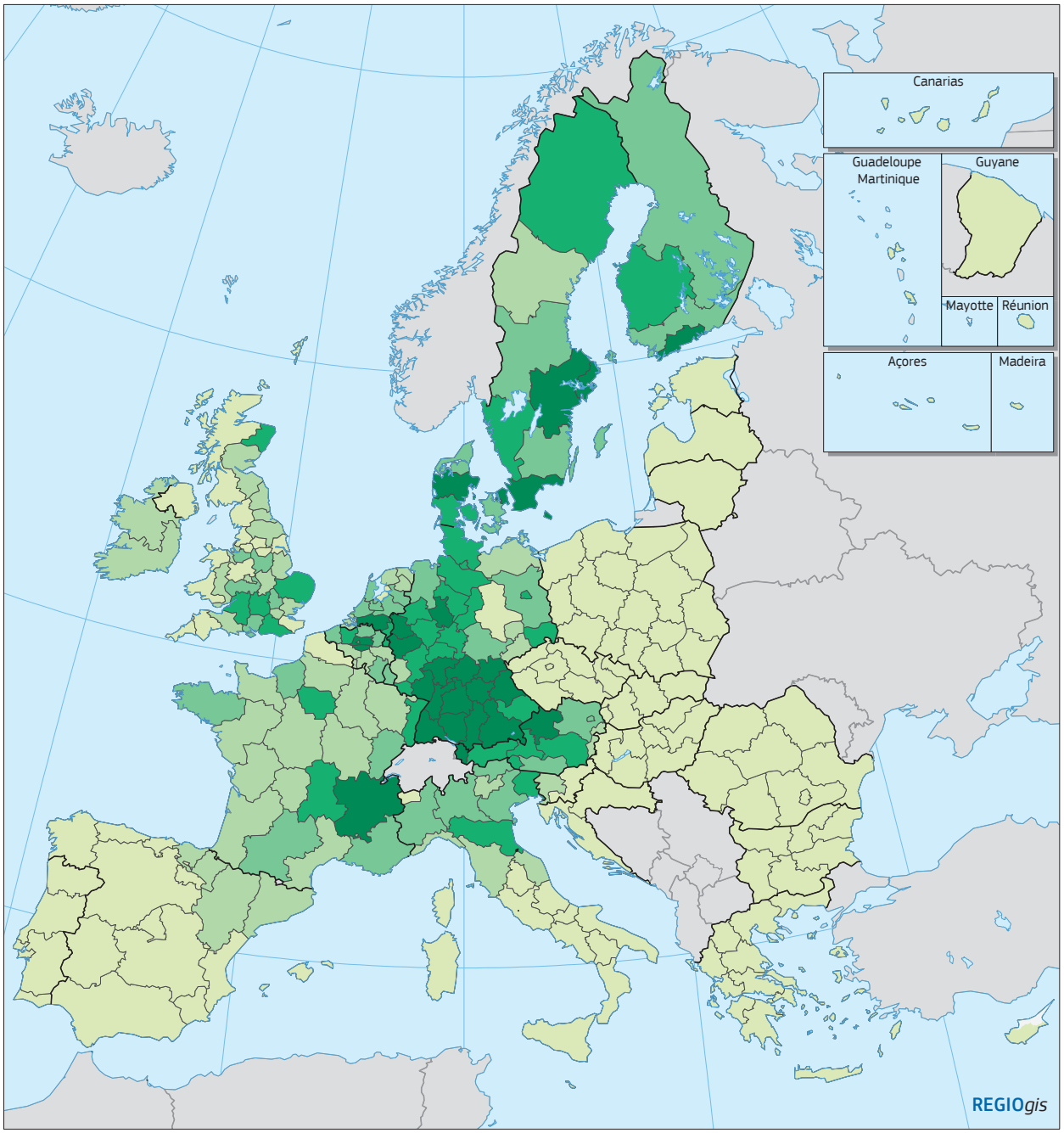
There are not only clear-cut differences in patenting activity between metro regions (around 140 applications per million inhabitants) and non-metro regions (around 86 per million) (Figure 1.16), but there is less variation between them (as measured by the coefficient of variation), suggesting that they generally offer a more favourable environment[15].

One of the main indicators for assessing the capacity to innovate is the level of expenditure on

13 Accordingly, they relate mainly to technological innovations in the manufacturing sector and do not a capture innovation in services, which are often intangible. The measure is therefore liable to be biased (Morrar, 2014).

14 European Commission and UN-HABITAT (2016).

15 The coefficient of variation calculated on the average number of patent applications in 2010 and 2011 in metro regions is 1.1, as against 1.4 for non-metro regions.



Map 1.7 Patent applications to the European Patent Office (EPO), average 2010–2011

Applications per million inhabitants

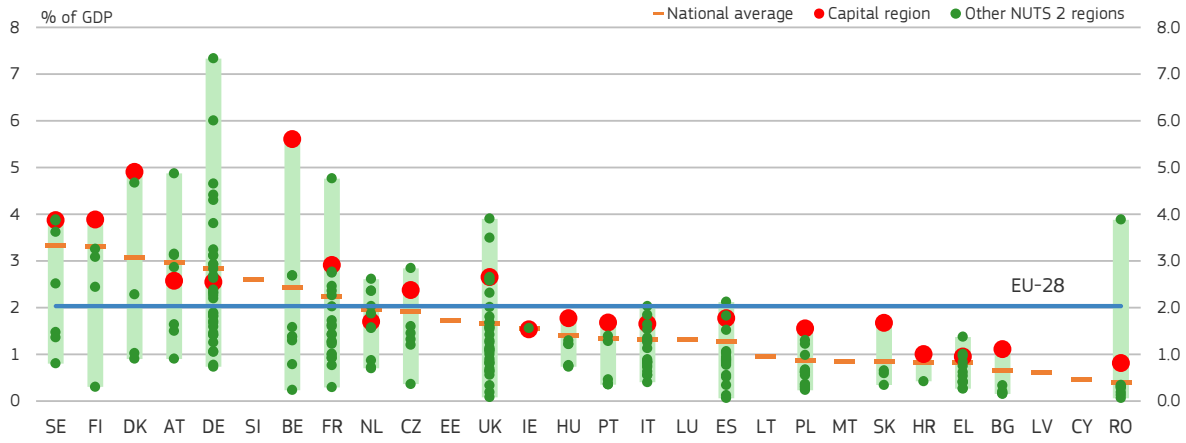
- < 50
- 50 – 100
- 100 – 150
- 150 – 250
- > 250
- no data

EU-28 = 113
Source: Eurostat, DG REGIO

0 500 km

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Figure 1.17 Total expenditure on R&D, 2014



Source: Eurostat, DG REGIO calculations

Table 1.7 Total R&D expenditure and the distance to the EU2020 target, EU-28 regions, 2014

	More developed	Transition	Less developed	EU-28
R&D as % of GDP, 2014*	2.3	1.3	0.9	2
Distance to EU target (% point difference)	0.7	1.7	2.1	1
% of regions** that have reached the EU target	19	2	0	11

Source: Eurostat, DG REGIO calculations
* BE, DE, EL, FR, AT, FI, SE: 2013
** includes only regions for which data are available

R&D which tends to be essential for technical progress to take place[16].

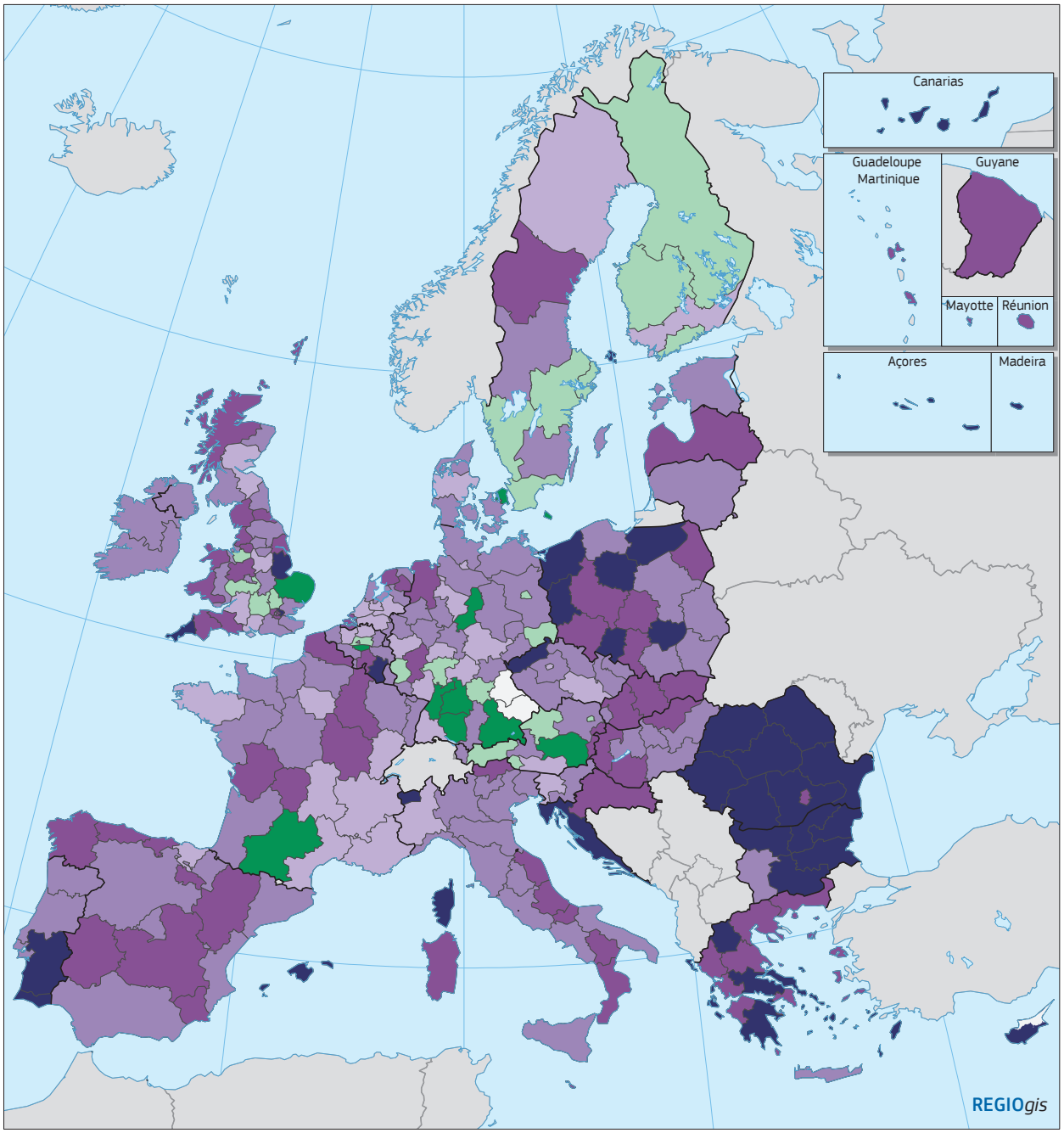
Expenditure on R&D in the EU-28 amounted to around 2% of GDP in 2014 (the latest data available) and increased only marginally over the previous two decades (1.8% of GDP in 1995), not by nearly enough to close the gap with other highly developed economies, especially Japan (where expenditure in 2014 amounted to 3.5% of GDP) or the US (where it stood at 2.7% of GDP in 2013).

Regions in the EU-15 have on average slightly higher expenditure on R&D (2.1% of GDP in 2014) than those in the EU-13 (1.8% of GDP). There are, however, wide variations across NUTS 2 regions, from over 6% of GDP in Brabant Wallon in Belgium and Braunschweig and Stuttgart in Germany to only 0.1% of GDP in Centru in Romania and Severen Tsentralen in Bulgaria (Map 1.8 and Figure 1.17).

Expenditure on R&D in 2014 exceeded the Europe 2020 target of 3% in only 30 regions, all of them in the EU-15 (Table 1.7). In the more developed regions, it was less than 1 percentage point below the target on average — which is still a significant amount given the generally slow rate of increase over recent years — while in less developed regions, it was slightly over 2 percentage points below.

In general, therefore, regions with the highest expenditure on R&D are the most highly developed ones, and in most cases those where the capital is located (Germany, France, and the UK are exceptions). Of the 20 regions with the highest expenditure, 19 regions have a GDP per head above 100% of the EU average and regions with low levels of expenditure tend to be either in southern, central and eastern Member States or are the low GDP per head ones in western Member States.

16 It should be noted, however, that R&D expenditure is likely to underestimate innovation activities, particularly in sectors outside manufacturing where non-technological innovation is frequent.



Map 1.8 Total expenditure on R&D, 2014

% of regional GDP

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

EU-28 = 2.04
BE, DE, EL, FR, AT, SE = 2013
The Europe 2020 R&D target is 3%.
Source: Eurostat

0 500 km

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Regional Innovation Scoreboard (RIS) methodology

The 2017 edition of the Regional Innovation Scoreboard (RIS) classifies regions into four innovation performance groups: Innovation Leaders (53 regions), Strong Innovators (60 regions), Moderate Innovators (85 regions), and Modest Innovators (22 regions).

The RIS for 2017 is based on data for 18 of the 27 indicators used in the European Innovation Scoreboard for the same year. In the same way as the latter, the indicators for RIS 2017 have been refined and expanded as new regional data have become available. In addition, whereas previous RIS reports only divided regions into groups, the 2017 report ranks them individually.

For more details, see: http://ec.europa.eu/growth/industry/innovation/facts-Figures/regional_en

A 2017 European Commission report highlights the key role innovation plays in the development of regions, and not only the high tech ones[17]. The Regional Innovation Scoreboard (RIS), an extension of the European Innovation Scoreboard, assesses the performance of regions in this respect on the basis of a limited number of indicators. For 2017, it covers 220 regions across 22 EU Member States and Norway, while Cyprus, Estonia, Latvia, Lithuania, Luxembourg, and Malta are covered at country level.

The most innovative region in the EU by this measure is Stockholm, followed by Hovedstaden in Denmark and South East England (Map 1.9).

Despite regional variations within countries, the ranking of regions largely matches that of countries. Most of the regional Innovation Leaders are in countries also identified as Innovation Leaders and almost all of the regional Moderate and Modest Innovators are located in countries categorised in the same way. However, regional 'pockets of excellence' are evident in some Moderate Innovator countries (such as, Praha in the Czech Republic, Bratislavsky kraj in Slovakia, and Pais Vasco in Spain), while some regions in strong innovation countries lag behind.

The assessment of regions in terms of innovation has changed over time. Between 2011 and 2017, 128 regions (60% of the total) improved their performance, while for 88, performance worsened. Although 75% of Innovation Leaders improved their performance, only 30% of Modest Innovators did so, implying a widening gap between them.

Performance declined in particular in more peripheral regions, in all regions in Romania and for more than half of those in Denmark, Finland, Germany, the Czech Republic, Hungary, Portugal, and Spain. It increased in all regions in Austria, Belgium, France, the Netherlands, Norway, Slovakia, Switzerland and the UK and in more than half of those in Greece, Italy, Poland and Sweden.

In general, the RIS confirms the wide diversity of regions in terms of innovation performance, so highlighting the fact that innovation has a strong regional dimension. Given this wide variation, measures for supporting innovation, including Cohesion Policy programmes, need to take explicit account of the regional or local context when devising the kind of support to provide. The smart specialisation approach is helping in this regard.

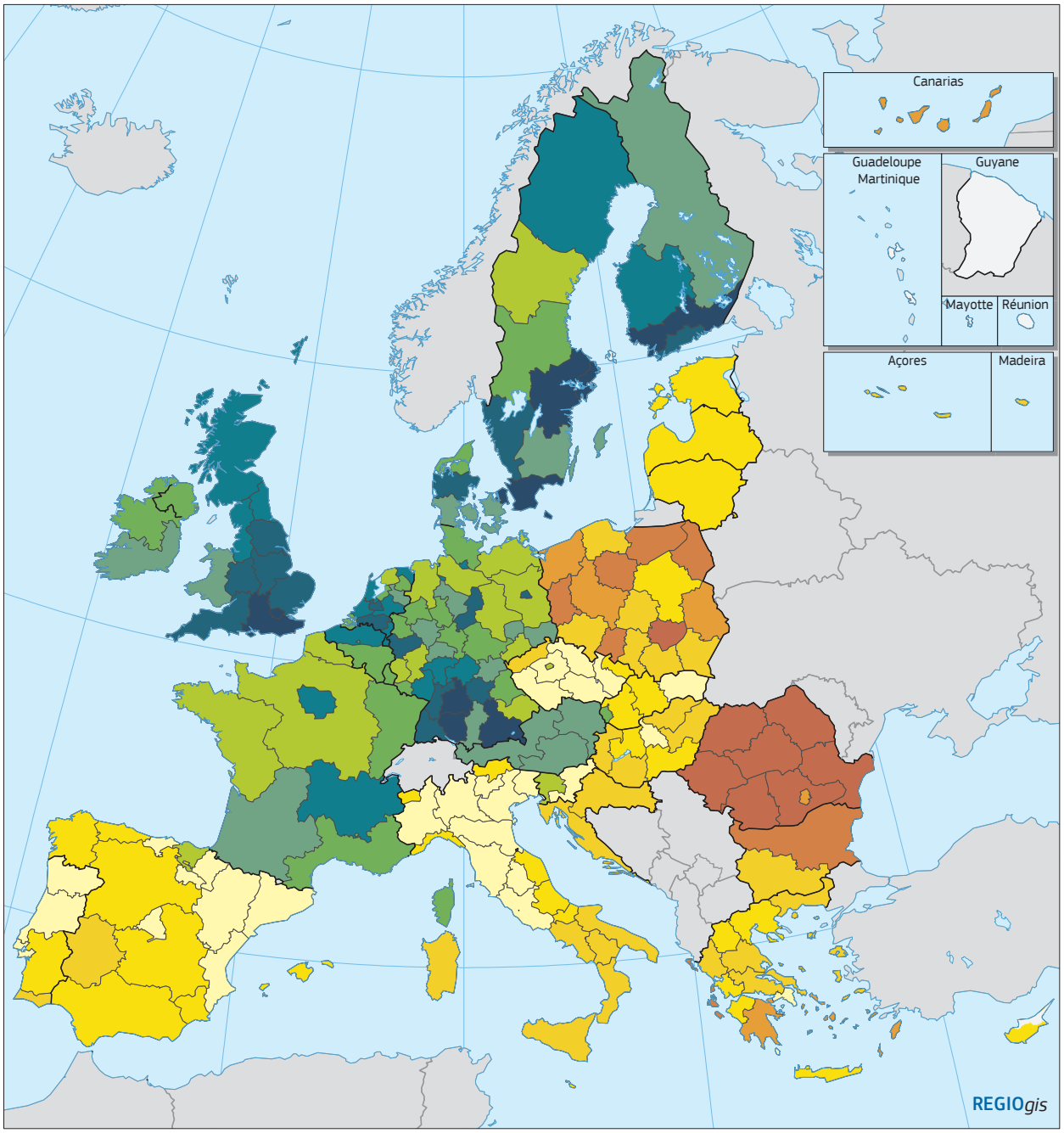
5.3 The number of people with tertiary education keeps increasing, but large disparities persist

A well-educated work force is the key to economic development and prosperity. Higher education boosts upward social mobility and improves employment prospects. In 2016, people aged 25–29 with tertiary education had an employment rate of 81%, compared to 74% for those with an upper secondary education and 54% for those with only basic schooling[18].

The link between educational attainment and employment rates is also strong for the population

17 European Commission (2017c).

18 European Commission (2016b).



Map 1.9 Regional innovation performance, 2017

Modest -
Modest
Modest +
Moderate -
Moderate
Moderate +
Strong -
Strong
Strong +
Leading -
Leading
Leading +

Source: European Commission (2017d)

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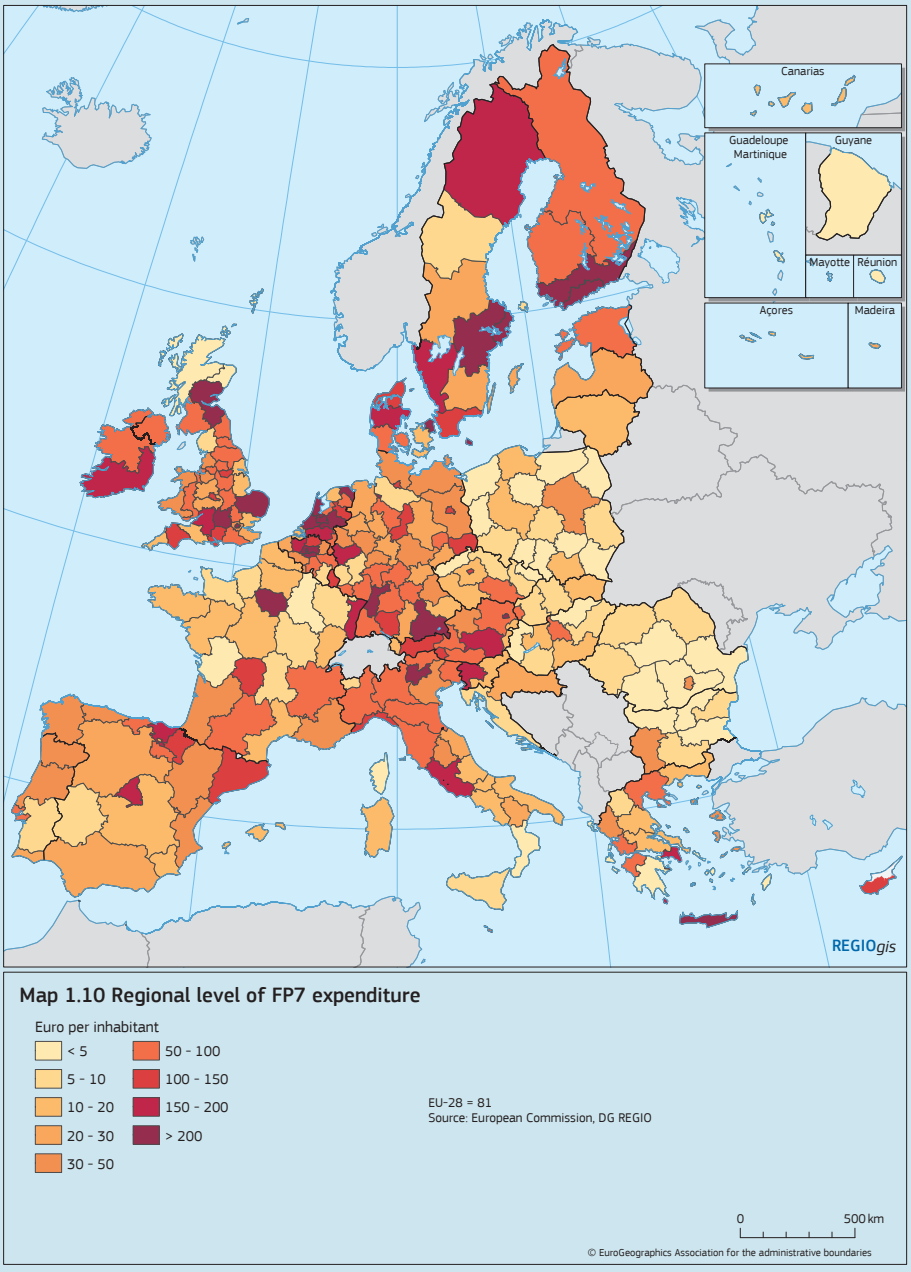
The regional distribution of expenditure under the EU Research and Innovation (R&I) Programme

The objective of the EU R&I Framework Programme Horizon 2020 is to support research excellence wherever it takes place. It, therefore, does not differentiate between regions, group or territory.

Nevertheless, a ring-fenced budget is allocated to Part IV of Horizon 2020 'Spreading Excellence and Widening Participation' (SEWP) which includes specific support for tackling the innovation divide in the EU.

In addition, the development of synergies between Horizon 2020 and the European Structural and Investment (ESI) Funds is intended to make an important contribution to the complementary use of the two funding sources. The Seal of Excellence is a practical manifestation of this. It is a high-quality label awarded to projects submitted to Horizon 2020 which were deemed to deserve funding but did not receive it because of a limited budget, which can be used to give credence to projects when approaching other funding sources. It also helps funding bodies (including national and regional authorities receiving ESI fund support) to identify promising projects more easily.

The map below illustrates the EU financial contribution to NUTS 2 regions by the 7th Framework Programme for Research and Innovation (2007–2013). The top 5 NUTS 2 regions are Brussels, Vlaams-Brabant, Inner London, Hovedstaden and Oberbayern, which all received €400 per inhabitant. On average, regions in the EU-15 received more than those in the EU-13, with capital city regions, in most cases receiving the largest amounts in each country.



Map 1.10 Regional level of FP7 expenditure

Tradable clusters in low density and high density economies in OECD countries.

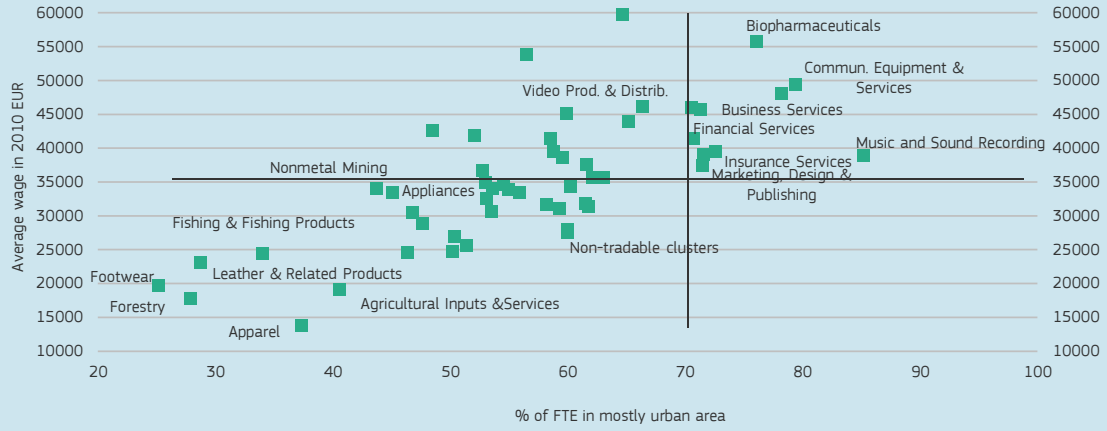
Productivity in larger cities is higher than in smaller cities or rural areas with lower population densities. This is, in part, due to differences in the characteristics of the local work force, which, on average, is more educated with skills that would make the workers concerned more productive no matter where they lived or worked (OECD, 2015).

Large metropolitan areas, like London, New York or Tokyo, are home to some of the most productive and innovative enterprises, mostly engaged in services, especially business services, but also in ICT, healthcare and higher education (OECD, 2014). Manufacturing firms located in large cities are typically involved in innovation and skill-intensive production. Indeed, often only the headquarters or research centres of large firms are situated in cities. Unsurprisingly, the wages paid by firms in tradable clusters located in urban areas tend to be higher than those in less-densely populated areas (Figure 1.18).

Rural economies are at the other end of the spectrum to large cities. They are often concentrated in agricultural production or the exploitation of natural resources (OECD 2016b). Manufacturing in these areas tends to be in the more 'mature' parts of the production process using well-established technologies. The relatively small work force in low population-density areas tends to mean specialisation in a few activities in contrast to large agglomerations. This requires a careful assessment of local strengths and weaknesses and support of activities that can give rise to growth.

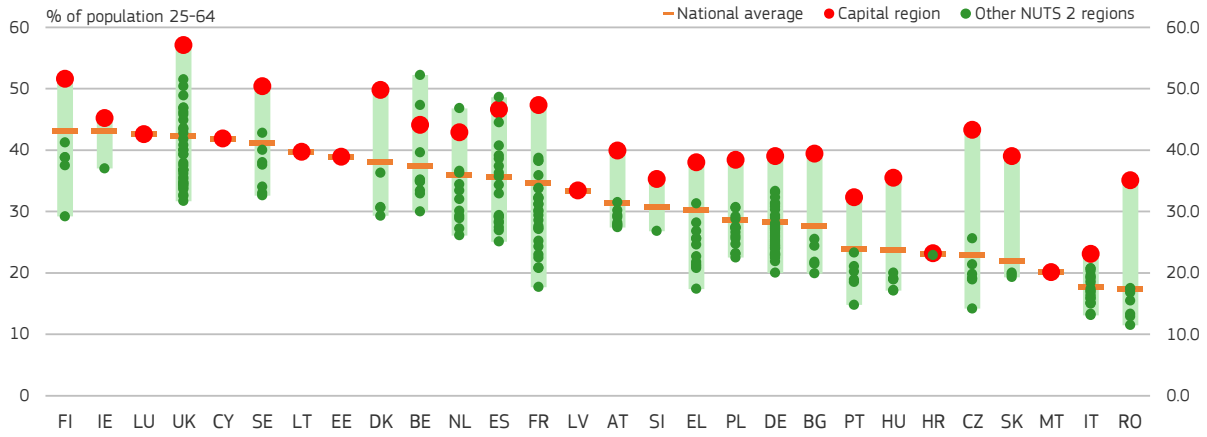
(This box is based on a contribution from OECD.)

Figure 1.18 Average wage and share of full-time equivalent (FTE) employment in tradable clusters located in mostly urban areas, 2014



The data identify 51 tradable clusters and a residual non-tradable cluster that includes all other firms. Regions with over 70% of population living in functional urban areas, or some of their population living in a large metropolitan area with over 1.5 million inhabitants, are classified as mostly urban. Average wage is the total wage bill of the cluster in EUR at 2010 prices divided by the number of FTE employees.
Source: Calculations based on OECD Regional Statistics and data used in and provided by Ketels and Protsiv (2016).

Figure 1.19 Population aged 25-64 with tertiary education, 2016



London corresponds to the NUTS 1 region
Source: Eurostat, DG REGIO calculations

Table 1.8 Population aged 30–34 with a tertiary education, by cohesion policy groups of regions, 2016

	More developed	Transition	Less developed	EU-28
Population aged 30–34 with a tertiary education, 2016 (%)	43.2	32.7	33	39.1
% point change 2008–2016	6.8	1	12.3	8
% point change 2000–2008	9.7	9.3	8	8.8
Distance to EU-2020 target (% point difference)	0	7.3	7	0.9
% of regions that have reached the EU target	53	22	29	41

Source: Eurostat, DG REGIO calculations
Note: The table includes only regions for which data are available

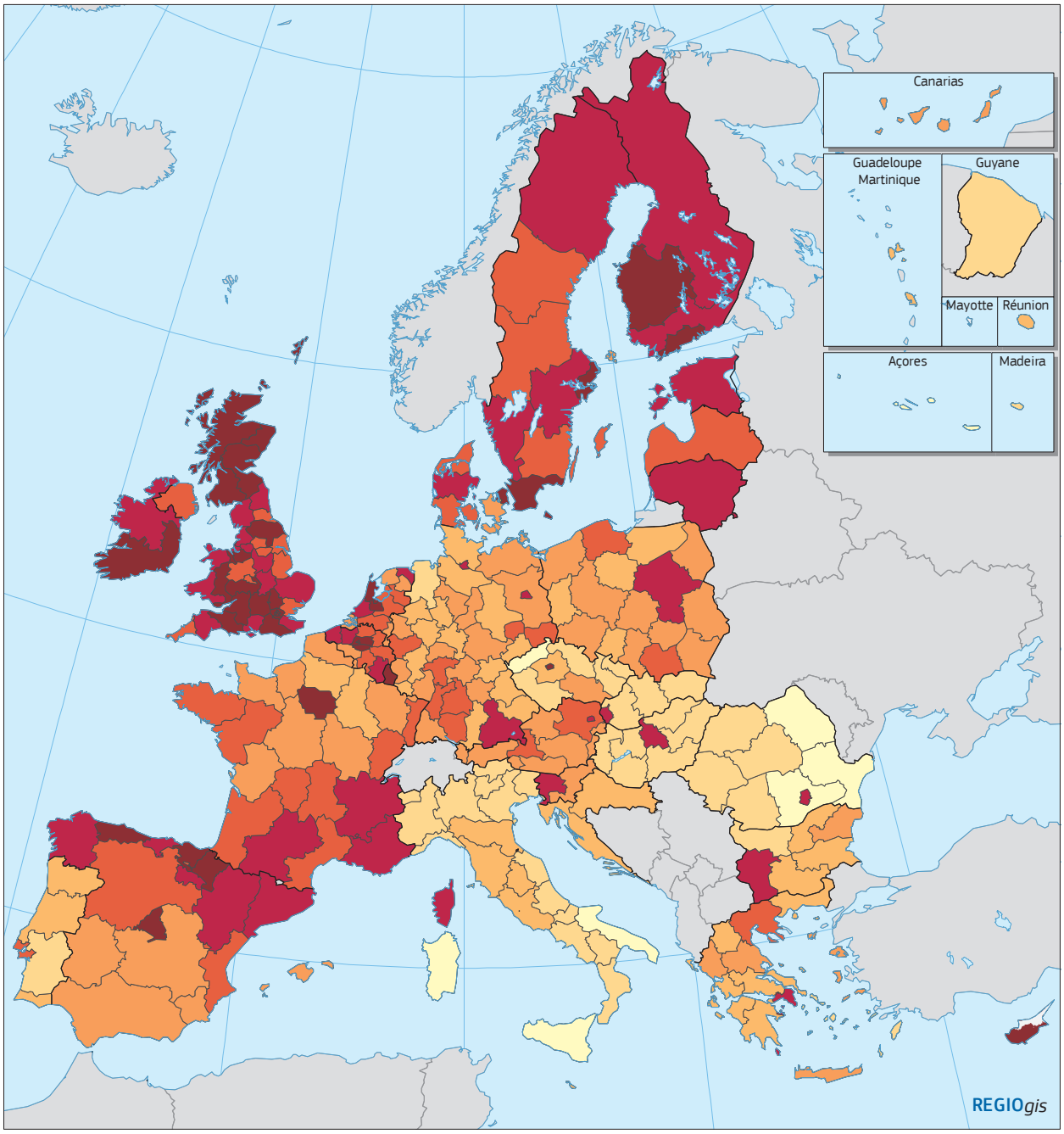
aged 25–64. Only 54% of those with only basic schooling were employed in 2016 as against 75% of those with upper secondary qualifications and 85% of those with tertiary education. Moreover, the gap in employment rates between those with tertiary education and those with only basic schooling has widened over time (from 28 percentage points in 2006 to 31 percentage points in 2016).

The share of people aged 25–64 with tertiary education, however, varies markedly across regions (Map 1.11 and Figure 1.19).

Metropolitan areas, especially larger ones, tend to have a more highly educated population than other areas[19]. Demand for highly skilled labour attracts those with such qualifications and makes it easier for them to find a job matching their skills. At the same time, firms are also more likely to find the skills they need in such areas. In 2016, around 41% of those aged 25–64 had tertiary education in capital metro regions and 32% in metro regions generally, as compared with an average of 30% in the EU as a whole. The highest figures were in Inner London, Brabant Wallon in Belgium and Helsinki, the lowest (below 20%) in regions in Italy and Romania.

The Europe 2020 strategy has a target of increasing the share of the population aged 30–34 with tertiary education to 40% by 2020. The situation in 2016, however, varies markedly between regions, largely according to their level of economic development. Over half the 81 more developed regions had already achieved the target (some before it was set in 2010). Some 22% of transition regions had also achieved the target (as compared with

19 European Commission and UN-HABITAT (2016).



Map 1.11 Population aged 25–64 with tertiary education, 2016

% of total population aged 25–64

- < 15
- 15 – 20
- 20 – 25
- 25 – 30
- 30 – 35
- 35 – 40
- > 40
- no data

EU-28 = 30.7
ISCED levels 5 and 6
Source: Eurostat

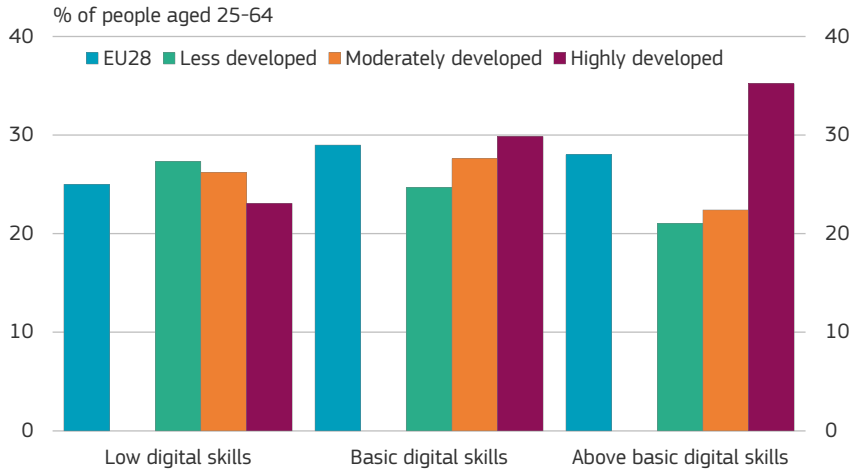
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none up to 2013), while 29% of less developed regions had done so (Table 1.8).

Ensuring that everyone has the right skills for an increasingly digital and globalised world is essential for an inclusive labour market and to spur innovation, productivity and growth (OECD, 2016). In 2015, around 25% of those aged 25–64 reported having a low level of digital skills and 29% a basic level, while 28% reported having a higher level than basic. The situation at EU level, however, hides marked differences between Member States, particularly between those with different levels of economic development, digital skills tending to increase with the latter (Figure 1.20). Whereas 35% of those in highly developed Member States reported their digital skills to be above basic, in less developed Member States, the figure was only 21%.

Figure 1.20 People's levels of digital skills, by level of economic development, 2015



Source: Eurostat, DG REGIO calculations

Measuring digital skills across the EU

Digital skills are measured by a composite indicator which attempts to capture the competence of those aged 16–74 in performing selected activities relating to internet and computer software use. The activities concerned are finding information, communicating, problem-solving and using software. People are asked whether they have performed a given activity and if they have, it is assumed they have the skills to do so.

Two skill levels, 'basic' and 'above basic' are defined for each of the four activities and an overall indicator is calculated from this, people being divided into four groups: those with 'no skills', 'low skills, 'basic skills' and 'above basic skills.

For more details, visit:
http://ec.europa.eu/eurostat/cache/metadata/en/tepsr_sp410_esmsip.htm

5.4 Improving market access does not always generate growth

Investment in transport infrastructure is widely used to promote economic development, but its actual impact on the economy is complex and hard to predict. In a number of cases across the EU, projections of transport demand made before the infrastructure had been built to justify the investment concerned have proved to be too optimistic. This is demonstrated by several severely underused motorways, airports and high-speed railway lines (Flyvbjerg et al., 2003, European Commission, 2014).

In principle, lowering transport costs should boost trade and economic growth. The new economic geography theory of regional development, however, warns that improving transport connections between two cities may not necessarily help both even if it improves overall productivity. For example, if a city with less efficient firms is connected to one with more efficient firms, the latter might

capture the market in the other city, leading to a reduction in economic activity there.

Regional access to markets by road is mainly determined by the spatial distribution of population. A remote region will always have a small market even with large-scale road investment. Accordingly, transport investment, especially in areas with a mature network, cannot radically alter market access. Potential accessibility by road is the highest in regions and cities in the centre of the EU (European Commission and UN-HABITAT, 2016). Many regions in central and eastern Member States, however, are not yet connected by an efficient road network and will only have better access to markets after the completion of the Trans-European Transport Network (TEN-T — Map 1.12)[20].

The speed and frequency of trains is also much lower in central and eastern EU countries (Poelman and Ackermans, 2016). While some countries, such as the Czech Republic and Hungary, have a relatively dense rail network, the frequency and speed of service on many of the lines make it an unattractive alternative to travel by car (Map 1.13).

Accessibility by rail is very high in the areas in and around the highly urbanised parts of the UK, the Netherlands, Belgium, northern France and the Rhine-Ruhr region in Germany. This is due to the combination of a high concentration of population, a dense rail network, high-speed rail connections and relatively high frequency of service (Map 1.14). Accessibility is still high in and around cities in western and eastern France, many parts of Germany, the north of Italy and some parts of Spain. It is relatively low in Austria and Switzerland due to the mountainous terrain and lower still in more peripheral western parts of the EU, in Ireland, Portugal and Spain, and in the Nordic countries, where there are longer distances between cities and low population density. In most of the eastern parts of the EU, as noted above, accessibility is low because of low frequency of service and slow speeds.

The Connecting Europe Facility

The main source of funding for implementing the EU transport policy is the Connecting Europe Facility (CEF), which complements the ESI Funds by focusing support on cross-border connections (including maritime ones) and interoperability between national transport networks. Funding for the Facility amounts to €24 billion for 2014–2020.

The CEF calls for proposals in 2014, 2015 and 2016 provided support to 604 projects with grants amounting to €22 billion and with ca. €41.6 billion of investment being mobilised. With the results of the 2016 call made public in June 2016 and adding, 96.3% of the budget for grants made available for transport under the Connecting Europe Facility will have been allocated.

The TEN-T Comprehensive network is mainly supported by the ESI Funds which also co-finance the TEN-T Core network, particularly non-cross-border parts and roads.

The current investment in the TEN-T amounts to around 50 billion EUR; however, according to the estimates it is necessary to invest 607 bn EUR in total by the end of 2030 to complete the TEN-T Core Network Corridors alone.

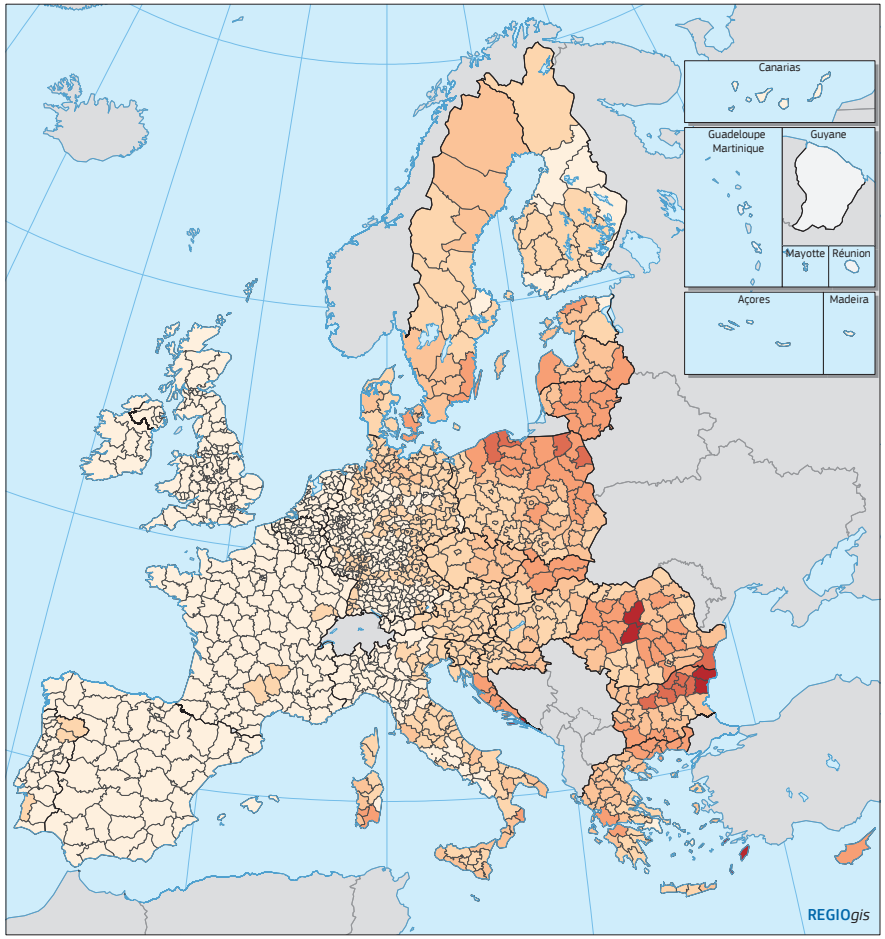
For more details: https://ec.europa.eu/transport/themes/infrastructure/ten-t-guidelines/project-funding/cef_en

By 2050, the EU intends to complete a European high-speed rail network, the aim being for rail, both high and normal speed, to account for at least 50% of all medium-distance passenger travel[21]. This will require substantial investment, especially in countries where the network is not very dense and the service tends to be slow and infrequent.

Access to passenger flights is highly uneven across the EU, ranging from London and surrounding areas where people have access to over 3 000 flights a day to regions in eastern Poland and Romania

20 The map depicts expected changes relative to the situation in 2012.

21 European Commission, 'White Paper, Roadmap to a Single European Transport Area — Towards a competitive and resource efficient transport system'. COM (2011) 144 of 28 March 2011.



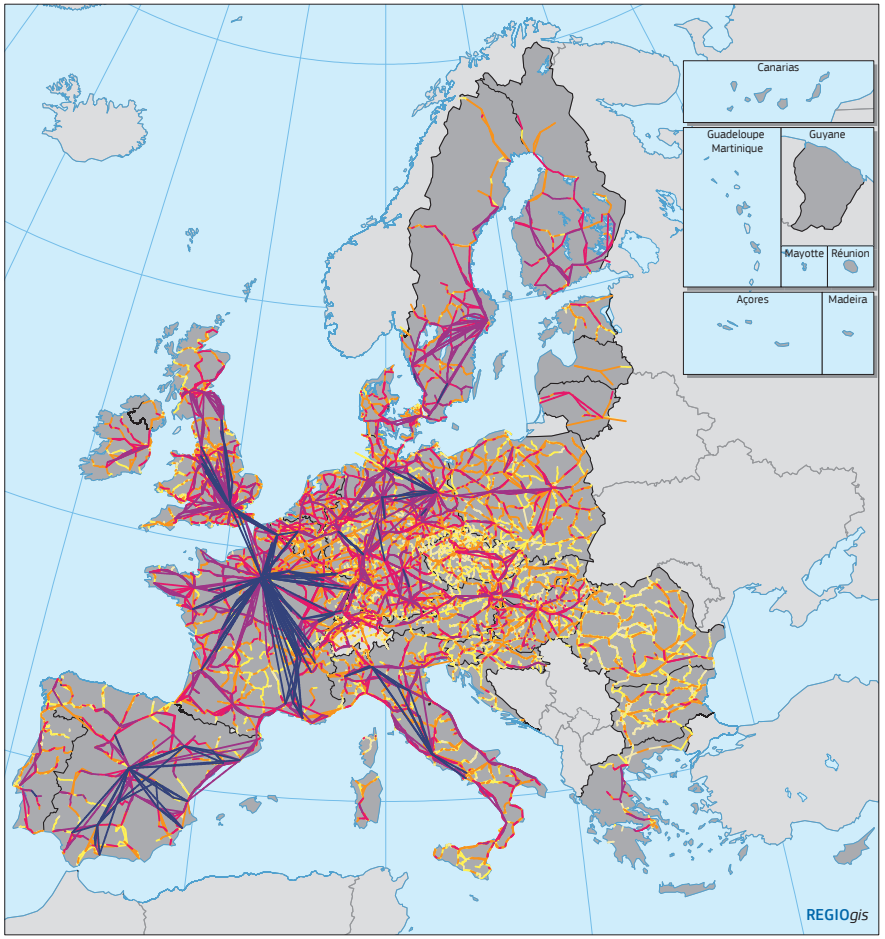
Map 1.12 Expected change in road accessibility due to the TEN-T network completion, by NUTS 3 region

%
- < 5
- 5 – 10
- 10 – 15
- 15 – 20
- 20 – 25
- > 25
- no data

Medium distance-decay function.
Change relative to the accessibility level observed in 2012.
Source: Ibañez et al. 2017

0 500 km

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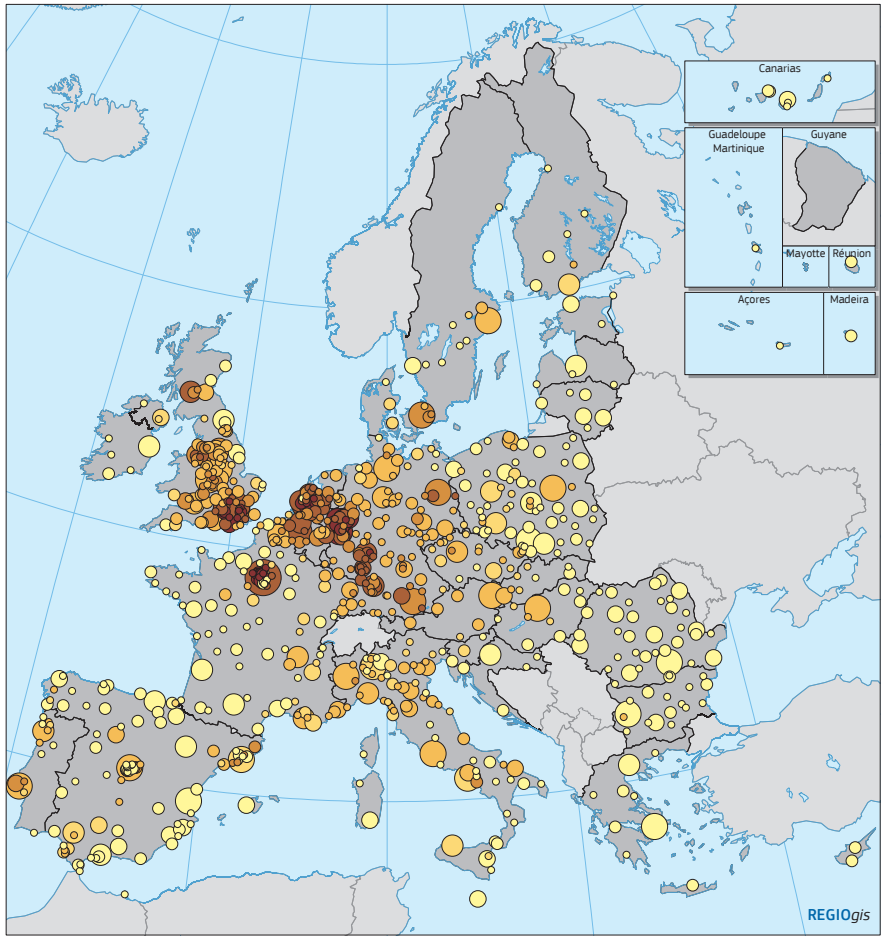
Map 1.13 Average speed of direct rail connections, 2014

km/h
- <= 40
- 40.1 – 60
- 60.1 – 80
- 80.1 – 100
- 100.1 – 150
- > 150

Speed calculated along straight lines representing the connection between two subsequent stops. All direct train trips between geolocated stations, starting between 6:00 and 20:00 on 02/10/2014 (EE, IE: 2013; EL, Corsica, Nothern Ireland: 2015).
Source: UIC, national railway operators, EuroGeographics, OpenStreetMap, TomTom, RRG, DG REGIO.

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Map 1.14 Rail accessibility during morning peak hours, by city, 2014

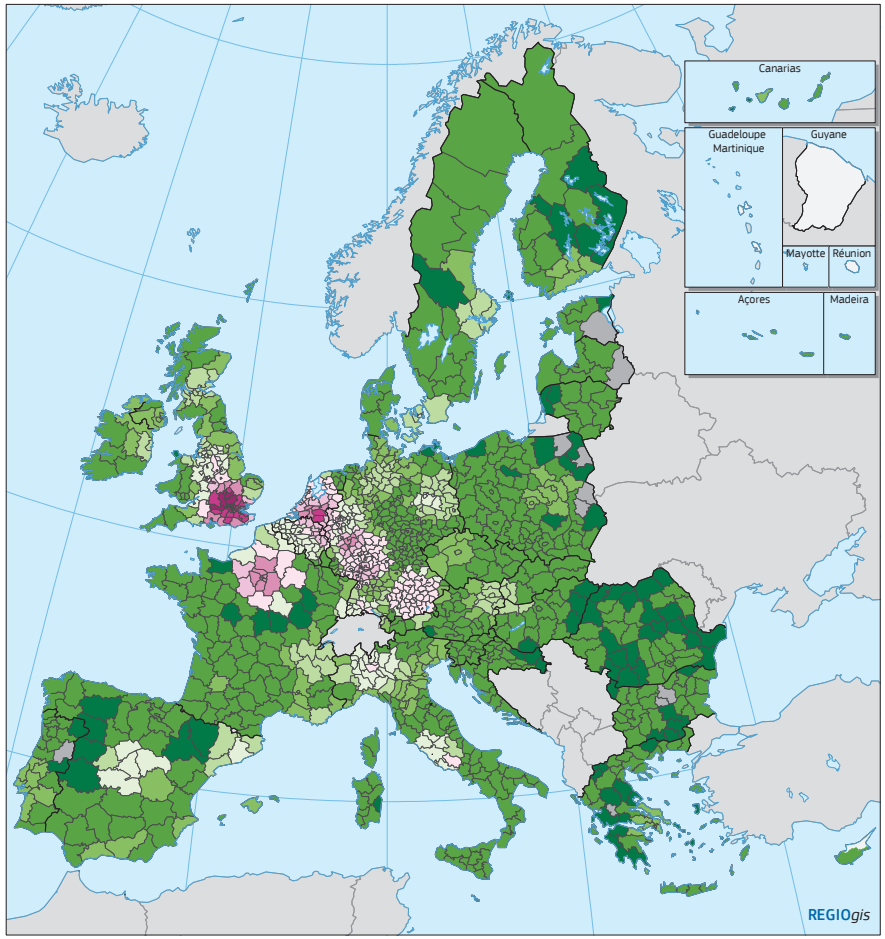
Accessible population
- < 50 000
- 50 000 – 100 000
- 100 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 2 000 000
- >= 2 000 000
- no data

Urban center population
- < 100 000
- 100 000 – 250 000
- 250 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 5 000 000
- >= 5 000 000

Population (outside the city) that can be reached within 1h30 of travel (including initial waiting time) from stations in the city.
Sources: UIC, rail operators, Eurostat, JRC, DG REGIO-GIS

0 500 km

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Map 1.15 Access to passenger flights by NUTS 3 region, 2015

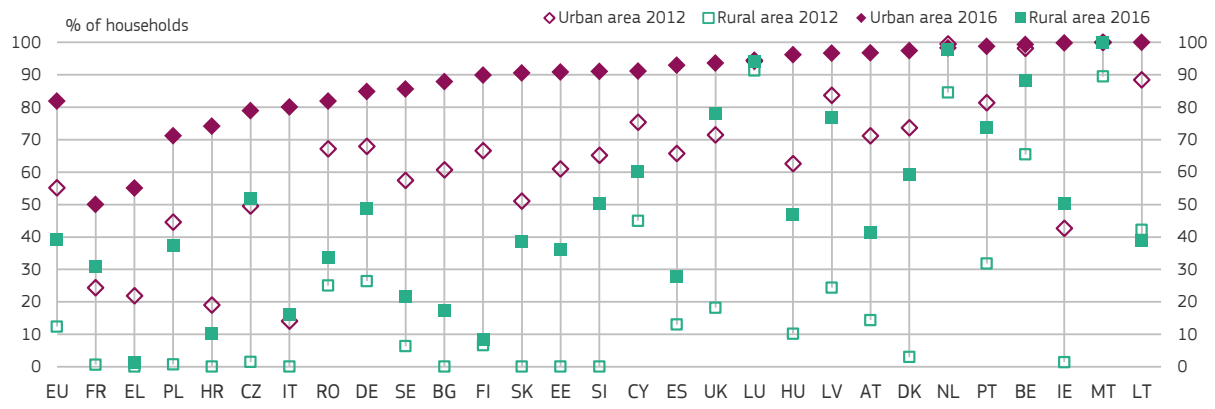
Average number of flights per day
- time to nearest airport > 90 min.
- > 10
- 10 – 250
- 250 – 500
- 500 – 750
- 750 – 1000
- 1000 – 1500
- 1500 – 2000
- 2000 – 2500
- 2500 – 3000
- > 3000
- no data

Population-weighted average number of flights per day, accessible within 90 minutes by road.
Sources: Eurostat, EuroGeographics, TomTom, JRC, DG REGIO-GIS

0 500 km

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Figure 1.21 Households with access to Next Generation Access (NGA) broadband by type of area, 2012 and 2016



Data are for the end of 2012 and Jan-2016.
Source: European Commission (2016a)

without any flights within 90 minutes driving time (Map 1.15).

5.5 Digital networks are spreading, but closing the gap between urban and rural areas represents a major challenge

Access to high capacity telecommunication networks is vitally important for competitiveness and growth. The use of digital services and the capacity to operate successfully in a global business environment increasingly rely on fast and efficient broadband connections. ICT infrastructure is therefore a major determinant of the development potential of EU regions. The most prosperous regions are in general already well-endowed in this regard, though there are still serious gaps in many of the less prosperous ones and pronounced disparities between urban and rural areas.

Over 214 million EU households (98%) had access to at least one of the main fixed or mobile broadband technologies (excluding satellite) in mid-2016. If satellite coverage is included, basic broadband services are now available to every household in the EU, so that the European Commission's Digital Agenda for Europe target of basic broadband for all has been achieved[22].

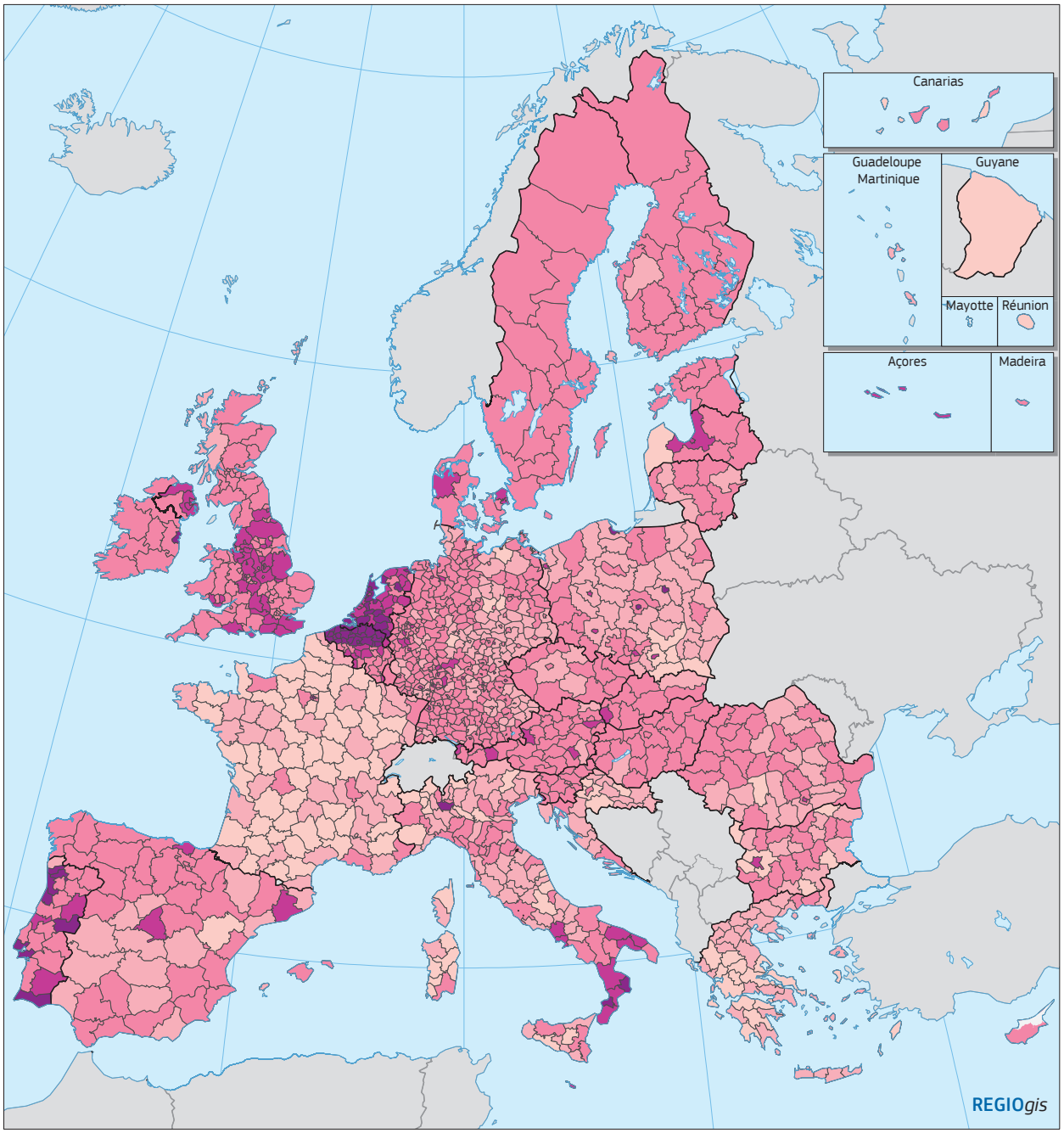
22 European Commission (2016a).

The coverage of Next Generation Access (NGA)[23] is expanding fast. In 2016, around 76% of households across the EU had access to at least one NGA network, up from 68% at the end of 2014, though there are wide variations in coverage between and within Member States (Map 1.16).

Access to fast broadband services in rural areas remains a challenge. Even though 99% of rural households across the EU-28 had access to at least one broadband technology at the end of June 2016, only 39% (12 million households) had access to NGA broadband (Figure 1.21), with almost no households with access in rural areas in Greece (0.3%). Substantial progress has been made since 2012. The funding provided under rural development policy to an expected 4 400 projects to install 'last-mile' connections to larger broadband projects co-financed by other EU funds is planned to improve access to ICT infrastructure and services for an estimated 18 million people living in rural areas.

Coverage is almost complete in most urban areas and cities, though there are a number of areas where it is well below the EU average (of 82% in

23 Next Generation Access Networks are defined as wired access networks which consist wholly or partly of optical elements and which are capable of delivering broadband access services with enhanced features, (such as higher throughput) as compared with those provided over existing copper networks.



Map 1.16 Next generation access coverage by NUTS 3 region, 2016

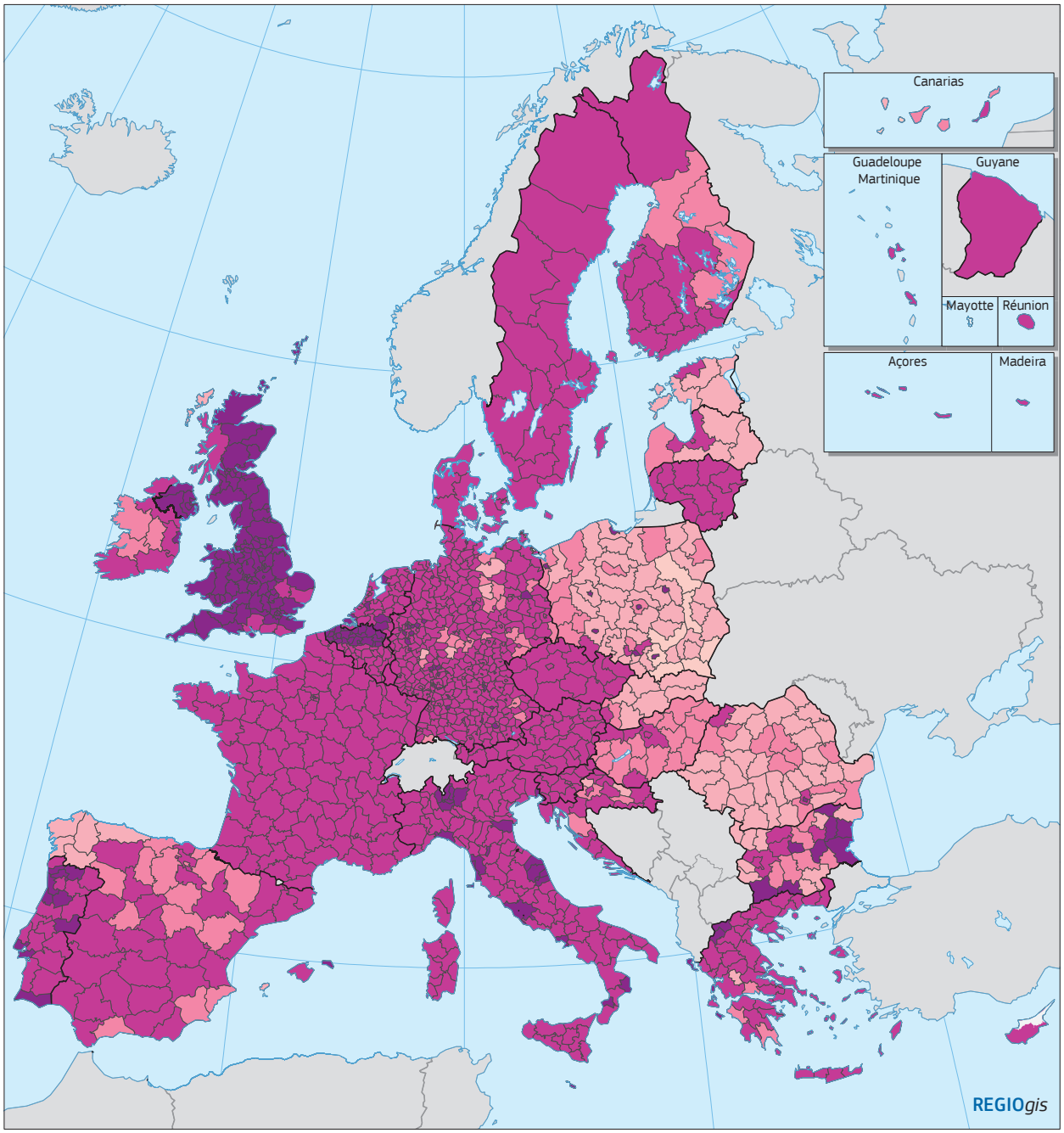
% of households

- 0 – 35
- 36 – 65
- 65 – 95
- 95 – 100
- 100

Next Generation Access (NGA) includes VDSL, Cable Docsis 3.0 and FTTP.
EU = 76%
Source: European Commission (2017b)

0 500 km

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Map 1.17 Fixed broadband coverage by NUTS 3 region, 2016

% of all households

- 0 – 35
- 35 – 65
- 65 – 95
- 95 – 100
- 100
- no data

EU = 98%

Source: DG CONNECT, European Digital Progress Report 2017

0 500 km

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The Digitising European Industry initiative

Rapid technological developments, innovation in services, demands for sustainability and an evolving global context are generating new kinds of goods and services, and new types of business models for producing them. Evidence suggests, however, that only one in five EU firms is highly digitised (Source: Europe's Digital Progress Report, 2016).

One of the key pillars of the 'Digitising European Industry' initiative, launched in 2016 as part of the Digital Single Market Strategy, is the set-up of a network of «Digital Innovation Hubs» that make latest digital innovations available to any company in Europe, wherever situated, of whatever size and in whatever sector. The Hubs will create innovation ecosystems connecting users and suppliers of digital innovations as well as investors in innovation in all phases of business development. The target is to ensure the presence of hubs in all regions by 2020, in line with smart specialisation strategies. Industry is used in a wide sense and also includes sectors like agriculture, fisheries etc. Specific actions are ongoing to set up Digital Innovation Hubs in EU 13 countries.

In addition, the 'Transforming regions and cities into launch-pads of digital transformation and industrial modernisation' initiative will help build regional and local capacity for digital transformation, in line with smart specialisation strategies. It builds on the role of cities and regions as leaders in the digital transformation process. They can create the right environment to accelerate the digital transformation of businesses, other organisations and public authorities and to improve the life of people. Many 'smart cities' projects already make use of advanced technologies to improve public services and the use of resources while reducing the impact on the environment.

urban areas), mostly in Greece (55%) and France (50%).

Household take-up of broadband has increased markedly in recent years along with coverage. While in 2009, only around 56% of households in the EU had a broadband subscription, the figure was over 72% in 2012 and it had increased to 83% in 2016. However, large differences remain between regions (Map 1.17). In 2016, the proportion of households with broadband was below 60% in Kentriki Ellada in Greece and Severozapaden and Yugoiztochen in Bulgaria, while it was over 95% in the large majority of regions in the Netherlands and in Helsinki-Uusimaa in Finland, South-East England and Luxembourg.

6. Capital and metro regions are the main drivers of regional competitiveness in Europe

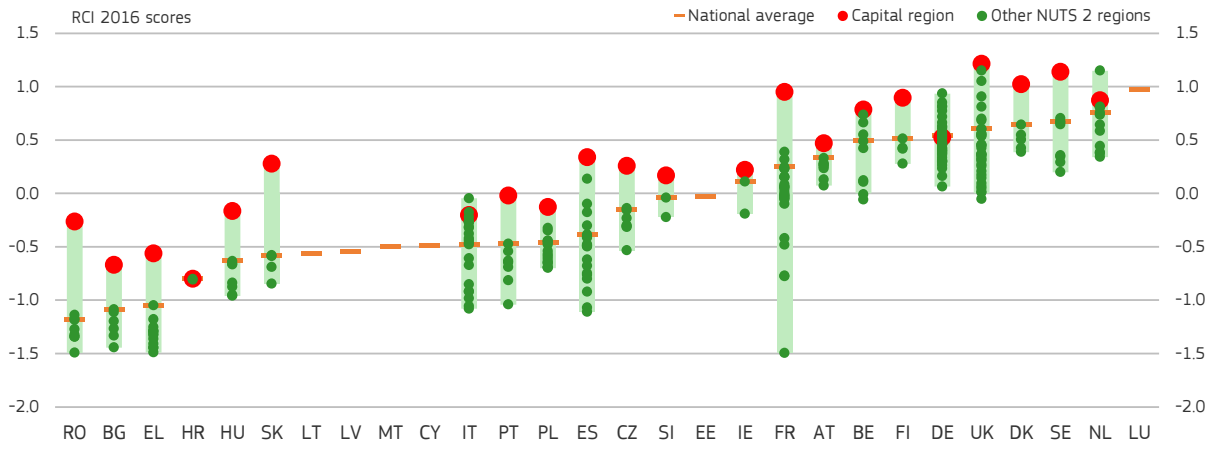
The Regional Competitiveness Index (RCI) is designed to capture the different dimensions of competitiveness for NUTS 2 regions and is the first measure to provide an EU-wide perspective on this. The 2016 edition follows the two previous ones published in 2010 and 2013 (Annoni and Kozovska, 2010; Dijkstra, Annoni and Kozovska, 2011; Annoni and Dijkstra, 2017). All three of them are built on the same approach as the Global Competitiveness Index of the World Economic Forum (GCI-WEF). The 2016 index is based on 74 mostly regional indicators covering the 2012–2014 period though with a number of indicators for 2015 and 2016.

The index is based on a definition of regional competitiveness from the perspective of both firms and residents (Dijkstra et al., 2011):

Regional competitiveness is the ability of a region to offer an attractive and sustainable environment for firms and residents to live and work in.

The RCI results for 2016 are in line with those for 2013. Once again, a polycentric pattern is evident with capital and other metro areas being the main centres of competitiveness. Spill-over effects are evident in most of the north-west of the EU, but less so in the in the east and south. As in 2010 and 2013, there is substantial variation both between

Figure 1.22 Regional competitiveness index, 2016



Source: Annoni et al. (2017)

countries and within them, the latter, in many cases, due to the capital city region significantly outperforming others in the country (Map 1.18).

The so-called 'Blue Banana', a highly urbanised, industrialised corridor defined in 1989 by a group of French geographers led by Roger Brunet, with Greater London at one end and Lombardia at the other and encompassing the Benelux countries and Bavaria, is not evident on the RCI map. On the contrary, the RCI shows strong capital and other metro regions in many parts of Europe. In some countries, capital city regions are surrounded by others that are similarly competitive, indicating the presence of spill-over effects, but in many other countries, the regions neighbouring the capital are far less competitive. An important question for the future is whether the strong performance of the capital and other metro regions concerned will help to strengthen the performance of neighbouring ones or whether the gap between them will widen.

London and its commuting area, which includes seven NUTS 2 regions[24], is ranked top in 2016, ahead of Utrecht in the Netherlands — for the first time not the most competitive region — which is ranked joint second with Berkshire, Buckinghamshire and Oxfordshire in the UK[25]. As in 2010 and 2013, most of the top-ranked regions include either capital cities or large metropolitan areas which help to boost their competitiveness. The regions at the other end of the scale are mainly in Greece and Romania with one in Bulgaria.

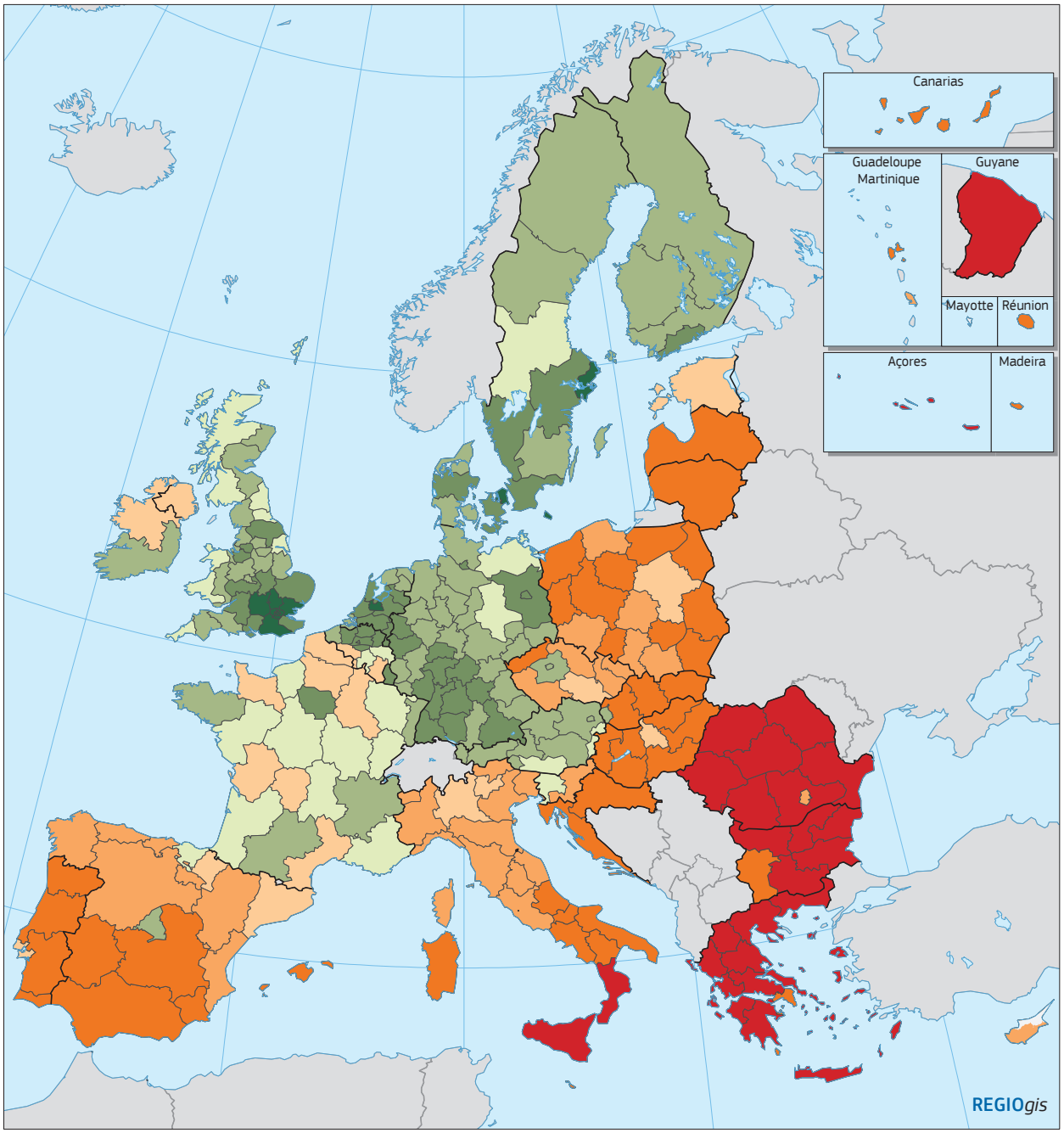
Capital city regions tend to be the most competitive in their countries (Figure 1.22). The only exceptions are in Germany, Italy and the Netherlands. In the last, the capital city region is ranked second and in Italy, Lombardia continues to be the most competitive one as in previous years. In Germany, many regions are more competitive than Berlin, which may be due to the relatively short time it has been the capital of a reunited country.

The gap between the capital city region and others is particularly wide in some countries, especially in Romania, Greece, Slovakia, Bulgaria and France. A big gap of this kind is generally a reason for concern as it puts substantial pressure on the capital city region while possibly leaving resources in other regions underutilised.

The gap between the capital city region and the second highest-ranking one is relatively small in the UK, Austria and Belgium. However, a small gap does not necessarily mean that the whole coun-

24 Table A.1.1 of the Appendix in Annoni, Dijkstra and Gargano (2017b) lists the NUTS 2 regions comprising London and its commuting areas.

25 It is important to note that, due to the margins of error in the set of indicators included in the index, the difference between some of the scores may not be statistically significant.



Map 1.18 Regional Competitiveness Index — RCI, 2016

Index: values range from low (negative) to high (positive)

- < -1
- -1 – -0.5
- -0.5 – -0.2
- -0.2 – 0
- 0 – 0.2
- 0.2 – 0.5
- 0.5 – 1
- > 1

EU-28 = 0

Source: Annoni et al. (2017), DG REGIO GIS

0 500 km

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The Regional Competitiveness Index (RCI) methodology

The 2016 edition of the RCI index is based on a set of 74 mostly regional indicators covering the 2012–2014 period but with a number of indicators for 2015 and 2016. It is composed of 11 pillars that cover the different aspects of competitiveness, which are classified into three groups: Basic, Efficiency and Innovation. The Basic group includes five pillars: (1) Institutions; (2) Macroeconomic stability; (3) Infrastructures (4) Health and (5) Basic education, which represent the key basic drivers for all types of economy. As a regional economy develops and advances in its competitiveness, factors related to a more skilled labour force and a more efficient labour market come into play as part of the Efficiency group. This includes three pillars: (6) Higher education, Training and Lifelong learning; (7) Labour market efficiency; and (8) Market size. At the most advanced stage of development, drivers for improvement are part of the Innovation group, which consists of three pillars: (9) Technological readiness; (10) Business sophistication; and (11) Innovation.

The RCI for 2016 covers all NUTS 2 regions, as defined by Eurostat in the latest 2013 revision (Eurostat, 2015). As in 2010 and 2013, the NUTS 2 regions that are part of the same functional urban area are combined, which is the case for 6 capital functional urban areas.

For further details on the methodology, see: Annoni et al. (2017).

EU regions by development levels, as defined for the RCI

EU regions are divided into five development levels based on their average GDP per head in PPS in the years 2012–2014 relative to the EU average (i.e. with the EU average =100). The levels are as follows:

- Level 1: < 50;
- Level 2: 50–75;
- Level 3: 75–90;
- Level 4: 90–110;
- Level 5: > 110.

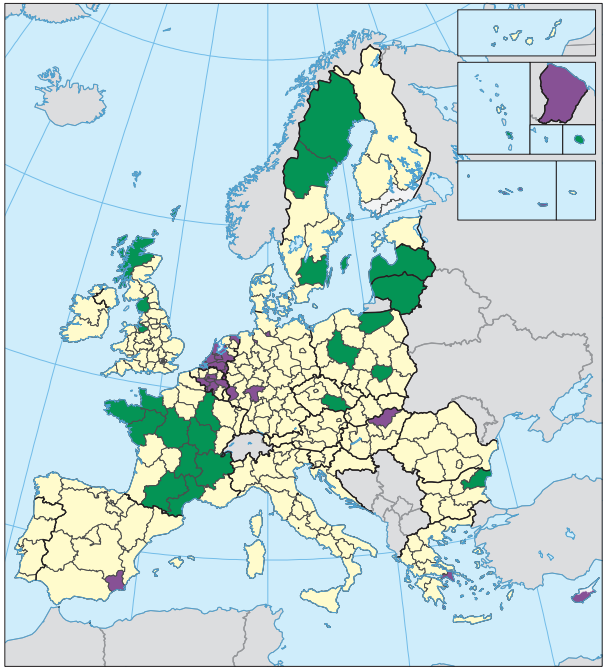
Source: Annoni et al. (2017b)

try is highly ranked. For example, in Belgium and the UK, variations between regions are relatively wide, highlighting the limitations of a national-level analysis. Such variations raise questions over whether gaps in regional competitiveness are harmful or not for national competitiveness and how far they can, and should, be reduced.

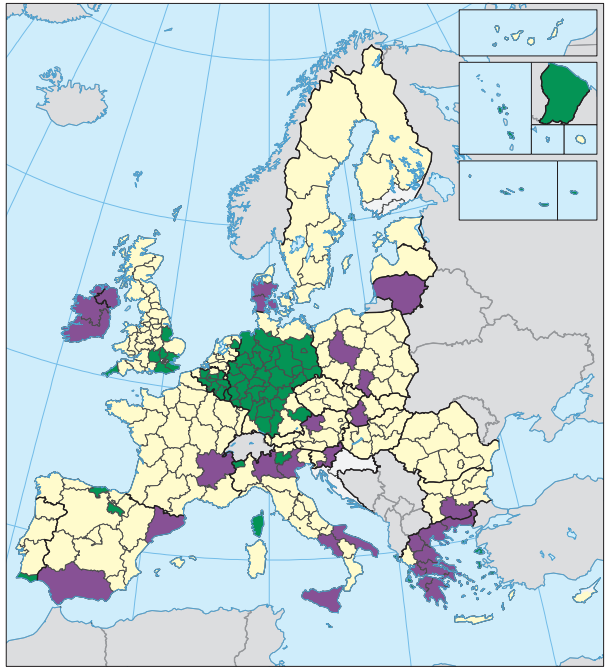
The changes over time in the RCI scores, as opposed to the rankings, are informative[26]. Even though the index is not entirely consistent between years because of recurrent and often unavoidable revisions of regional indicators and the NUTS classification, the three editions of the RCI provide a unique means of monitoring and assessing the development of regional competitiveness across the EU. Map 1.19 shows the regions where the scores changed by more than 5% of the difference between the highest and lowest scores across the three editions (i.e. the maximum score range). The three maps show the changes between 2013 and 2016, 2010 and 2013 and over the period as a whole. Between 2013 and 2016, competitiveness improved in around 10% of regions and weakened in another 10%, while between 2010 and 2013, it improved in many more regions (26%) than it weakened (11%).

26 Comparing the RCI over time is complicated because each edition of the index incorporates improvements and slight modifications. These do not affect the overall structure of the index, but they limit the possibilities of measuring change over time. The reasons for the modifications are various: new indicators become available at the regional level, while others are not updated or no longer fit the statistical framework of the index. In addition, methodological improvements, especially between the first and the second editions, and changes in the definition of NUTS regions complicate the exercise. Nevertheless, there remains a fair degree of continuity in the indicator list — changes between 2013 and 2016 are listed in Table A.3.1 in the Appendix in Annoni, Dijkstra and Gargano (2017b).

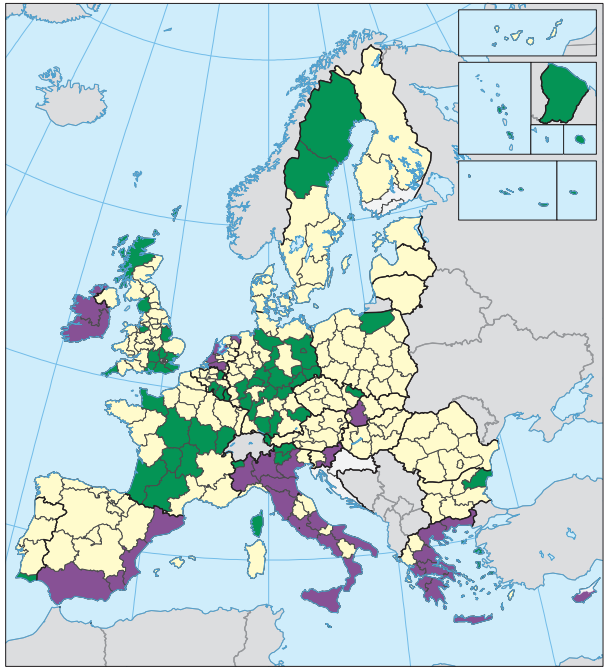
Map 1.19 Changes in the Regional Competitiveness Index



2013–2016



2010–2013



2010–2016

Difference between RCI 2016 and RCI 2013
- deterioration
- stability
- improvement

Difference between RCI 2013 and RCI 2010
- deterioration
- stability
- improvement

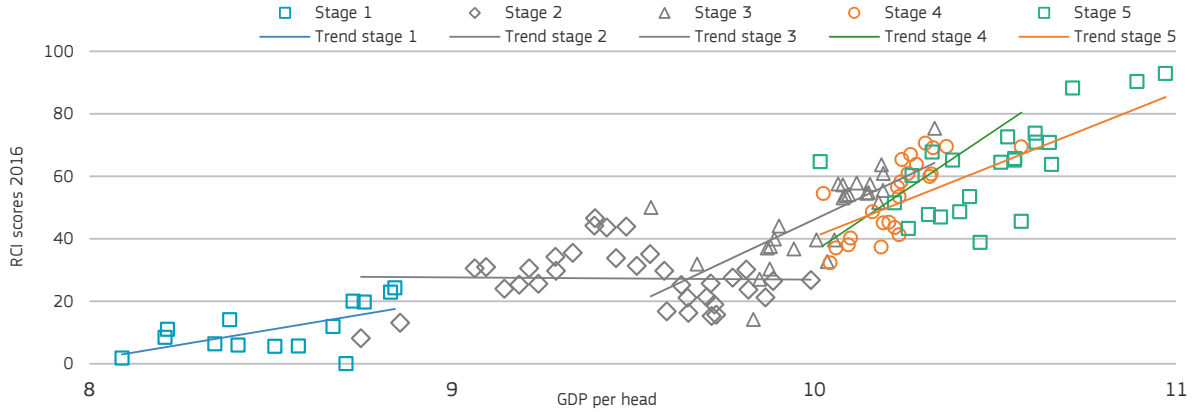
Difference between RCI 2016 and RCI 2010
- deterioration
- stability
- improvement

Source: DG REGIO

0 1 000 km

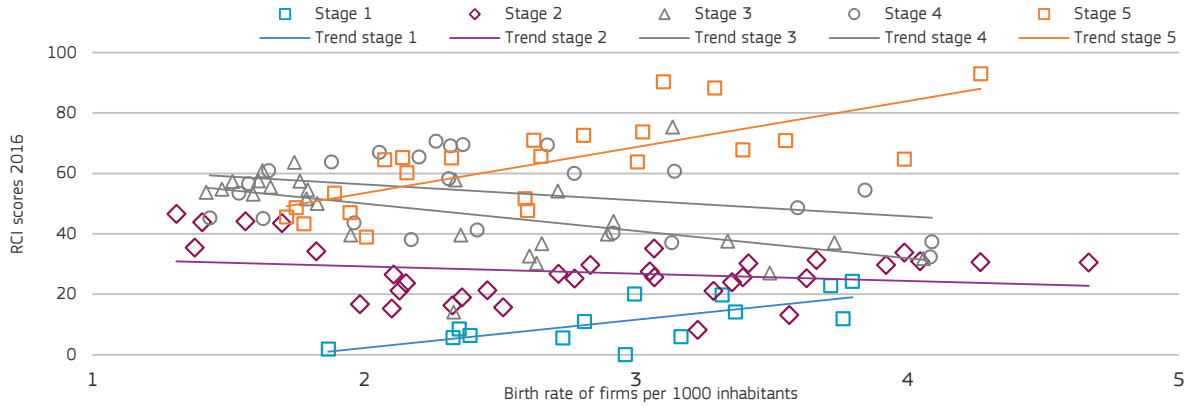
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Figure 1.23 Relationship between RCI and GDP per head (in PPS) in NUTS 2 regions by level of economic development



For observations denoted in grey, correlations are not statistically different from zero. For the other observations, the correlations are significantly different from zero, at the standard 1%, 5%, or 10% level.
Source: Eurostat, DG REGIO calculations

Figure 1.24 Relationship between RCI and the birth rate of firms (relative to population) in NUTS 2 regions by level of economic development



Only regions in AT, BG, CZ, DK, ES, FI, FR, HR, HU, IT, LT, PT, RO and SK included. Observations denoted in grey: correlations not statistically significant. Other observations: correlations statistically significant at the standard 1%, 5% or 10% level
Source: Eurostat, DG REGIO calculations

Between 2010 and 2013, competitiveness improved in most Belgian and German regions. While it remained largely unchanged between 2013 and 2016 in most of the latter, it weakened in several Belgian regions, including in the capital city region. Competitiveness also deteriorated significantly in Greek and Irish regions between 2010 and 2013, and failed to improve over the following three years. In regions in many countries (Austria, Bulgaria, Czech Republic, Denmark, Spain, Finland, Hungary, Poland, Portugal, Romania, Sweden and Slovakia), competitiveness as measured remained largely unchanged over the 6 years.

In the other countries, there were quite a few changes. In France, competitiveness improved in 12 regions between 2013 and 2016 and four between 2010 and 2013. Conversely in the UK, it improved in many fewer regions between 2013 and 2016 (4) than between 2010 and 2013 (9). In Italy, it deteriorated in four regions in the first period and remained unchanged in all regions over the following three years. In the Baltic countries, competitiveness improved between 2013 and 2016 in Latvia and Lithuania, while it remained unchanged at a relatively high level in Estonia

As might be expected, there appears to be a positive relationship between regional competitiveness and GDP per head, which is evident for both regions with high levels of the latter and those with low levels (Figure 1.23).

There is some evidence that regions which are more competitive have higher rates of business start-ups, at least regions which are most highly developed and those which are least developed (Figure 1.24).

chapter 2

Social cohesion

- In 2016, the employment rate of those aged 20–64 reached 71% which is above the pre-crisis level but still well below the 75% target set by the Europe 2020 strategy. The situation varies markedly across the EU. In Spain, the rate was still 5 percentage points below the 2008 level, in Cyprus 8 percentage points lower and in Greece, as much as 10 percentage points less.
- Unemployment in the EU has fallen from a high of 10.9% in 2013 to 8.6% in 2016 and 7.7% in 2017, still above the 7% it was in 2008. In the Czech Republic, Germany, Hungary, Malta, Poland and the UK, the rate is lower than in 2008, in Greece, Spain, Italy and Cyprus, at least five percentage points higher. Youth unemployment followed a similar pattern and remains above 40% in Greece and Spain. Regional disparities in unemployment rates have not narrowed as yet, but they have largely ceased to widen.
- The risk of poverty or social exclusion in the EU has fallen back to its pre-crisis level, but it remains higher in EU-15 cities, while it is significantly lower in EU-15 rural areas, as it is in all types of areas in the EU-13.
- Big differences in unemployment and income between regions encourage people to move to find better job opportunities and/or to escape poverty. In several regions, this has led to large reductions or increases in population, putting pressure on public infrastructure and services. A major task of regional development strategies is to tackle the factors pushing people to move.
- The EU has recently seen a big increase in asylum-seekers, reaching 1.2 million in 2015 and in 2016. Although this represents only 0.5% of working-age population, their distribution across the EU is far from even. The effective integration of the people concerned is important for cohesion and future prosperity.

Chapter 2
Social cohesion

1. Population change is increasingly determined by migration

As natural population growth in the EU slowed down in the early 1990s, migration overtook it as the main source of overall population growth (Figure 2.1). In the 1960s, natural growth added more than 3 million people a year to the EU-28 population, in the 2000s, it added only 350 000. In 2015, for the first time, there was a natural reduction in the EU population. The impact of migration in the 1960s was small, adding only about 100 000 a year, while in the 2000s, it added over a million a year on average. In 2015, migration increased population in the EU by 1.8 million, a figure which does not include all the asylum seekers who arrived during the year as they are typically included in the population figures only after 12 months of residence or after being granted international protection.

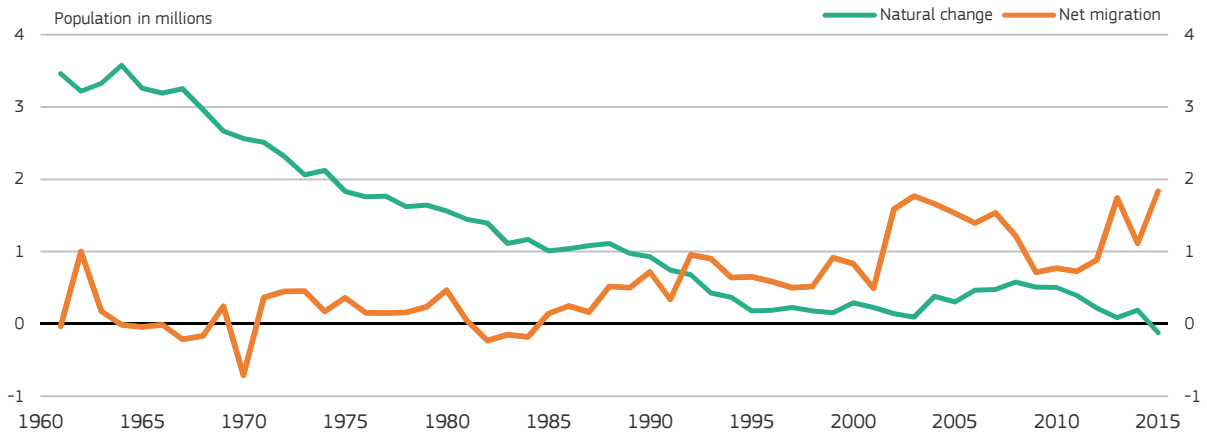
In 2016, 10.7% of the EU population were born abroad, either outside the EU or in another EU country, an increase of 0.7 of a percentage point compared to 2011. Two-thirds of the people concerned were born outside the EU, the number of whom rose from 6.3% of total population in 2011 to 6.9% in 2016 (Figure 2.2). The increase was 2 percentage points or more in Luxembourg, Finland and Sweden. In contrast, the share declined by over 2 percentage points in Cyprus and Slovenia and by around 1 percentage point in the Baltic States, because of outward migration among the people concerned and/or because they passed away.

The share of people born in another EU Member State (other-EU-born) barely increased between 2011 and 2016 (from 3.7% to 3.8%), though it rose by over 2 percentage points in Luxembourg and Slovenia (Figure 2.3). The only countries where it declined were the Czech Republic (by 2 percentage points), Germany (1 percentage point) and Ireland (0.5 of a percentage point).

1.1 Almost two-thirds of the EU-13 population live in a region of population decline

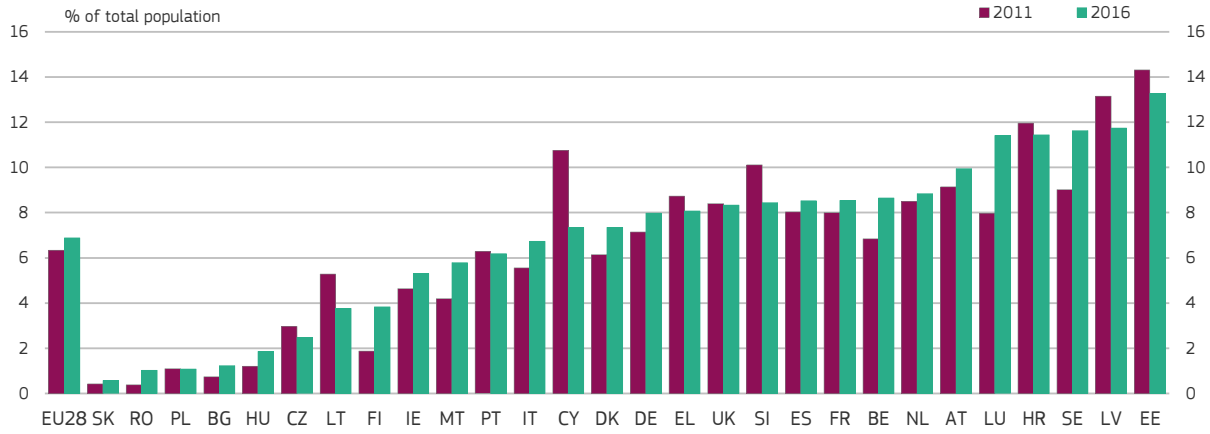
In the EU, 43% of the population live in a NUTS 3 region that lost population due to a natural reduction between 2005 and 2015. In the EU-13, the share was much larger (66%). The largest reduc-

Figure 2.1 Natural change and net-migration in the EU-28, 1960-2015



Source: Eurostat

Figure 2.2 Population born outside the EU-28, 2011 and 2016



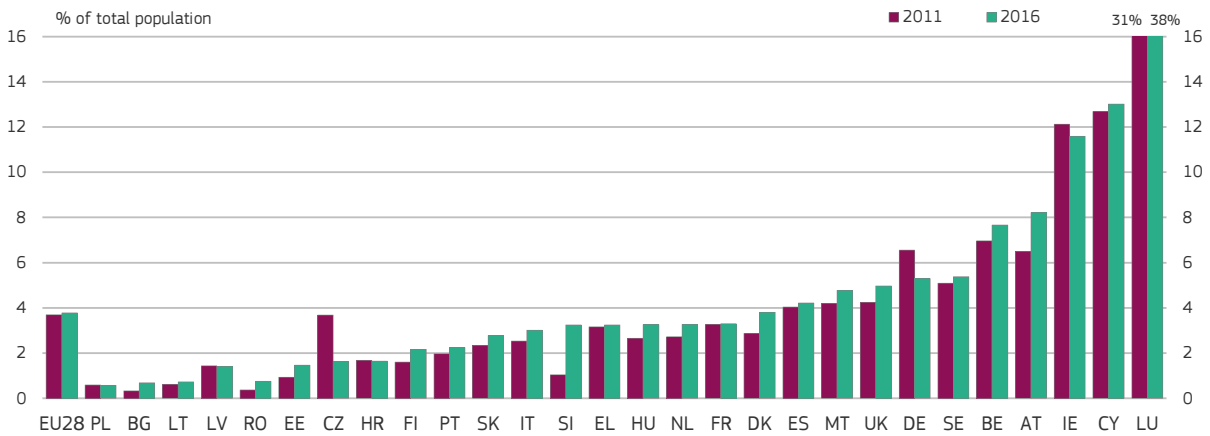
Source: Eurostat

tion occurred over the period in eastern Bulgaria (a decline of more than 10%) (Map 2.1). In many countries, rural and intermediate regions experienced fewer births than deaths. This was particularly so in Romania, Hungary, the Baltic States and Germany, where there was a natural reduction in population in almost all regions except metropolitan ones. The same was true in large parts of Portugal, Spain, France, Poland and the UK.

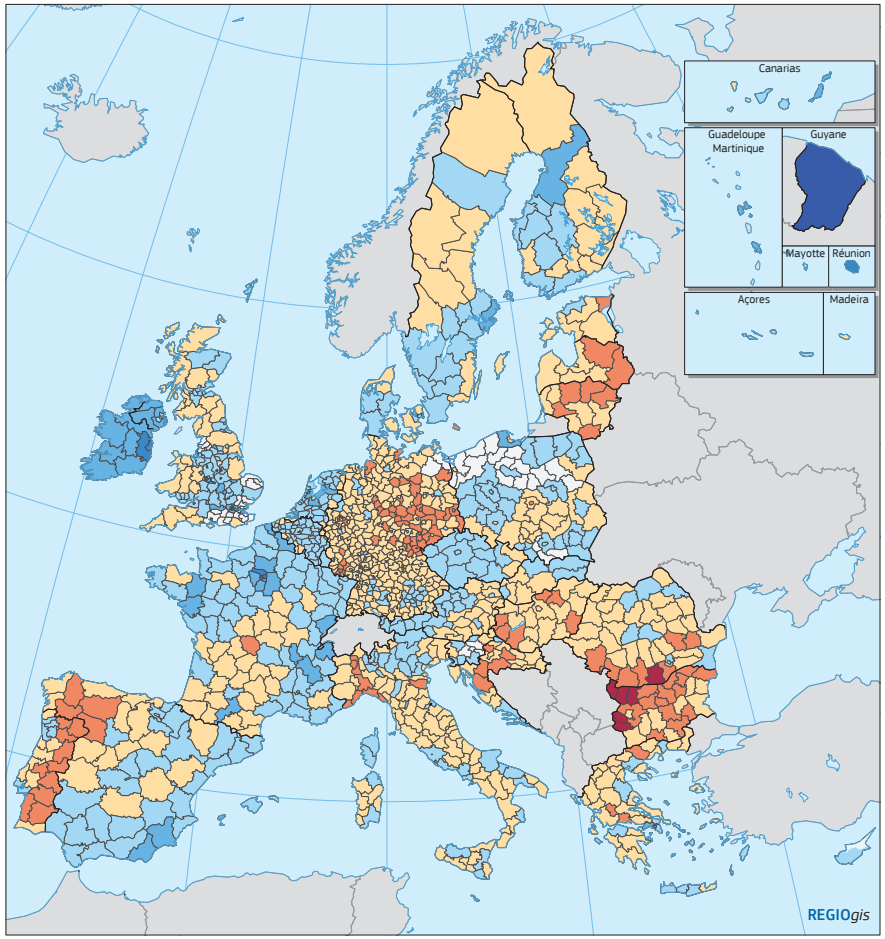
Almost a third of the EU population, 31%, live in a region that lost population due to net outward migration, more people leaving the region than people entering the region, between 2005 and 2015. In the EU-13, however, the figure was much higher, 66%, as compared with only 22% in the EU-15 (Map 2.2). Lithuania, Latvia and some Romanian regions have been particularly affected. Metropolitan regions in these countries were the only ones with net inward migration, more people entering than leaving the region over this period, although in some cases with a shift of population from the city centre to the surrounding region.

The highest growth in total population (7.7% on average) occurred in regions where there was both a natural increase in population and net inward migration (Map 2.3). Almost half the EU-15 pop-

Figure 2.3 Population born in another EU-28 country, 2011 and 2016



Source: Eurostat



Map 2.1 Natural population growth in NUTS 3 regions, 2005–2015

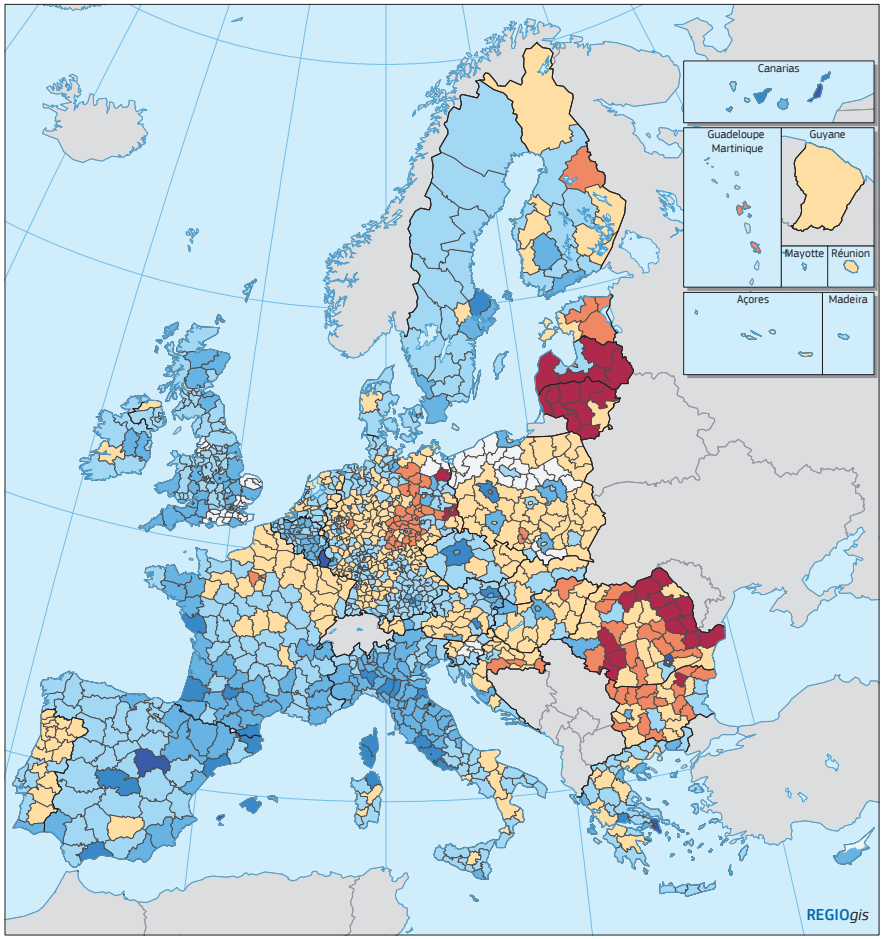
Total change (%)

< -10	5 – 10
-10 – -5	10 – 15
-5 – 0	> 15
0 – 5	no data

EU-28 = 0.66
DK, DEA, DED, DEE: data before 2007 was extrapolated.
PL52, UKD3, UKI3, UKI4, UKI5, UKI6, UKI7: NUTS 2
Source: Eurostat, DG REGIO

0 500 km

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Map 2.2 Net migration in NUTS 3 regions, 2005–2015

Total change (%)

< -10	5 – 10
-10 – -5	10 – 15
-5 – 0	> 15
0 – 5	no data

EU-28 = 2.18
DK, DEA, DED, DEE: data before 2007 was extrapolated.
PL52, UKD3, UKI3, UKI4, UKI5, UKI6, UKI7: NUTS 2
Source: Eurostat, DG REGIO

0 500 km

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Table 2.1 Population share in NUTS 3 regions by determinants of population change, 2005–2015 (%)

	Population decline				Population growth				
% of population in regions by determinants of population change, 2005-2015									
Net migration change	-	-	+	**All declining regions**	-	+	+	**All growing regions**	**All regions**
Natural population change	-	+	-		+	-	+		
Total population change	-	-	-		+	+	+		
EU-13	49	13	4	**66**	5	10	19	**34**	**100**
EU-15	11	3	8	**22**	11	19	48	**78**	**100**
EU-28	19	5	7	**31**	9	17	42	**69**	**100**
Change in population, 2005-2015 (%)									
EU-13	-8.1	-2.5	-2.6	**-6.7**	1.2	3.9	6.6	**5.1**	**-2.7**
EU-15	-6.1	-1.7	-1.7	**-4.0**	3.0	3.6	7.8	**6.1**	**3.9**
EU-28	-7.2	-2.1	-1.7	**-5.2**	2.8	3.6	7.7	**6.0**	**2.5**

The first three rows show whether the change in net migration, natural population and total population is negative or positive – e.g. the first column shows where all three are negative, the second where net migration was negative and natural population was positive, but the overall result was still population decline and so on.
The top section shows the share of population in regions where the determinants of population change are as indicated as % of the total population. The bottom section shows the % change over the period in each group of regions.

Source: Eurostat and DG REGIO calculations

Measuring population change and migration

Total population change is split into the natural change and net migration. Natural change is the difference between live births and deaths over the period divided by average population over the period. More births than deaths means natural growth, the opposite, natural decline.

Net migration is the difference between people moving into a region and those moving out divided by average population over the period. Since accurate figures on movement of people are difficult to obtain, net migration is estimated as the difference between the total change in population and the natural change. This means that it includes any statistical errors or adjustments.

- Net migration at regional level covers both people moving between regions in the same country and those moving from outside.
- Net inward migration means more inward than outward migration (i.e. positive net migration).
- Net outward migration means more outward than inward migration (i.e. negative net migration).

This report shows Population change over a ten year period. It is measured by subtracting population on the 1st January in 2015 from population on the 1st January in 2005 and dividing this by average population over the period. Net migration and natural change are calculated in the same way.

To capture the cumulative impact on population of international movements the following indicators are used:

- native-born population: Residents born in the country they live in;
- foreign-born population: Residents who were born in a different country than the country they live in, defined in terms of present borders, which means, for example, that in the Baltic States it includes people born in a different part of what was then the Soviet Union who moved to the Baltic States prior to their independence and remained there afterwards.

The foreign-born population is divided into two subgroups:

- non-EU-born population: Residents born in a country outside the EU-28;
- other-EU born population: Residents born in a different EU-28 country.

Table 2.2 Population change, natural change and net migration in capital metro, other metro and non-metro regions, 2005–2015

population change 2005 - 2015 (%)	Capital metro region	Other metro region	Non-metro region	Total
EU-13				
Total change	5.1	-2.5	-4.9	-2.5
Natural change	-0.2	-0.7	-1.8	-1.2
Net migration	5.2	-1.8	-3.1	-1.3
EU-15				
Total change	7.6	2.6	4.8	4.2
Natural change	5.0	1.2	-0.2	1.3
Net migration	2.5	1.4	5.0	3.0
EU-28				
Total change	7.0	1.8	2.2	2.8
Natural change	3.9	0.9	-0.6	0.7
Net migration	3.1	0.9	2.8	2.1

Source: Eurostat and DG REGIO calculations

Table 2.3 Population change, natural change and net migration in urban, intermediate and rural region, 2005–2015

population change 2005 - 2015 (%)	Predominantly urban	Intermediate	Predominantly rural	Total
EU-13				
Total change	-1.2	-3.5	-2.0	-2.5
Natural change	-0.5	-1.4	-1.3	-1.2
Net migration	-0.7	-2.1	-0.7	-1.3
EU-15				
Total change	6.5	1.5	2.9	4.2
Natural change	2.6	0.3	-0.9	1.3
Net migration	3.9	1.3	3.8	3.0
EU-28				
Total change	5.7	0.2	1.1	2.8
Natural change	2.3	-0.2	-1.1	0.7
Net migration	3.4	0.4	2.2	2.1

Source: Eurostat and DG REGIO calculations

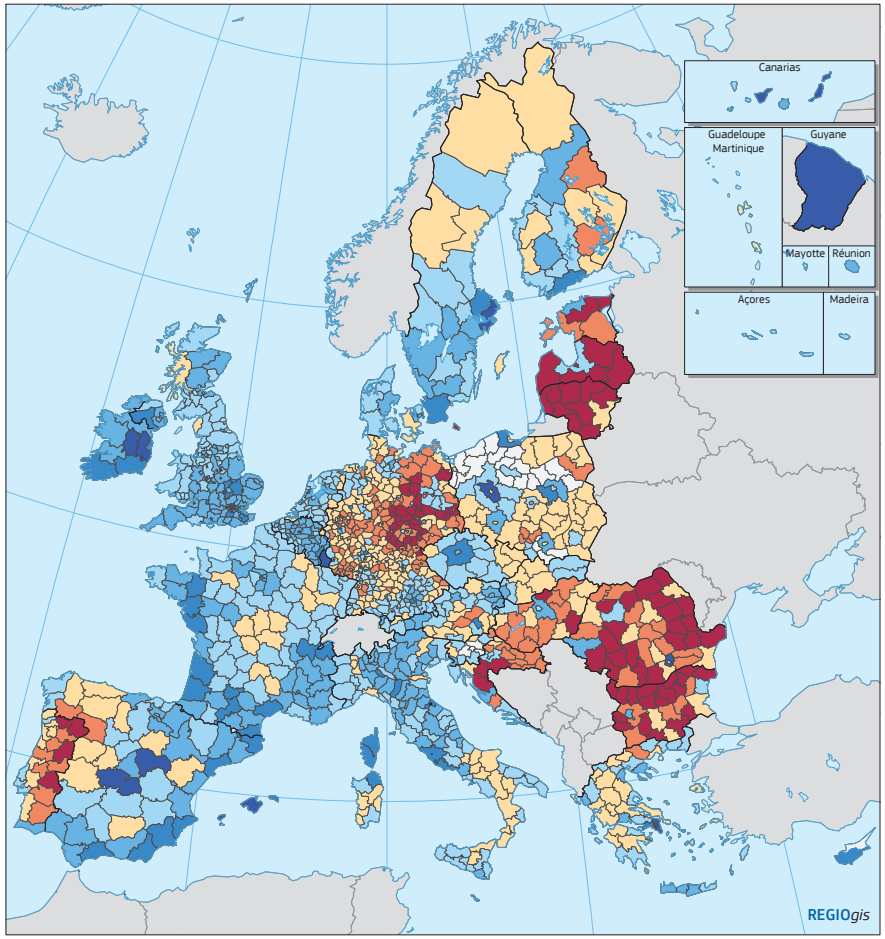
ulation live in such regions, but only 19% of the EU-13 population. The biggest reductions (7.2% on average) occurred in regions where there was both a natural population decline and net outward migration. Only 11% of the EU-15 population live in such a region as against 49% of the EU-13 population (Table 2.1).

Migration from outside the EU and mobility[1] between and within EU Member States is affected by differences in living conditions, unemployment and wage levels as well as the extent of discrimination (ESPON 2017).

Capital metropolitan (metro) regions have experienced the highest population growth, especially in the EU-15 Member States, where population increased by 8% between 2005 and 2015, mainly driven by a natural increase in population (5%) (Table 2.2). In the EU-15, population also increased in other regions (by 4%), mostly driven by net inward migration (which added 3% to the total). In the EU-13, population increased in capital metro regions as well (by 5%), entirely as a result of net inward migration, but both the other metro and non-metro regions lost population, mainly due to net outward migration.

Rural regions tend to have slower population growth than urban ones, but faster growth than intermediate regions in both the EU-13 and the EU-15. In the EU-13, intermediate regions have the highest net outward migration rate, in the EU-15, the lowest net inward migration rate. As a result, in the EU-28, population in intermediate regions

1 Article 45 of the Treaty on European Union and the Treaty on the Functioning of the European Union.



Map 2.3 Total population change in NUTS 3 regions, 2005–2015

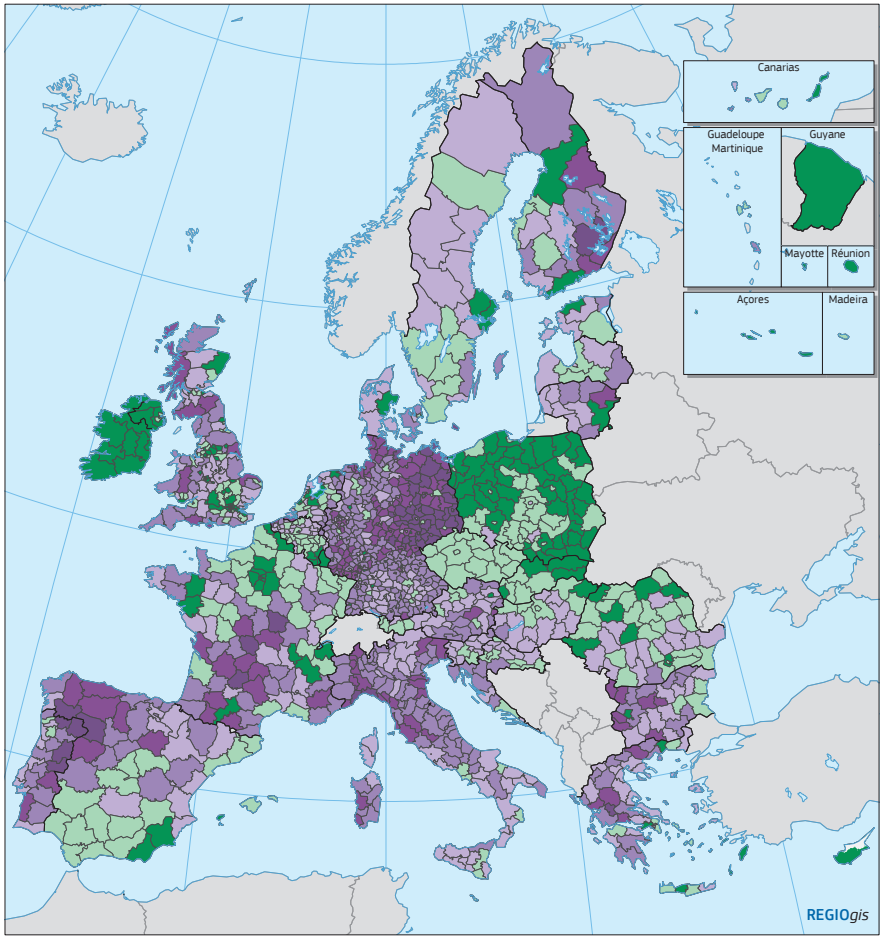
Total change (%)

- < -10
- -10 – -5
- -5 – 0
- 0 – 5
- 5 – 10
- 10 – 15
- > 15
- no data

EU-28 = 2.84
DK, DEA, DED, DEE: data before 2007 was extrapolated.
PL52: NUTS 2
Source: Eurostat, DG REGIO

0 500 km

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Map 2.4 Median age in NUTS 3 regions, 2016

Median age, in years

- 0 – 40
- 40 – 42.5
- 42.5 – 45
- 45 – 47.5
- 47.5 – 50
- 50+

EU-28 = 42.6 years
Source: Eurostat

0 500 km

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Table 2.4 Division of NUTS 3 regions by median age in 2016 and direction of net migration, 2005–2015 (% of total)

Median age (classes)	Net outward migration	Net inward migration
< 40	29%	71%
40 — 50	38%	62%
> 50	73%	27%
Total	38%	62%

Source: Eurostat and DG REGIO calculations

remained unchanged, while it increased by 6% in urban regions and by 1% in rural ones (Table 2.3).

Comparison between net inward migration (Map 2.2) and the median age of population (Map 2.4) indicates that younger people are more mobile than older ones. In the regions with net outward migration, the average age of the population living in the region tends to be higher and vice-versa. At the NUTS 3 level, regions with a young population were more likely to have experienced net inward migration between 2005 and 2015. This was the case for 71% of regions with a median age below 40 (Table 2.4), while 73% of regions with a median age of 50 and above experienced net outward migration. Regions of net outward migration in Portugal, central France, southern Italy, Greece, Bulgaria, Hungary, southern Romania, eastern Germany, Finland and the Baltic States tend, for the most part, to have an older than average population. On the other hand, regions of net inward migration in southern Spain, northern France, London and surrounding areas, north-eastern Scotland and southern Sweden and Finland have a younger than average population, in many cases, migrants being attracted by dynamic urban centres. Accordingly, net outward migration tends to push up the median age of population, since it is disproportionately younger people who move, which also tends to reduce the birth rate so reinforcing the effect on the median age.

The largest shares of young people are in the capital metro regions in the EU-15 — almost 23% of the population was below 20 in 2016 — while those of 65 and older accounted for only 16% (Table 2.5). Many young people come to the capital to study or to find a job. The elderly, who are mostly retired, do not need to be close to employment opportunities and often opt for a more peaceful and a lower cost location outside the capital.

The tendency is the same, even if less pronounced, in other metropolitan regions. In the EU-15, there are about the same number of elderly as young people (21% of both in 2016). Those below 20 are more numerous than those of 65 and older in all three types of region in the EU-13.

2. Employment rates are higher for those born in another EU country than for the native-born

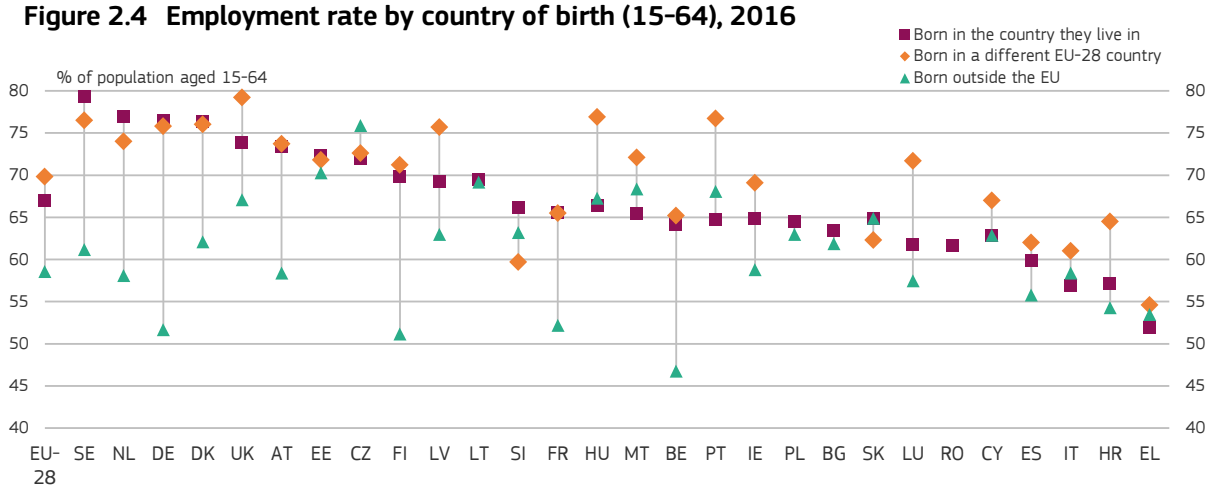
People born in the EU have the right to live and work wherever they choose in the Union, enabling them to gain work experience in other Member States for short periods as well as to move there on a long-term basis. In the EU as a whole, the employment rate of people aged 15–64 born in a different EU country averaged 70% in 2016, slightly higher than that of the native-born (67%) and substantially higher than that of people born outside the EU (59%) (Figure 2.4). In Portugal,

Table 2.5 Division of population age in capital metro, other metro and non-metro regions, 2016

% of total	Age class	Capital metro regions	Other metro regions	Non metro regions	Total
EU-13	less than 20	19.6	19.8	20.5	20.1
	65 or more	17.2	17.0	17.5	17.3
EU-15	less than 20	22.6	20.9	20.7	21.1
	65 or more	16.4	19.5	21.1	19.6
EU-28	less than 20	21.9	20.8	20.6	20.9
	65 or more	16.6	19.1	20.2	19.2

Source: Eurostat and DG REGIO calculations

Figure 2.4 Employment rate by country of birth (15-64), 2016



DE: employment rate by country of citizenship. Figures with a low reliability were not included.
Source: Eurostat

Hungary, Luxembourg, Latvia, Croatia and the UK, the employment rate of other EU-born was markedly higher than that of the native-born.

People born outside the EU, on the other hand, face multiple challenges to find a job. In most Member States, for which there are reasonably reliable data, the employment rate of non-EU born was lower than that of either the native-born or other EU-born, including in countries with a large share of non-EU born such as Sweden, Belgium, the Netherlands and France. Speaking the local language, having the right qualifications and having them recognised are only some of the difficulties the people concerned face in finding a job.

In most EU countries, the rate of employment of the native-born is higher than that of those born outside the EU, regardless of education level, whether basic, upper secondary or tertiary[2]. In some countries (Cyprus, Czech Republic, Spain, Greece, Italy, Luxembourg, Malta, Slovenia) the rate of employment of non-EU born, according to data for 2016, is higher than that of the native-born, but only for those with basic education.

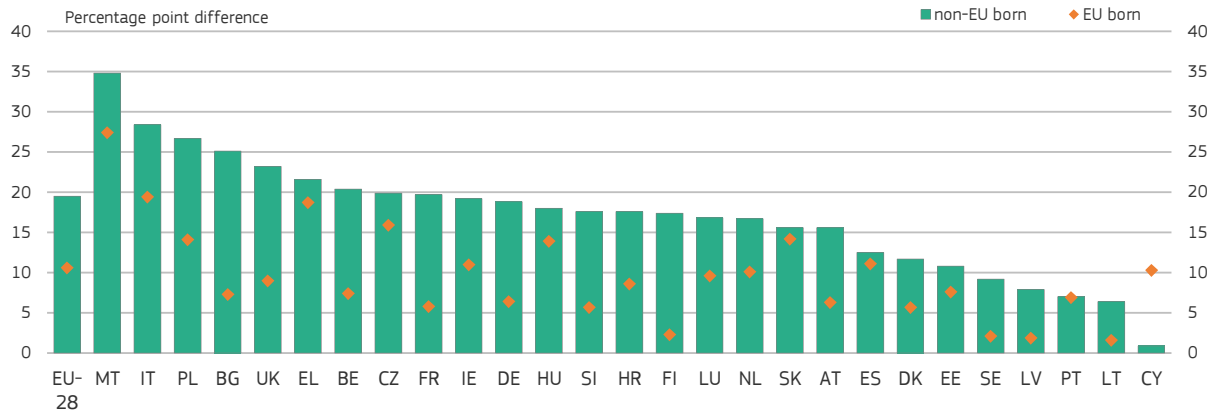
The Skills Profile Tool for non-EU nationals

To help non-EU nationals integrate into the labour market, the European Commission, in June 2017, launched a new Skill Profile Tool, a multilingual means of making it easier for non-EU nationals to have their skills, qualifications and experience recognised, such as in reception centres and by public employment services and other organisations working with migrants As such, it is intended to guide third country nationals towards the most suitable training, education or employment and to identify their needs in these respects. Around a quarter of non-EU nationals in the EU have tertiary education, but around two-thirds of them are inactive, unemployed or overqualified for the work they do. The new Tool is aimed at helping those with such an education level to find a job that matches their qualifications as well as those with lower qualification who need further education and training.

For more information: https://ec.europa.eu/education/news/20170725-commission-launches-online-tool-help-integrate-newly-arrived-non-EU-nationals_en

2 Data come from the Labour Force Survey. 'Basic' is lower secondary education or less (i.e. ISCED levels 0, 1 and 2); 'upper secondary' includes upper secondary and post-secondary, pre-tertiary (i.e. ISCED levels 3 and 4) and 'tertiary' is university and equivalent (i.e. ISCED levels 5-8).

Figure 2.5 Employment rate gap between native-born men and women and non-EU born (20–64), 2016



DE: employment rates by citizenship; RO: data for non-EU born not available.
Source: Eurostat

Gender also plays a role. Employment rates of men are higher than for women in all countries, irrespective of the country of birth, but especially so for the non-EU born (Figure 2.5). In Belgium, Greece, the UK, Bulgaria, Poland Italy and Malta, the difference for the latter was over 20 percentage points in 2016, reflecting in part cultural norms, lack of opportunity and inadequate wages in respect of the women concerned.

3. Asylum seekers and refugees

In 2015, EU Member States received 1.2 million first-time applications for international protection and the same number again in 2016. As a share of the current non-EU born population, the yearly inflow in 2015 and 2016 together amounted to 7% at EU level (18% in both Germany and Finland, 16% in Sweden) and 0.5% in terms of total population (1.8% in Sweden and 1.5% in Austria). If confined to the number of positive first instance asylum decisions, it was only around 0.1% of the population (being highest in Sweden and Germany at 0.7% and 0.5%, respectively)[3]. The increase in asylum seekers brought with it an increased flow of the most vulnerable group seeking asylum, namely unaccompanied minors[4], whose numbers in the EU almost doubled between 2013 and 2014 (from 13 000 to 23 000) and almost quadrupled in the following year (92 205 in 2015, 59% of whom were hosted in Sweden and Germany). Although it declined in 2016, it was still at a relatively high level (63 280). By their nature, those concerned require additional protection and integration as-

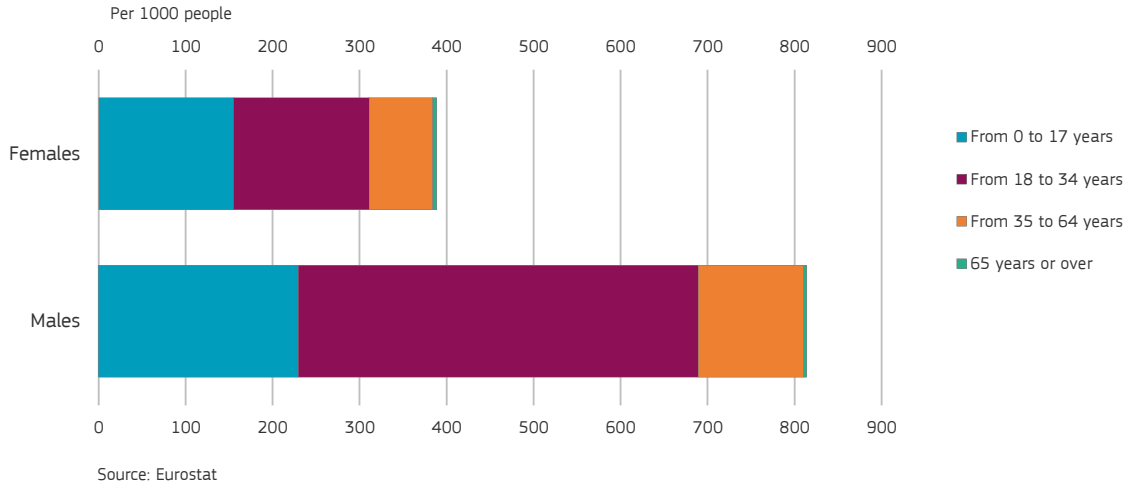
The Action Plan against Migrant Smuggling

The fight against migrant smuggling has been part of EU policies tackling irregular migration for more than a decade. In 2002, the EU adopted a legal framework on smuggling in the form of a Directive defining the facilitation of unauthorised entry, transit and residence and the strengthening of the penalties for these offences. The crisis in 2015 for the countries along the Eastern Mediterranean route called for a common and coordinated response that, in May 2015, took the form of an Action Plan against Migrant Smuggling designed to transform smuggling from a 'high profit, low risk' activity into a 'high risk, low profit' one, while ensuring full respect for, and protection of, the human rights of migrants.

3 Hungary has seen a large inflow (2.1% of its total population in 2015 and 2016) but mostly as a transit country, as the ratio of asylum decisions to applications was only 2%, indicating many people absconding and highlighting the need to consider asylum decisions as well when measuring asylum seeker inflow.

4 Unaccompanied minors are generally defined as those under the age of 18 who arrive without parents, other adult relatives or guardians (UNHCR).

Figure 2.6 First-time asylum applications in the EU-28 by gender and age, 2016



Source: Eurostat

sistance to find the most sustainable solutions for them.

The distribution of asylum seekers across the EU is highly uneven. Germany, in particular, received more first-time asylum applications than all other EU countries combined in 2016. Not all these have been, or will be, granted refugee status and not all want to stay. Accordingly, at this stage, it is too early to say how many will remain in the EU.

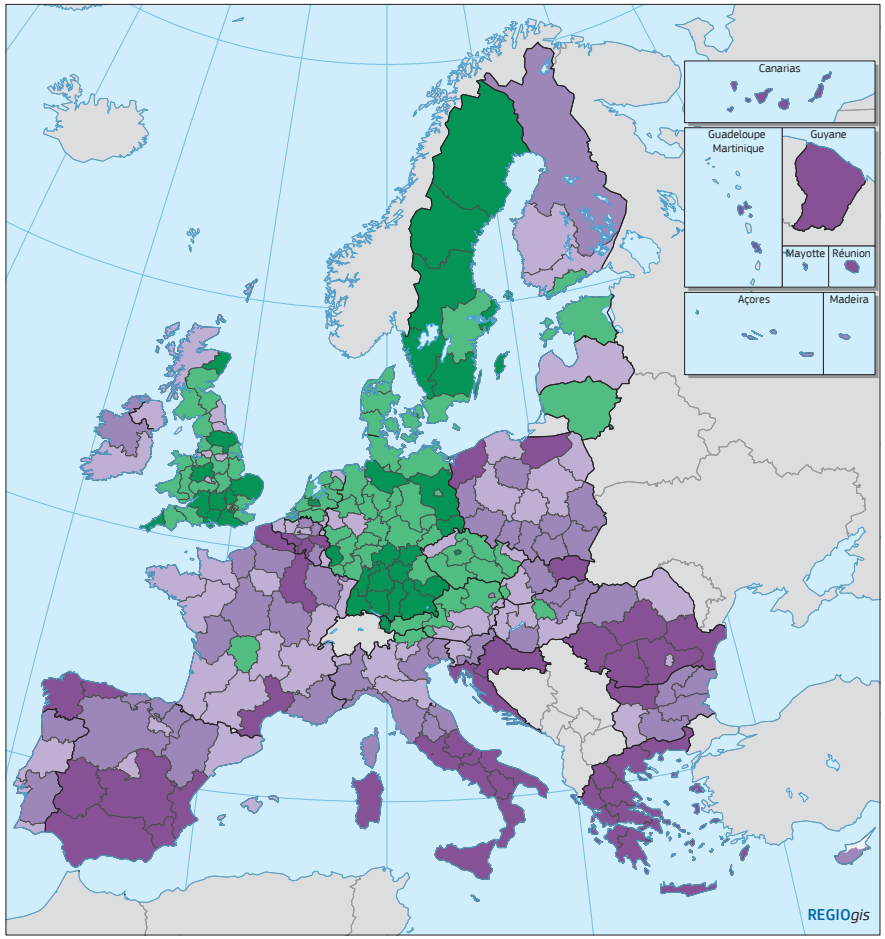
Recent asylum seekers are predominantly young and male, a disproportionate number being men aged 18–34 (Figure 2.6).

The rapid influx represented a challenge for the local authorities to provide asylum seekers with food and shelter in the areas where they arrive. Integrating them into EU society will require language training, education and help in finding a job or setting up a business. The evidence from an *ad hoc* LFS survey in 2014 is that refugees face considerable problems in integrating into the labour market, as reflected in their significantly lower employment rates than other non-EU born residents and the EU-born population in most Member States (European Commission 2016f). Low participation rates among women, a large proportion of people without upper secondary education and low levels of proficiency in the local language underlie this tendency (European Commission 2016b, Dumont et al. 2016). While the chances of refugees and others born outside the EU being employed increases significantly with their education level, the increase is smaller than for the native born or other-EU born (European Commission 2015b, 2016d).

4. The employment rate has surpassed its pre-crisis level, but unemployment rates are still too high

In 2016, the EU employment rate for those aged 20–64 (Map 2.5) exceeded the pre-crisis level for the first time. At 71%, it is higher than the previous high in 2008 of 70%, though only slightly. The rate has not recovered, however, in all parts of the EU. In Greece, it is still 10 percentage points lower than before the crisis, in Cyprus 8 points lower and in Spain 5 (Map 2.6). On the other hand, it was 10 percentage points higher in Hungary and Malta.

Only 6 Member States (Sweden, Germany, Denmark, UK, Estonia and Netherlands) had an employment rate in 2016 above the Europe 2020 target of 75%. In more than half of Member States it was below 70% and in Greece, Spain, Croatia, France and Italy, below 65%. The impact of the crisis on employment rates has made it unlikely that the target will be reached by 2020.



Map 2.5 Employment rate (20–64), 2016

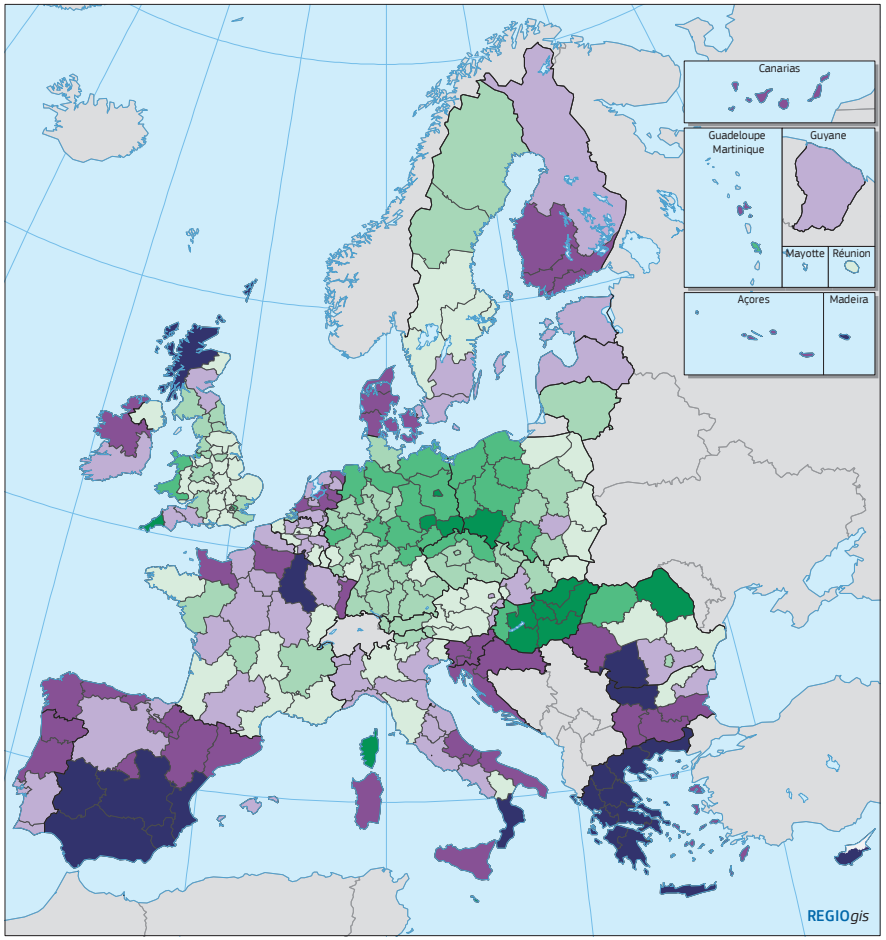
% of population aged 20–64

- < 65
- 65 – 70
- 70 – 75
- 75 – 80
- > 80

EU-28 = 71
The Europe 2020 target is 75
Source: Eurostat

0 500 km

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Map 2.6 Change in employment rate (20-64), 2008–2016

Percentage point change

- < -5
- -5 – -2.5
- -2.5 – 0
- 0 – 2.5
- 2.5 – 5
- 5 – 7.5
- > 7.5
- no data

EU-28 = 0.8
Source: Eurostat, DG REGIO

0 500 km

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Table 2.6 Employment and unemployment by category of region, 2016 and change 2008–2016

		Less developed regions	Transition regions	More developed regions	EU
Employment rate	2016	65.0	67.7	74.2	71.1
	change 2008–2016	1.1	-0.2	0.8	0.8
Unemployment rate	2016	9.5	12.3	7.4	8.5
	change 2008–2016	1.7	2.0	1.4	1.5

Source: Eurostat, Labour Force Survey

Table 2.7 Youth unemployment, those not in employment, education or training (15–24) and participation in education and training (25–64) by category of region, 2008–2016

		Less developed regions	Transition regions	More developed regions	EU
Youth unemployment rate (% of labour force 15–24)	2016	24.4	27.3	16.7	18.7
	change 2008–2016	4.7	6.4	2.9	2.8
Not in employment, education or training (% population 15–24)	2016	15.4	13.7	9.6	11.5
	change 2008–2016	2.6	0.0	0.3	0.6
Participation in education and training (% population 25–64)	2016	4.6	11.6	12.9	10.8
	change 2008–2016	0.2	2.2	1.8	1.3

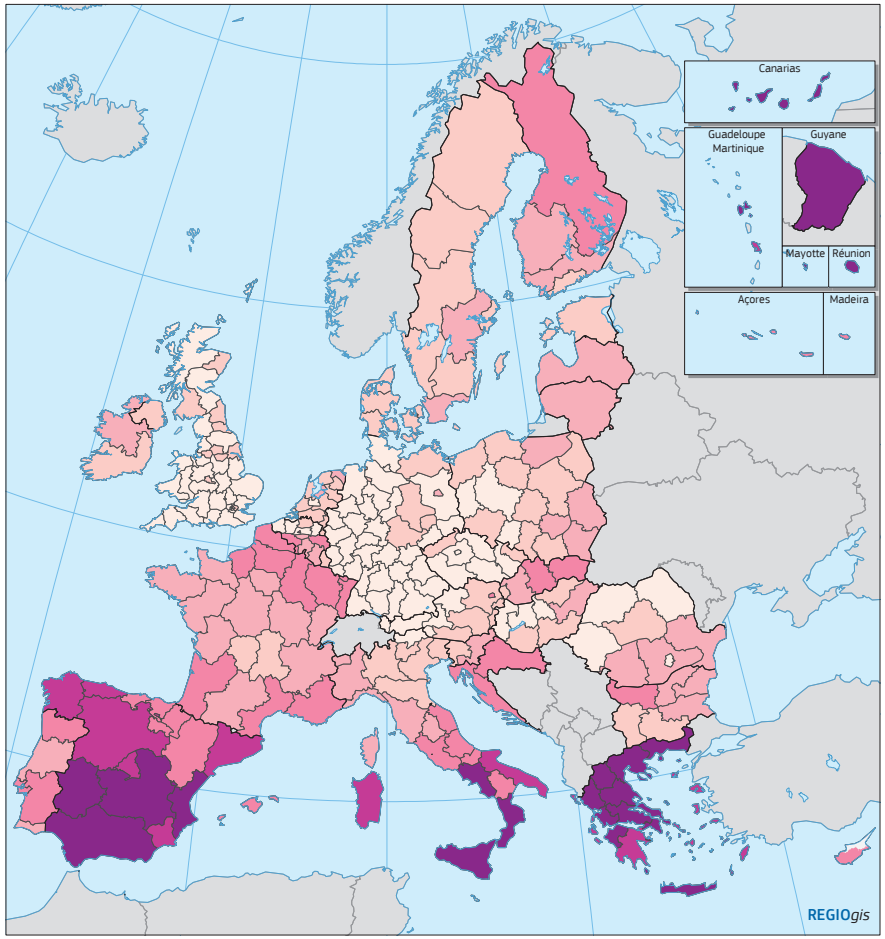
Source: Eurostat, Labour Force Survey

The rate, however, varies markedly between types of region. The average employment rate in more developed regions[5] was 74.2% in 2016, quite close to the 75% target (Table 2.6). In the less developed regions the average rate was well below the target, at only 65%. While it increased slightly in these regions between 2008 and 2016, in the transition regions, it did not increase at all. The increases in employment rates in regions where rates are low at least means that after several years of divergence, regional disparities in employment have started to narrow again.

Between 2008 and 2016, unemployment increased at the same time as employment rates went up, which means that the rate of job creation lagged behind the growth in the labour force. Although the unemployment rate fell from a high of 10.9% in 2013 to 8.6% in 2016 (Map 2.7), this was still higher than in 2008 (7%). While in some northern and eastern parts of the EU, rates were lower than before the crisis, in the southern Member States, rates were up to 10 percentage points higher (Map 2.8). In several regions in Greece, Italy and Spain and in the French outermost regions, rates were still over 20%.

The youth (15–24) unemployment rate declined from a high of 23.7% in 2013 to 18.7% in 2016, but it remains well above the level before the crisis of 15.9% in 2008 (Table 2.7). The rate in 2016 was particularly high in the less developed regions (averaging 24%) but it was even more so in the transition ones (27%). The share of young people neither in employment nor in education or training (the NEET rate) has also declined, in this case from a high of 13.2% in 2012 to 11.5% in 2016, only slightly above the 2008 level (10.9%). The NEET rate was also highest in the less developed and transition regions (Map 2.9).

5 See Lexicon for the definition of less developed, transition and more developed regions.



Map 2.7 Unemployment rate, 2016

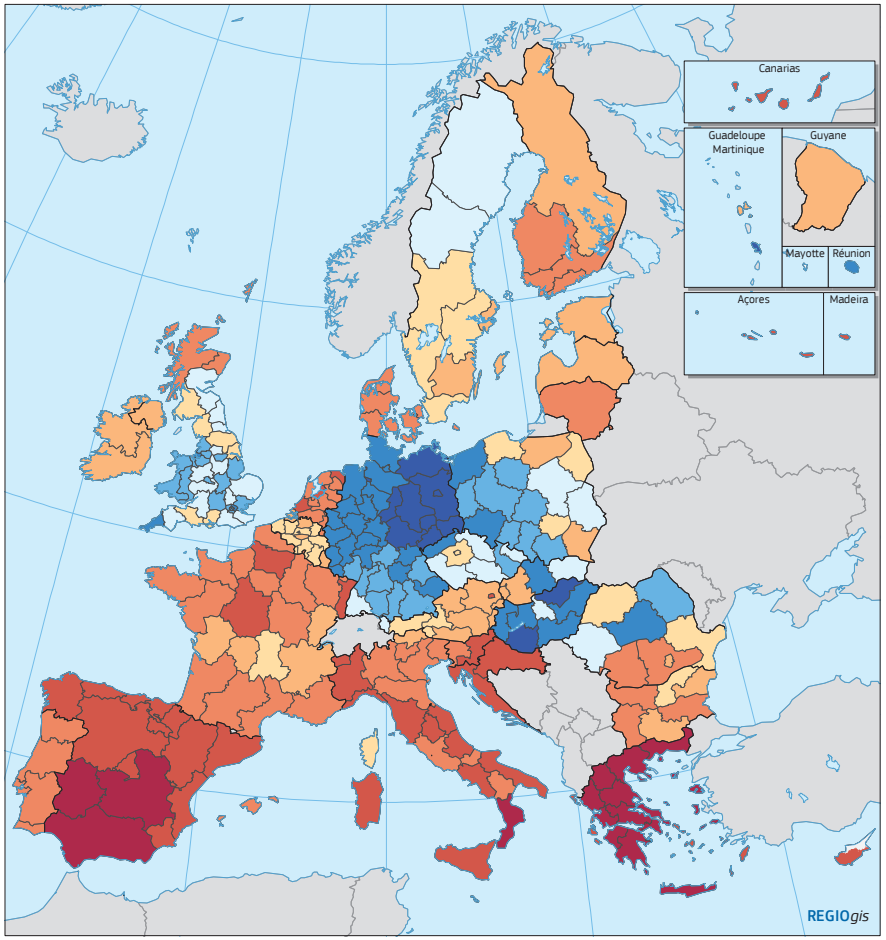
% of labour force

- < 5
- 5 – 7.5
- 7.5 – 10
- 10 – 15
- 15 – 20
- > 20

EU-28 = 8.6
Source: Eurostat

0 500 km

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Map 2.8 Change in unemployment rates, 2008–2016

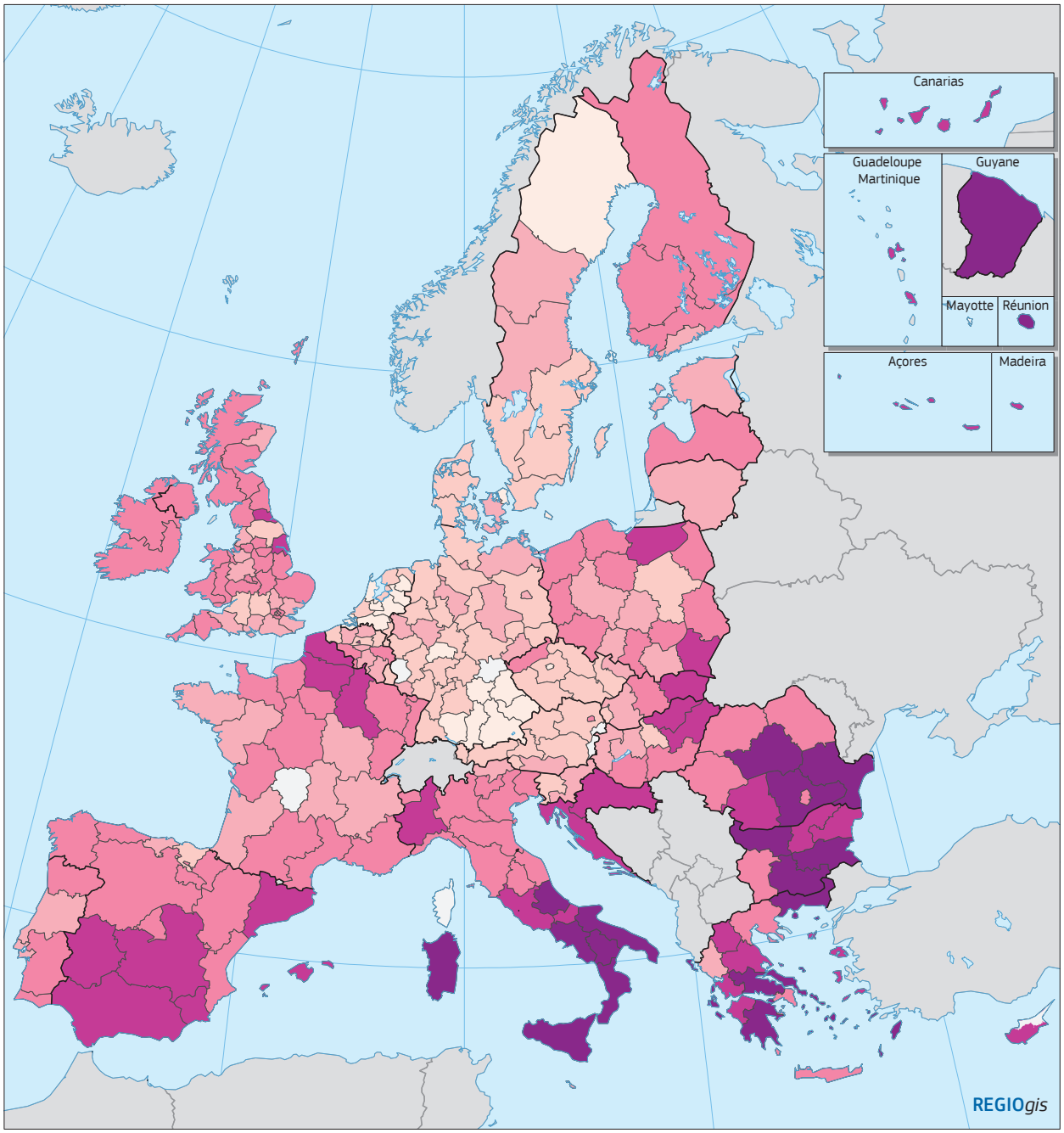
Percentage point change

- < -4
- -4 – -2
- -2 – -1
- -1 – 0
- 0 – 1
- 1 – 2
- 2 – 4
- 4 – 10
- > 10
- no data

EU-28 = 1.5
Sources: Eurostat, DG REGIO

0 500 km

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Map 2.9 Young people (15–24) not in employment, education or training (NEET), 2016

% of population aged 15–24

- < 5
- 5 – 7.5
- 7.5 – 10
- 10 – 15
- 15 – 20
- > 20
- no data

EU-28 = 11.5
Source: Eurostat

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Measures to combat unemployment and social exclusion among young people

Young people are one of Europe's greatest assets for the future. The economic crisis hit young people particularly hard. It has widened the gap between those with more opportunities and those with fewer. Some are increasingly excluded from social and civic life and, worse still, a number are at risk of disengagement, marginalisation and even radicalisation. This is why the Commission and Member States have increased their efforts since 2013 to improve their employability, their integration into the labour market, and their inclusion and participation in society In the face of a growing socio-economic divide, policy must continue tackling the deep-seated social problems that many young people face. Sustainable solutions need to be found to reduce youth unemployment, strengthen social inclusion and prevent violent radicalisation. This requires more systematic cooperation across a range of policies at EU and Member State level in respect of employment, education, training and social policy as well as culture, sport and health. The 'cooperation framework for youth', EU funding under the Erasmus+ programme, the European Social Fund (ESF) and the Youth Employment Initiative (YEI) are all targeted at young people to help them find quality jobs, participate in social life and develop their full potential.

5. Education and training

In a fast-changing, technology-driven world, people need to have access to opportunities continuously to update and improve their skills as well as to acquire new ones. This is vital not only to enable them to remain in employment and advance in their careers but also to boost productivity and the competitiveness of the economy.

To this end, EU Member States set a target in 2010 that by 2020, 15% of those aged 25–64 should be taking part in continuing training as compared with only just over 9% at the time. Progress towards this target, however, has been slow. By 2016, the figure had risen to only just under 11%. The target had been reached or exceeded in only 7 Member States and there were pronounced disparities not only between but also within countries, especially in Italy, France, the Czech Republic, Hungary and Germany (Map 2.10).

Stronger efforts are needed to encourage low-qualified adults in particular to participate in training, since there is a larger proportion of people with only basic schooling in the EU than in other industrialised economies. Because such people are the least likely to participate in training, engaging them is particularly challenging. The New Skills Agenda for Europe includes recommendations to tackle this issue (see Box).

Upskilling Pathways: new opportunities for adults

The Recommendation, adopted by the Council in December 2016, calls on Member States to develop a linked series of targeted interventions, establishing a 'pathway' of support for low-skilled or low-qualified adults, of whom there are 64 million in the EU. The aim is to support them to improve their literacy, numeracy and digital skills and to acquire a broader set of competences by increasing their qualifications. Each would be offered:

- a skills assessment, to identify existing skills and upskilling needs;
- an offer of education or training on the basis of this;
- opportunities to have the skills acquired validated and recognised.

These three steps will be accompanied by outreach and support measures.

Implementation by Member States can be supported by funding from the ESF, Erasmus+ and other sources. By mid-2018, Member States need to outline the measures they will take to implement the Recommendation, including the groups of low-skilled adults they will give priority to.

One of the Europe 2020 targets is to reduce the share of early school leavers to 10% or less. At the EU level, the share of those aged 18–24 with no qualifications beyond basic schooling and no longer in education or training in the 2014–2016 period was 11%, close to the target, but with wide differences between and within countries (Map 2.11). In Spain, Portugal, Italy, Bulgaria and Romania, for example, the share in almost all regions is far above the target, whereas in Belgium, Germany, the UK and Greece, there is a large variation between regions, with some close to the target or below and others far above. In the Bruxelles-Capital region, for instance, 15% of 18 to 24 year-olds were early school-leavers against a country average of just below 10%.

High rates of early school-leaving may be linked to pockets of socio-economic deprivation, often with high concentrations of migrants, where schools are of low quality and are less capable of retaining students. This is particularly the case in larger cities.

Education and continuing training have recently been confirmed to be among the main drivers of economic growth, a larger proportion of poorly educated people being more detrimental to growth than a smaller proportion of highly educated ones.

The results of the 2016 PISA (the OECD Programme for International Student Assessment) survey of 15 year-olds shows, in line with previous surveys, that competence in maths is particularly problem-

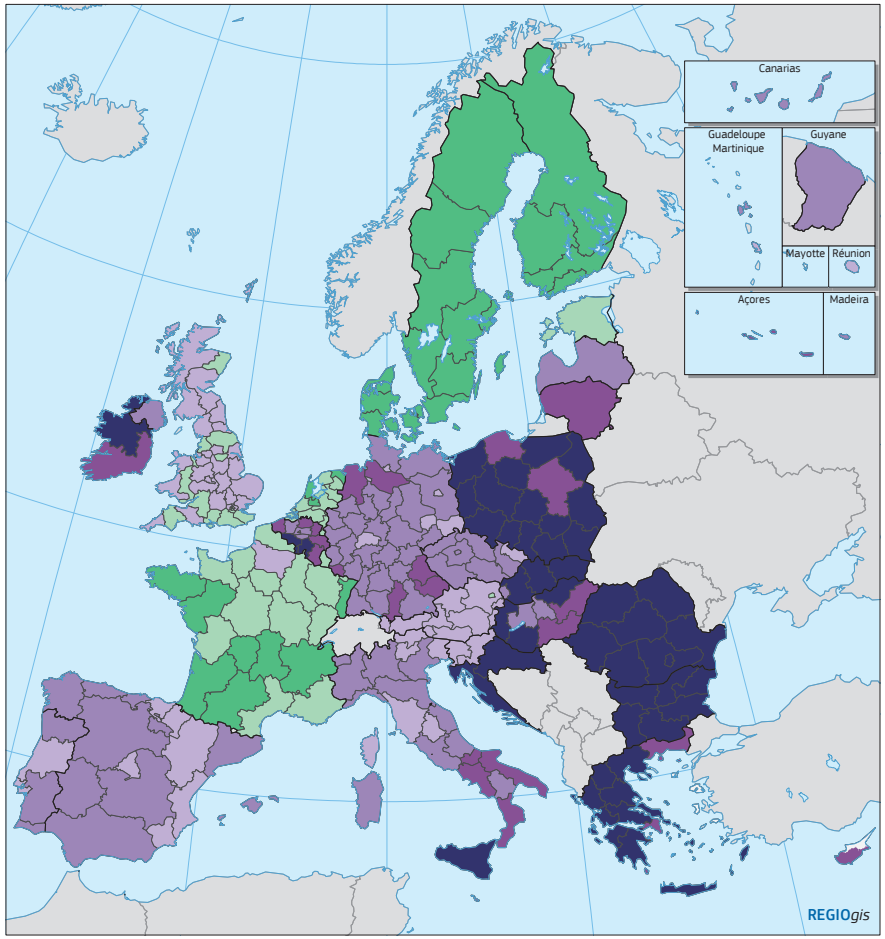
The New Skills Agenda for Europe

The New Skills Agenda for Europe[1], adopted on 10 June 2016, called on Members States, social partners, industry and other stakeholders to work together to raise the quality and relevance of skills training, to make skills more visible and comparable across countries and to improve the information on skills to enable better career choices. It launched 10 key actions:

- A Skills Guarantee to help low-skilled adults acquire a minimum level of literacy, numeracy and digital skills and progress towards an upper secondary qualification (adopted as Council Recommendation of 19 December 2016 on Upskilling Pathways: New Opportunities for Adults[2]).
- A review of the Recommendation on Key Competences to help more people acquire the core set of skills necessary to work and live in the 21st century, with a special focus on promoting entrepreneurial and innovation-oriented mindsets and skills.
- Making Vocational Education and Training (VET) a first choice by increasing opportunities for VET participants to undertake work experience and by highlighting the favourable career prospects open to them.
- The 'Digital Skills and Jobs Coalition' to support cooperation among education, employment and industry stakeholders to boost the supply of digital skills.
- A review of the European Qualifications Framework and the related annexes to increase understanding of qualifications and to make better use of available skills in the labour market.
- A 'Skills Profile Tool Kit for Third Country Nationals' to support early identification and profiling of the skills and qualifications of asylum seekers, refugees and other migrants.
- A revision of the Europass Framework to give people better and easier-to-use means of presenting their skills and of obtaining real-time information on skill needs and trends which can help with their career and learning choices.
- The 'Blueprint for Sectoral Cooperation on Skills' to improve intelligence on skills and to tackle skill shortages in particular sectors.
- Further analysis and sharing of examples of best practice to tackle the brain drain.
- A Graduate Tracking initiative to assemble information on their performance.

1 European Commission 'The New Skills Agenda for Europe', COM (2016) 381 of 10 June 2016.

2 Official Journal C484 of 24 December 2016, p1.



Map 2.10 Participation of adults aged 25–64 in education and training, 2016

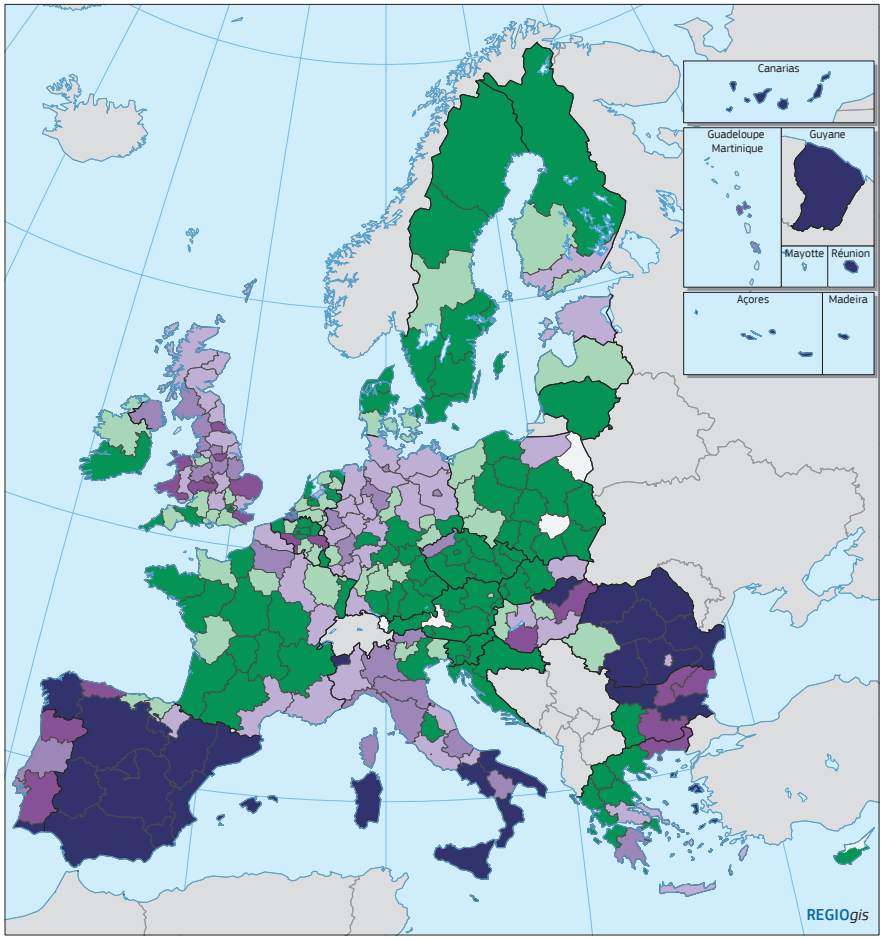
% of population aged 25–64

- < 5
- 5 – 7
- 7 – 10
- 10 – 15
- 15 – 20
- > 20

EU-28 = 10.8
The Europe 2020 target is 15%.
Source: Eurostat

0 500 km

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Map 2.11 Early school-leavers from education or training aged 18–24, average 2014–2016

% of population aged 18–24

- < 8
- 8 – 10
- 10 – 12
- 12 – 14
- 14 – 16
- > 16
- no data

EU-28 = 11
The Europe 2020 target is 10.
Source: Eurostat, DG REGIO

0 500 km

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atic in the EU, with over 22% of those tested having a low proficiency (Map 2.12). Around 20% of those tested in the EU also had insufficient understanding of what they read and a low proficiency in science. The largest proportions with low proficiency (over 35% in all three disciplines) were in Bulgaria, Romania and Cyprus, while at the other end of the scale, Finland, Estonia and Ireland had reached the Europe 2020 target of no more than 15% of low achievers in the three disciplines, and Denmark and Slovenia were close to it.

Vocational education and training (VET) can improve job-specific and transversal skills, facilitating the transition to employment and maintaining and updating the skills of the work force. Over 13 million people enrol in initial VET programmes every year in the EU. Yet labour market forecasts indicate an upcoming shortage of people with VET qualifications in a number of Member States. Those with recent VET qualifications at upper secondary level generally have a smoother transition from education to the labour market and higher employment rates than those with upper secondary qualifications from general education pathways who do not go on to complete tertiary education[6].

The evidence suggests that VET programmes lead to better employment outcomes than non-tertiary general oriented ones. In 2015, those who had recently completed initial VET had an average employment rate of 73% in the EU, as against one of 61% for those who had recently completed upper secondary general education and had not gone on to tertiary education. The biggest difference was in Belgium, Germany, Estonia, and Cyprus. Only in 6 countries (the Czech Republic, Ireland, France, Malta, Finland and UK)[7] was the average employment rate of those with VET qualifications similar or lower than those completing general upper secondary programmes.

Measures to support apprenticeships

The European Alliance for Apprenticeships was launched in 2013 as a multi-stakeholder platform at EU level to improve the quality, supply and image of apprenticeships and to promote international mobility among apprentices. In addition, the European Pact for Youth was initiated in 2015 by CSR Europe (European business network for Corporate Social Responsibility) to bring together business and relevant stakeholders to create apprenticeships, traineeships, internships and entry-level jobs for young people. The latest 2017 Commission Work Programme and the Communication on «Investing in Europe's Youth»[1] also announced that the Commission will propose a Council Recommendation for a Quality Framework for Apprenticeships.

1 European Commission 'Investing in Europe's youth' COM (2016) 940 of 7 December 2016.

Despite this, for many young people and their parents, VET is not seen as an attractive option, suggesting perhaps a need to improve the labour market relevance of VET programmes. Too few programmes at present fully exploit the potential of work-based training or provide opportunities to progress to tertiary education. As a response, Member States agreed in 2015[8] to further strengthen key competences in VET curricula and provide more effective opportunities to acquire or develop these skills.

6. Adult proficiency in literacy and numeracy needs to be raised in several EU Member States

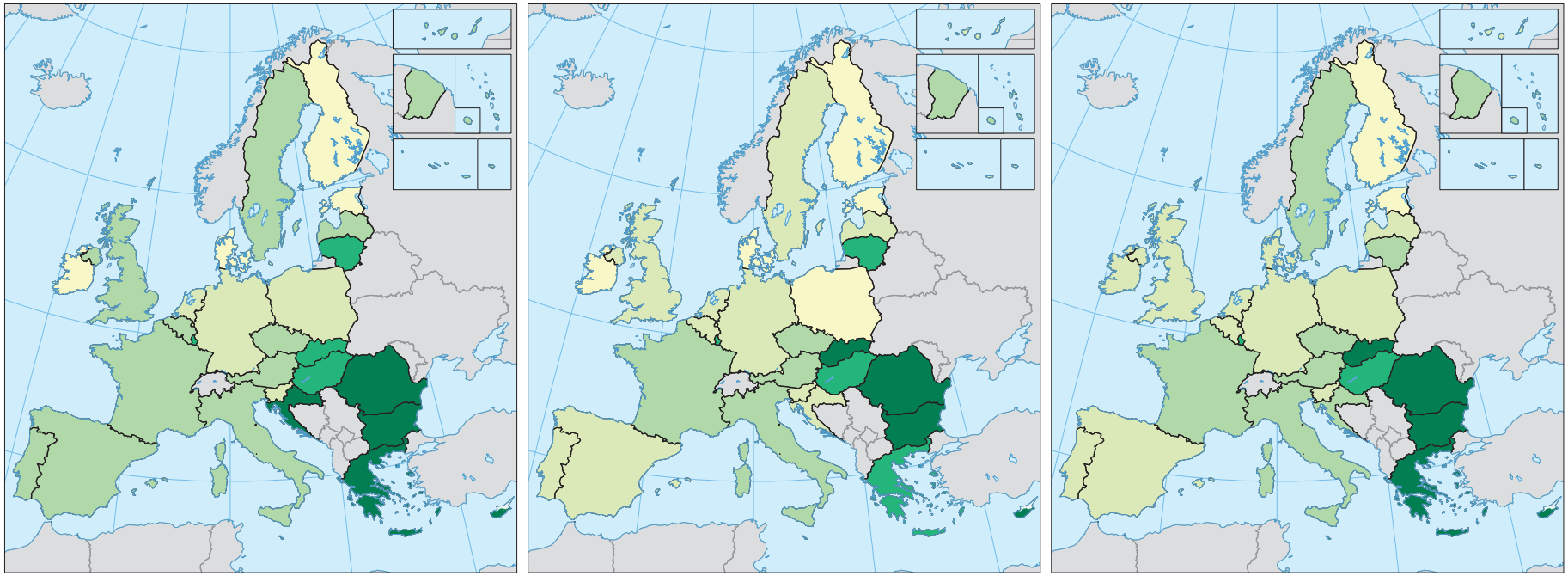
The ability to read and understand both literary and numerical information is essential for full participation in society and the economy. Without adequate skills of these kinds, people are likely to

6 The indicator measures the employment rates of persons aged 20 to 34 having completed education 1–3 years before the survey with a diploma from upper secondary education (ISCED 3) or post-secondary non tertiary education (ISCED 4), and who are currently not enrolled in any further formal or non-formal education or training, out of the people in the same age group.

7 European Commission, (2016b).

8 'Riga Conclusions 2015 on a new set of medium-term deliverables in respect of VET for the period 2015–2020'.Conclusions of the Council of Ministers in charge of vocational education and training. Available at: http://www.izm.gov.lv/images/RigaConclusions_2015.pdf

Map 2.12 Proportion of 15-year-olds with low proficiency in mathematics, reading and science, 2016



Mathematics

% of 15 year old students with a proficiency below level 2 in PISA

- < 15
- 15 – 20
- 20 – 25
- 25 – 30
- > 30

EU-28 average = 22.11
Source: OECD PISA, 2016

Reading

% of 15 year old pupils with a proficiency below level 2 in PISA

- < 15
- 15 – 20
- 20 – 25
- 25 – 30
- > 30

EU-28 average = 19.38
Source: OECD PISA, 2016

Science

% of 15 year old students with a proficiency below level 2 in PISA

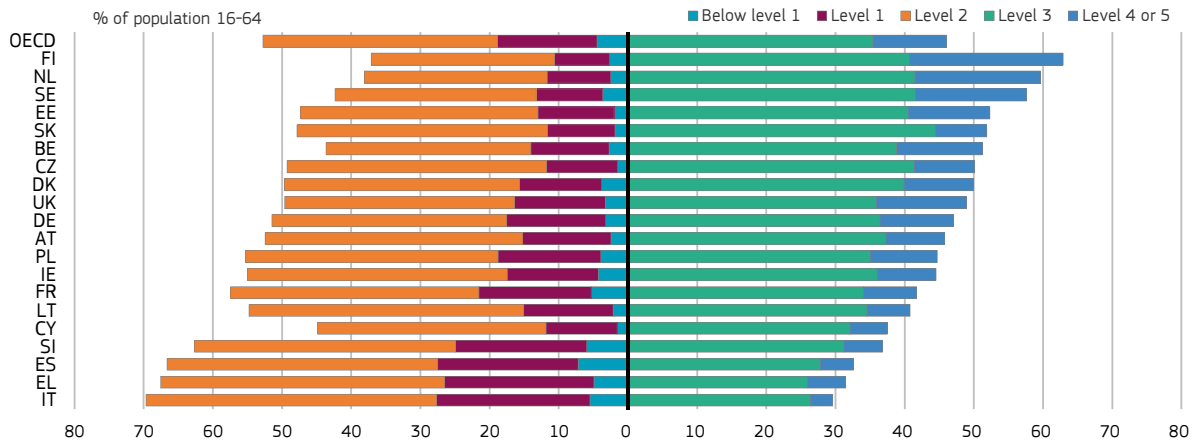
- < 15
- 15 – 20
- 20 – 25
- 25 – 30
- > 30

EU-28 average = 20.55
Source: OECD PISA, 2016

0 1 000 km

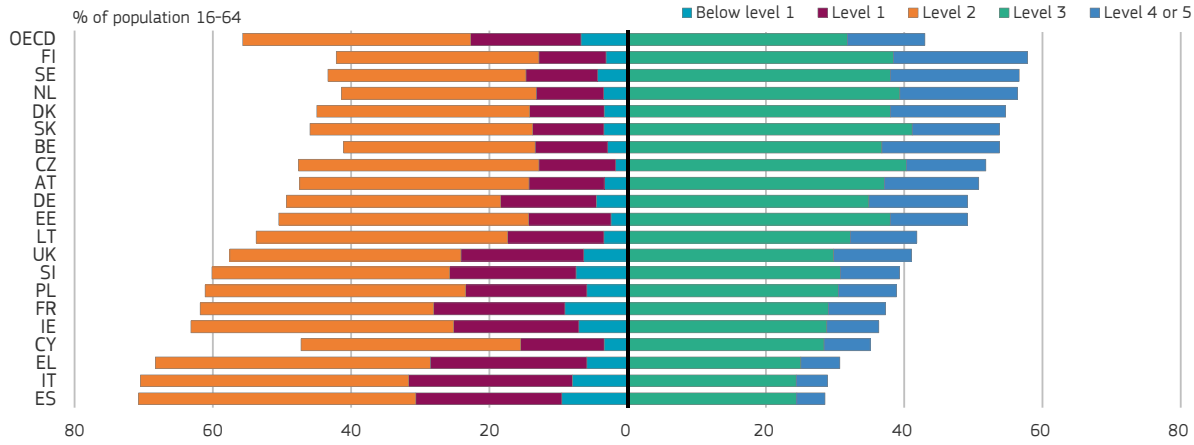
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Figure 2.7 Literacy proficiency of adults (16-64), 2016



Adults who are not classified are not included. UK includes only England and N. Ireland; BE includes only Flanders.
Source: OECD (2016), Skills Matter: Further Results from the Survey of Adult Skills, OECD Skills Studies, OECD Publishing, Paris

Figure 2.8 Numeracy proficiency of adults (16-64), 2016



Adults who are not classified are not included. UK includes only England and N. Ireland; BE includes only Flanders.
Source: OECD (2016), Skills Matter: Further Results from the Survey of Adult Skills, OECD Skills Studies, OECD Publishing, Paris

remain at the margins of society and to face significant barriers in finding a decent job.

In practice, in most Member States, substantial numbers of people have low levels of proficiency in reading and maths, as indicated by the Survey of Adult Skills (PIAAC carried out by the OECD with support from the European Commission), which assesses the ability of people aged 16 and over in these respects (Figures 2.7 and 2.8). According to the survey, the highest levels of literacy and numeracy are in Finland, the Netherlands and Sweden together with Japan. By contrast, levels are relatively low in Spain, Greece and Italy. The survey shows, moreover, that high levels of inequality in literacy and numeracy are related to inequality in the distribution of income.

7. Poverty and social exclusion is declining in the EU-13 but growing in cities in the EU-15

Clear signs of a general improvement in the social situation in the EU are emerging, though divergences among Member States remain. In 2015, almost a quarter (23.7%) of people in the EU were

What it means to be at risk of poverty or social exclusion

A set of indicators is used to measure poverty or social exclusion in the EU. The headline indicator for those at risk of poverty or social exclusion (AROPE) consists of a combination of three indicators:

- At risk of poverty (or relative monetary poverty) measures the percentage of people living in a household with equivalised disposable income in the previous year below the at-risk-of-poverty threshold set at 60% of the national median.
- Severe material deprivation measures the percentage of people who report to the EU-SILC survey that they are unable to afford any 4 of 9 items included in the survey[1].
- Living in a households with very low work intensity measures the percentage of people living in households where those aged 18–59 worked for only 20% or less of the time they could potentially have worked during the past year if they had worked full-time throughout the year.

People identified as being at risk of poverty or social exclusion are those recorded under any one of these three indicators.

EU Statistics on Income and Living Conditions (EU-SILC)

The EU Statistics on Income and Living Conditions (EU-SILC) is the main source of data in the EU on poverty and social exclusion. The survey from which the statistics are derived covers a representative sample of households in all Member States. The survey is carried out each year and the data on income, and therefore the risk of poverty, and work intensity relate to the year preceding the survey — i.e. for 2015, the risk of poverty and low work intensity relate to 2014 while material deprivation relates to the year of the survey, i.e. 2015.

1 The 9 items are a colour TV; a washing machine; a telephone; a car; a meal of meat or fish or the equivalent every other day; a week's annual holiday away from home; an ability to avoid being in arrears on mortgage payments, rent, utility bills, hire purchase instalments or loans; an ability to make ends meet and an ability to keep the house adequately warm.

recorded as being at risk of poverty or social exclusion, the poverty indicator targeted by Europe 2020 (see Box). The proportion increased during the crisis between 2008 and 2012 but then fell back to the 2008 level. This reduction, which was common to most Member States, followed increases in incomes as a result of the recovery in economic activity, improvements in labour markets and reductions in those affected by severe material deprivation and those living in low work intensity households (two of the components of the indicator). The proportion at risk of poverty, on the other hand was 1 percentage point higher in 2015 than in 2008[9].

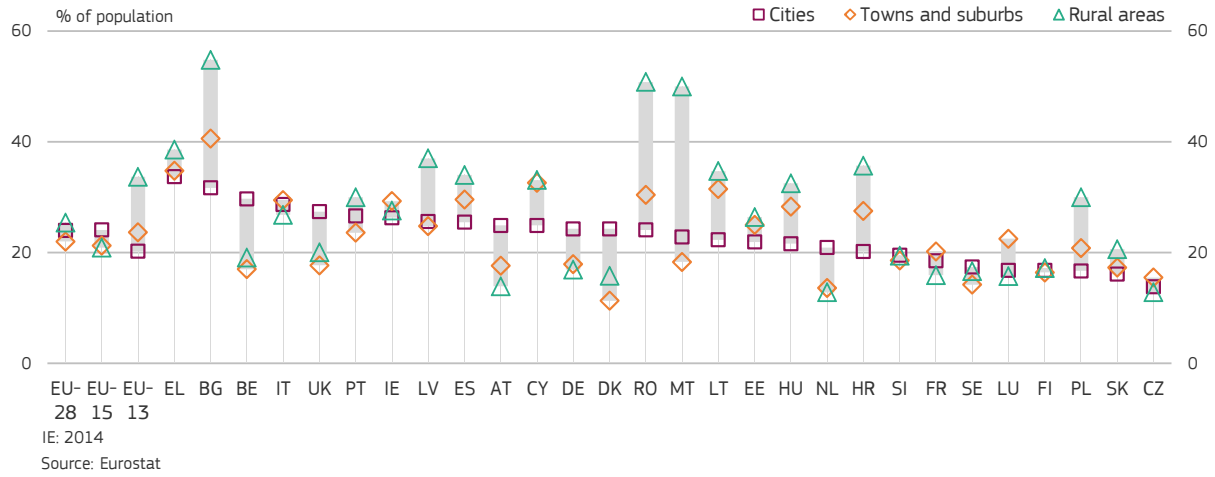
Despite positive signs, the risk of poverty or social exclusion remains a key challenge especially in the Baltic and southern Member States. The risk remains high despite improvements in Bulgaria, Croatia, Latvia, Lithuania, Romania and Greece, and it has been rising in Cyprus and Italy. Together with an increase in inequality in many Member States, it is one of the main challenges to social cohesion.

In the EU-13, the proportion of people at risk of poverty or social exclusion is considerably larger in rural areas (34%) than in cities (20%) (Figure 2.9). In the EU-15, the pattern is the opposite, the proportion being larger in cities (24%) than in rural areas (21%), though the difference is much smaller. Between 2008 and 2015, the proportion fell in all areas in the EU-13, the difference between cities and rural areas narrowing. In the EU-15, the proportion fell only in rural areas while it increased in cities, towns and suburbs (Figure 2.10).

There is some difference in the incidence of the three indicators combined in the aggregate measure across the EU, though there are also similarities since each of them is measuring an aspect of poverty or social exclusion. In 2015, 17.3% of the EU population was recorded as being at risk of poverty (Figure 2.11). As in the case of the aggregate indicator, there was a somewhat larger proportion of households at risk in rural areas across

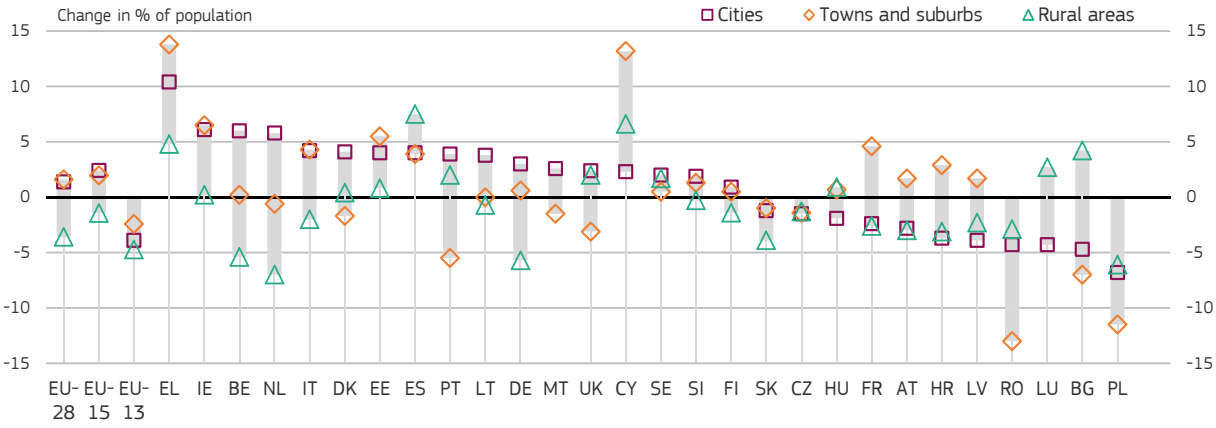
9 2015 and 2008 refer to the years of the survey. The income being measured actually relates to the previous years, i.e. 2014 and 2007.

Figure 2.9 Share of population at risk of poverty or social exclusion by degree of urbanisation, 2015



IE: 2014
Source: Eurostat

Figure 2.10 Change in the proportion of people at risk of poverty or social exclusion by degree of urbanisation, 2008-2015

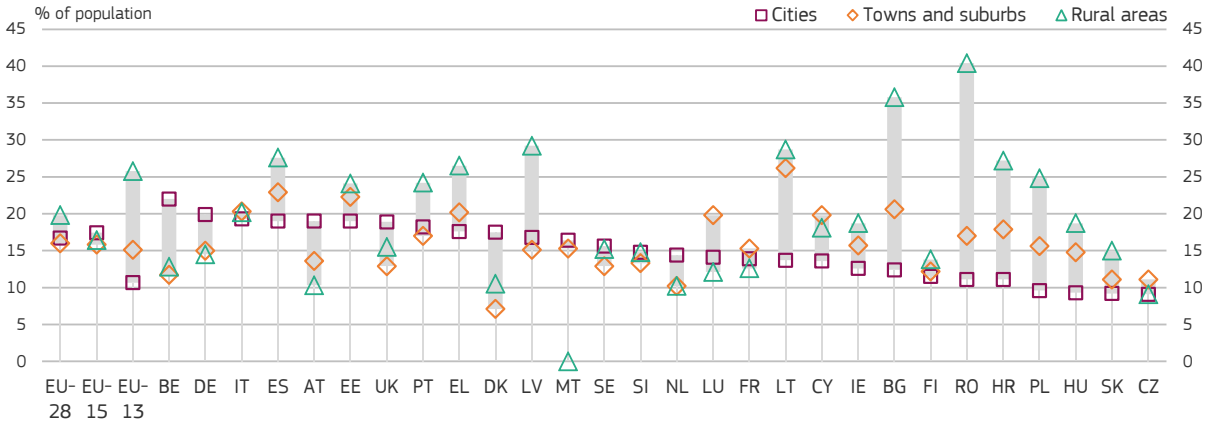


HR: 2010 instead of 2008; IE: 2014 instead of 2015
Source: Eurostat

the EU (19.8%) than in cities (16.7%) or towns and suburbs (16.0%). At the same time, rural areas have a smaller proportion of households with very low work intensity, which suggests that their higher risk of poverty is not mainly due to their lower employment but to their lower incomes, or perhaps to their incomes needing to support larger households. The difference in the risk of poverty between cities and rural areas at EU level is due to the big difference in the EU-13 (26% as against 11%), while in the EU-15, the proportion at risk is slightly smaller in rural areas than in cities. Moreover, the proportion fell between 2008 and 2015 in rural areas solely in the EU-15 (Figure 2.12).

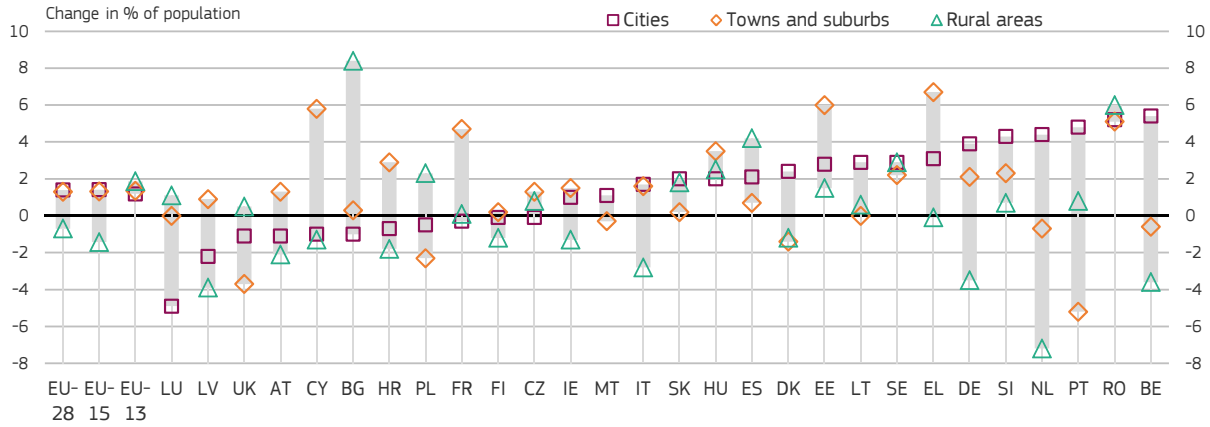
In line with the pattern of change in unemployment, the proportion of people living in households with very low work intensity in the EU in 2015 was higher than in 2008 (10.6% as against 9.2%) but lower than the peak in 2014 (which in fact relates to 2013). In contrast to the risk of poverty, the proportion was much higher in the EU-15 than in the EU-13, especially in cities (18%), whereas in the EU-13, it was higher in rural areas (6%) than in cities (4%) (Figure 2.13). The situation in the EU-15 may seem surprising as employment opportunities tend to be greater in cities. But it is also the case that a larger proportion of people live alone than in other areas and if they become unemployed,

Figure 2.11 The at-risk-of-poverty rate by degree of urbanisation, 2015



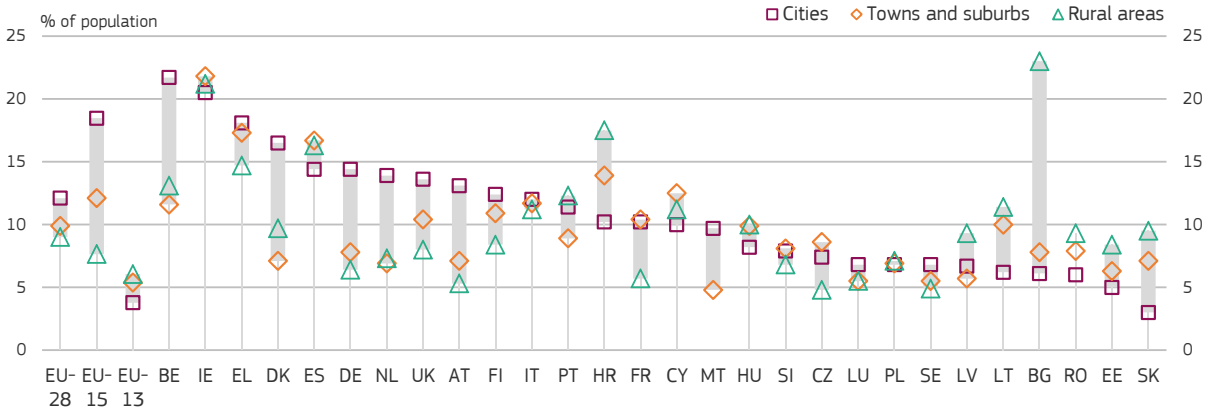
IE: 2014
Source: Eurostat

Figure 2.12 Change in the at-risk-of-poverty rate by degree of urbanisation, 2008-2015



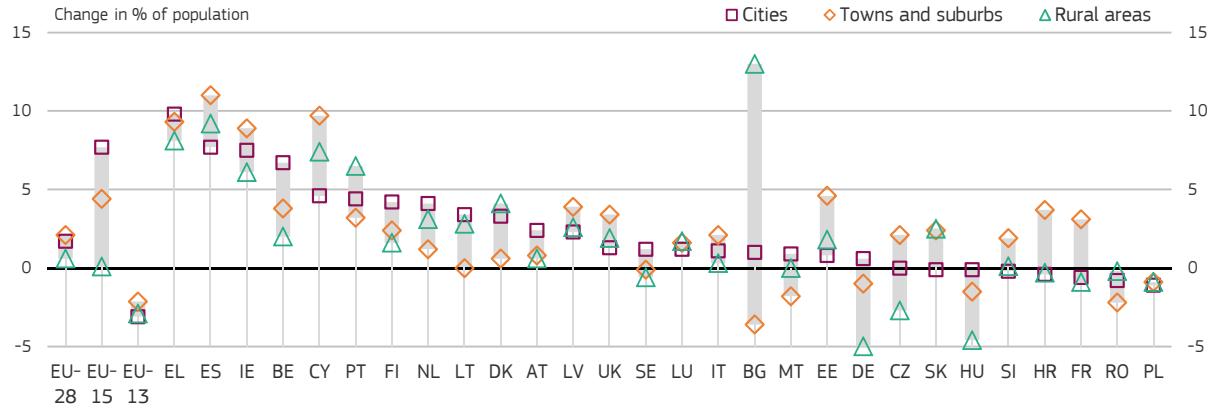
HR: 2010 instead of 2008; IE: 2014 instead of 2015. LU: Towns and suburbs, break in series.
Source: Eurostat

Figure 2.13 Proportion of population living in very low-work intensity households by degree of urbanisation, 2015



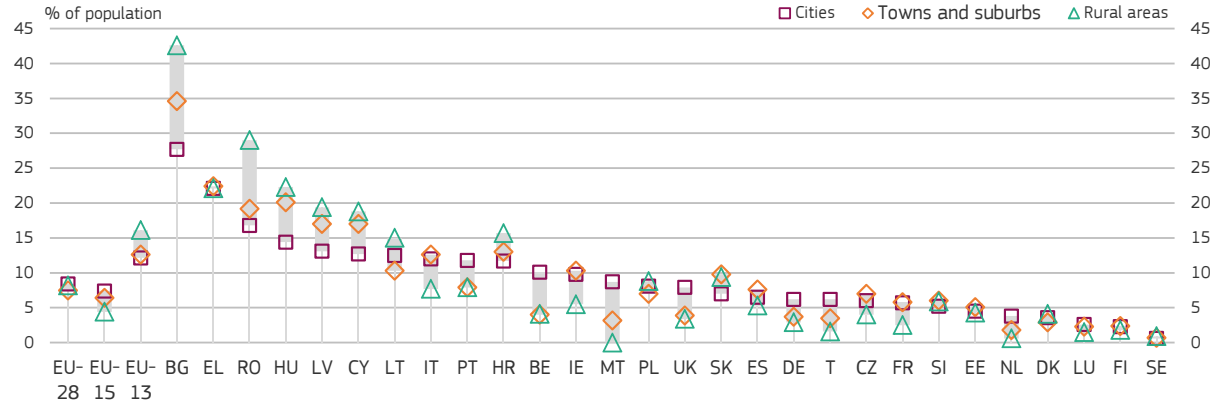
IE: 2014
Source: Eurostat

Figure 2.14 Change in the proportion of population living in very low-work intensity households by degree of urbanisation, 2008-2015



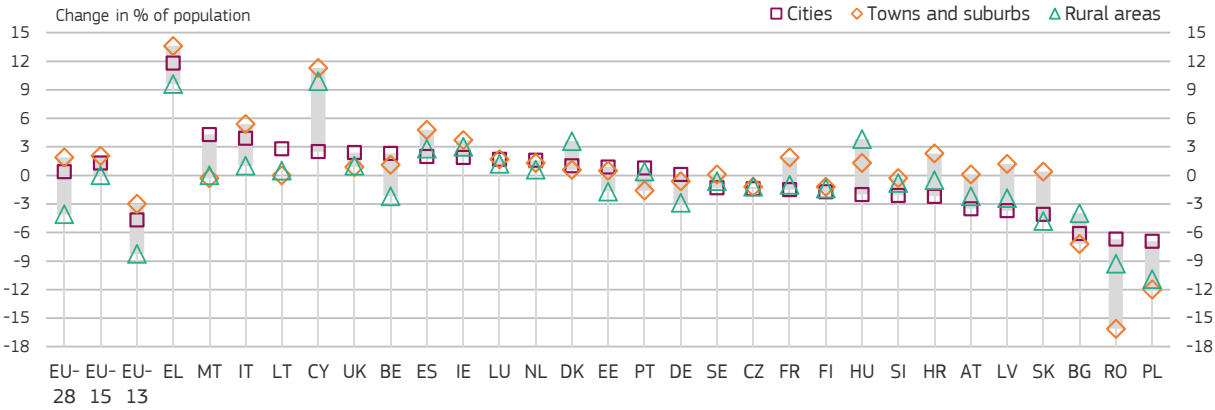
HR: 2008 instead of 2010; IE: 2014 instead of 2015
Source: Eurostat

Figure 2.15 Proportion of population living in severe material deprivation by degree of urbanisation, 2015



IE: 2014
Source: Eurostat

Figure 2.16 Change in the proportion of population living in severe material deprivation by degree of urbanisation, 2008-2015



HR: 2008 instead of 2010; IE: 2014 instead of 2015
Source: Eurostat

Income inequality in cities has a spatial dimension

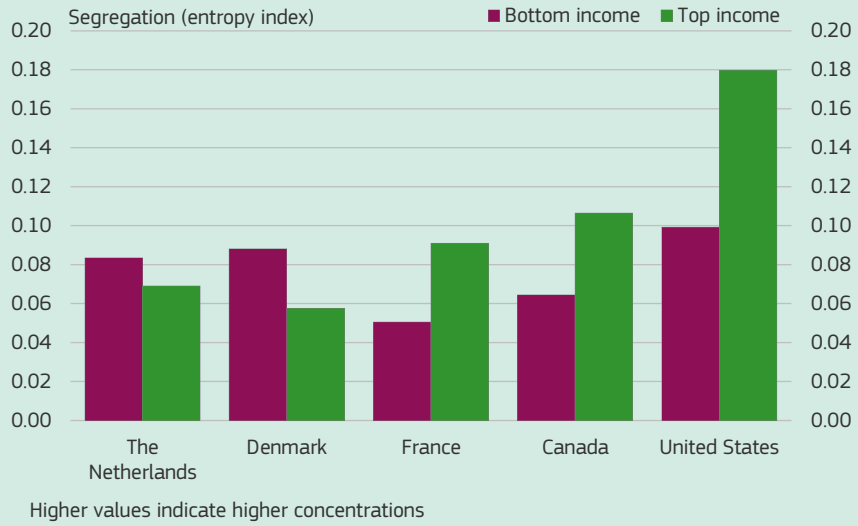
Rich and poor people often live in separate neighbourhoods in cities. The difference in average prosperity and living conditions in different parts of a city has been the subject of debate because of the potential effect on social mobility, since the quality of schools, access to services and decent living conditions are important for people to prosper and fulfil their potential.

Although households in European cities tend to be less spatially segregated by income than in North America, the pattern of segregation differs across the EU. In Denmark and the Netherlands, for example, the poorest households show the highest level of spatial concentration, while in France, as in the US and Canada, it is the most affluent who tend to concentrate most in specific areas of a city (Figure 2.17).

The concentration of poor households in disadvantaged neighbourhoods can give rise to less favourable outcomes for people who live and grow up there. In the Netherlands, for example, those who lived with their parents in poor neighbourhoods (bottom 20% of the income distribution) ended up, 12 years after leaving the parental home, having an income 5–6% lower than those who lived in the most affluent neighbourhoods.

(This box is based on a contribution from OECD.)

Figure 2.17 Income concentration in cities by income group, 2014 or latest available year



Source: OECD (2016b)

household work intensity immediately falls to zero, whereas in households with two or more people, the other person(s) in the household may continue to be employed. It is also the case that the proportion of non-EU born in EU-15 cities is four times that in rural areas, which, because of their lower employment rates, also tends to increase the number of households with low work intensity.

In addition, the crisis hit cities in the EU-15 harder than other areas, the proportion of people living in low work intensity households increasing by 8 percentage points as a result, whereas it remained unchanged in rural areas. In the EU-13, by contrast, the proportion declined by 3 percentage points in both rural areas and cities and by 2 percentage points in towns and suburbs (Figure 2.14).

The European Pillar of Social Rights

After a wide public consultation, the European Commission published the European Pillar of Social Rights[1] on 26 April 2017. It sets out a number of key principles and rights to support fair and well-functioning labour markets. which is also essential for building more resilient economic structures. In particular, the European Pillar of Social Rights sets out 20 principles in support of fair and well-functioning labour markets and welfare systems to serve as a guide for a renewed process of convergence towards better working and living conditions among participating Member States. Although it is primarily conceived for the euro area, it is applicable to all Member States wishing to participate. The principles are grouped into three broad categories:

Equal opportunities and access to the labour market, which includes equal access to education and training, gender equality and active support to employment.

Fair working conditions, which includes the right to secure and adaptable employment, fair wages, information about working conditions and protection in cases of dismissal, consultation with social partners, support in achieving a suitable work-life balance and a healthy and safe working environment

Social protection and inclusion, which includes the right to childcare and support to children education, social protection, unemployment benefits and access to activation measures, minimum income support, old-age pensions, affordable healthcare, support to people with disabilities, affordable long-term care, housing and access to essential services.

Most of the tools for delivering on these principles are in the hands of local, regional and national authorities, though the social partners and civil society also have a role. The EU — and the European Commission in particular — can help by setting the framework, giving direction and establishing a level-playing field while fully respecting differences in national circumstances and institutions.

The Pillar reaffirms rights already present in the EU but complements them by taking account of new realities. As such, it does not affect principles and rights already contained in binding provisions of EU law. But, by putting together rights and principles set at different times, in different ways and in different forms, it aims to make them more visible, understandable and explicit.

1 The Pillar was published as a Commission Recommendation and as a proposal for an inter-institutional Proclamation with the European Parliament and the Council.

The severe material deprivation indicator identifies people who cannot afford any four of 9 basic items included in the EU-SILC. The proportion concerned in the EU-13 was more than twice that in the EU-15 in 2015 (14% as against 6%), reflecting the much lower income levels. In the EU-13, in the same way as the risk of poverty, it was larger in rural areas than cities (16% as against 12%, Figure 2.15), but the difference is narrowing. Between 2008 and 2015, the proportion fell by 9 percentage points in rural areas and 5 percentage points in cities (Figure 2.16).

In the EU-15, severe material deprivation is more common in cities than rural areas (affecting 7.4% of the population in 2015 as against 4.4%) and has become more so over time (increasing by 1.3 percentage points while remaining unchanged in rural areas). Although many cities in the EU-15 have high levels of GDP per head, they also have, in many cases, high levels of inequality, as reflected in at-risk-of-poverty rates, higher concentrations of deprivation than other areas and more households with low work intensity.

8. Moving at different speeds to the Europe 2020 targets

The Europe 2020 strategy sets out five headline targets to be reached by 2020, covering employment, education, poverty, innovation and climate change. The targets for reducing greenhouse gas emissions and increasing renewable energy have been translated into legally-binding national tar-

Europe 2020 targets for the EU

1. Employment
   - 75% of 20–64 year-olds to be employed
2. R&D
   - 3% of EU GDP to be invested in R&D
3. Climate change and energy sustainability
   - Greenhouse gas emissions 20% lower than in 1990
   - 20% of energy from renewables
   - 20% increase in energy efficiency when compared to the projected use of energy in 2020
4. Education
   - The rate of early school-leaving to be reduced below 10%
   - At least 40% of 30–34-year-olds to have completed tertiary education
5. Fighting poverty and social exclusion
   - At least 20 million fewer people to be at risk of poverty and social exclusion (equivalent to reducing the number to 19.5% of the population)

Constructing the Europe 2020 achievement index

The Europe 2020 achievement index measures progress towards meeting the targets set at EU-level by NUTS 2 regions and by areas grouped by degree of urbanisation (see Dijkstra and Athanasoglou, 2015).

A score of 100 means that a region or an area group has reached or surpassed all the EU targets, a score of zero means that the region or area concerned is furthest away from reaching them.

Each headline target is weighted equally. This means that for the index, the employment, poverty and R&D indicator have a weight of 25%, while the two education indicators have one of 12.5%. For the index of areas grouped by degree of urbanisation, the employment and poverty indicator both have a weight of 33%, while the two education indicators have one of 16.6%.

Climate change indicators are not available below the national level and so could not be included in the two indices. The R&D target had to be excluded from the index for degree of urbanisation groups as it is not measured at this level.

For purposes of the indices, the absolute target for reducing poverty and social exclusion was transformed into a reduction in the share of people at risk of poverty or social exclusion.

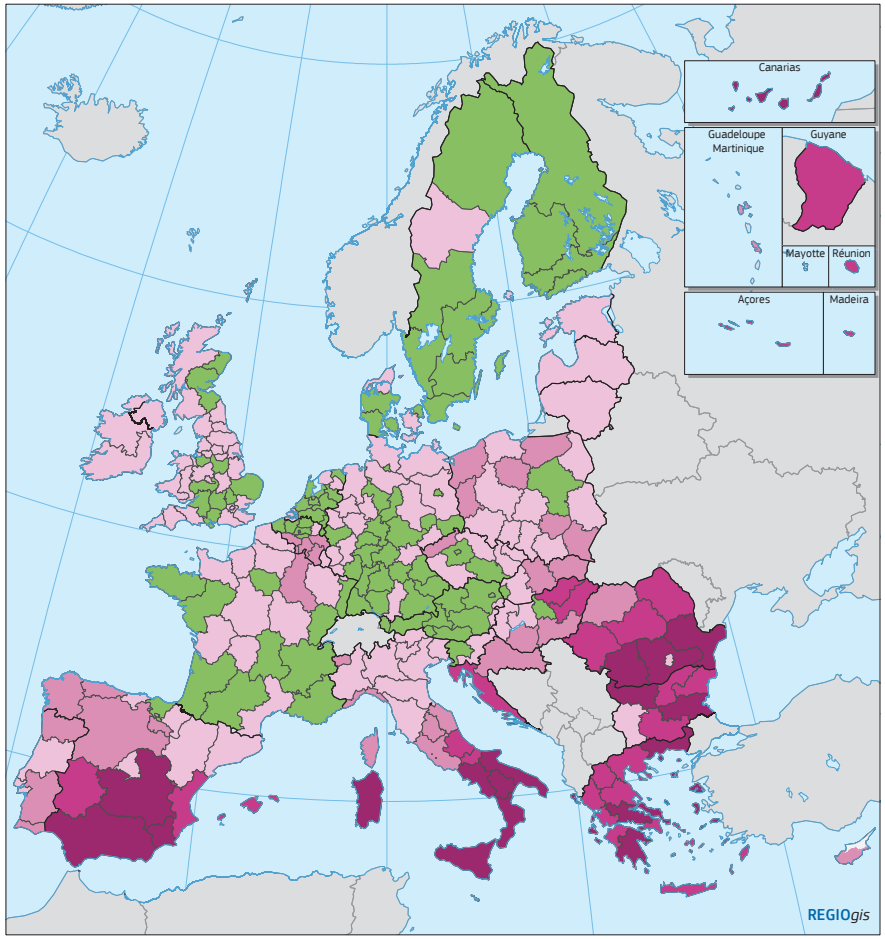
As not all Member States opted to set national targets for the employment, education and poverty reduction indicators, the index presented here is relative to the EU target in each case.

gets. In the other cases, there are optional national targets.

Portugal, Spain, the south of Italy, Croatia, Greece, Bulgaria, Romania and eastern Hungary are furthest away from achieving the EU targets (Map 2.13). Intra-country variation is, however, pronounced. Apart from the traditional north-south divide in Italy, in France, Germany, Belgium, the UK, the Czech Republic and Denmark, there are both regions with high values of the index and those with low values.

Between 2010, when the targets were set, and 2015, almost all regions in central and eastern Member States made progress towards achieving them (Map 2.14). The score on the index for the less developed regions increased on average from 36 to 46. The score for the transition regions, on the other hand, rose only marginally, reflecting the impact of the crisis. The score also increased for the more developed regions, from 76 to 80, but at this rate even these will not reach the targets by 2020 (Table 2.8).

In general, cities are closer to achieving the targets (Figure 2.18) than towns and suburbs or rural areas. In Sweden, Czech Republic and Luxembourg, cities have reached or surpassed the employment, education and poverty reduction targets — indeed



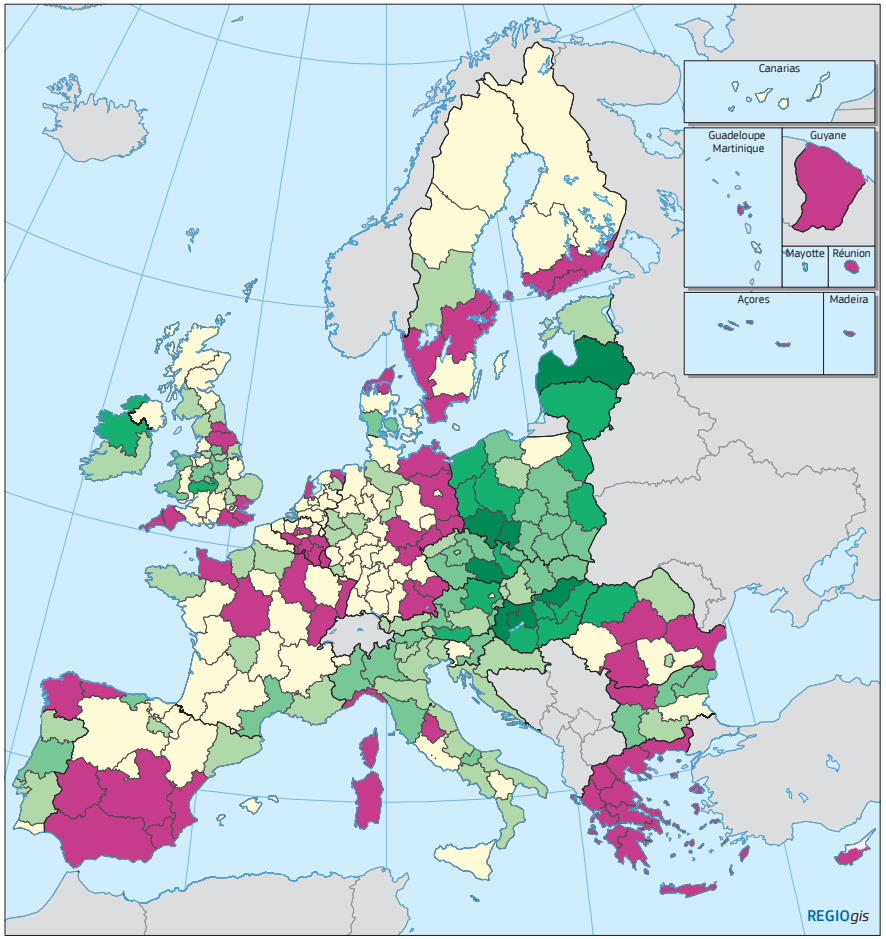
Map 2.13 The Europe 2020 achievement index (EU targets), 2015

Index
- 0 – 20
- 20 – 40
- 40 – 60
- 60 – 80
- 80 – 100

EU-28 = 80.79
0 = lowest level of achievement | 100 = all targets included in the index reached.
This index takes into account the following indicators: Employment, R&D spending, Education (ESL and TERT) and fighting poverty and social exclusion (AROPE).
Source: JRC

0 500 km

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Map 2.14 Change in the Europe 2020 achievement index (EU targets), 2015-2010

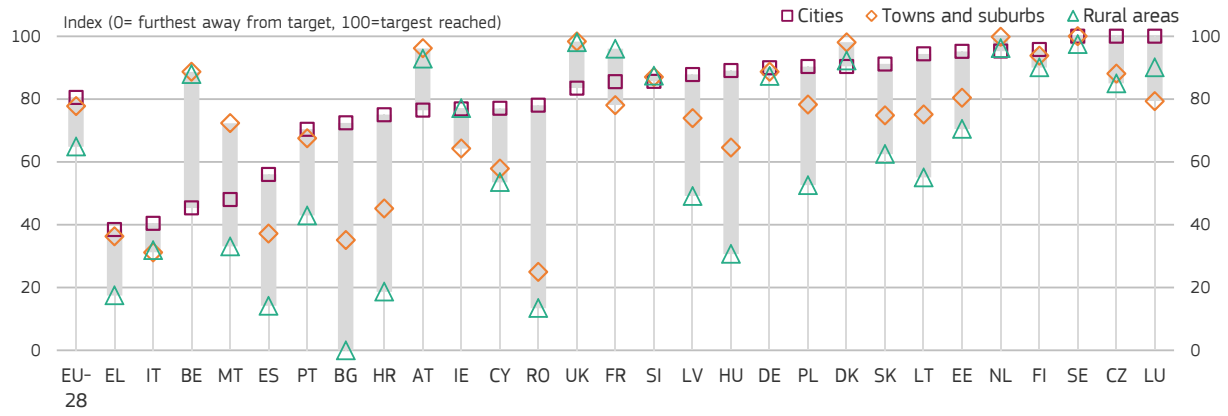
Percentage points
- < 0
- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- >20

EU-28 = 8.5
Source: JRC

0 500 km

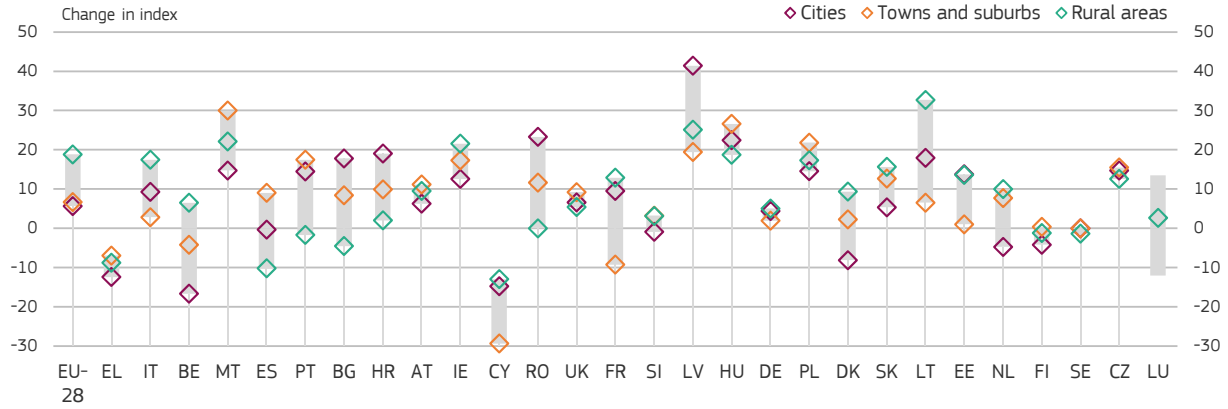
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Figure 2.18 Europe 2020 achievement index (EU targets), 2015



Source: Dijkstra and Athanasoglou (2015)

Figure 2.19 Change in the Europe 2020 achievement index (EU targets) between 2010 and 2015



Source: Dijkstra and Athanasoglou (2015)

some had already done so in 2010. The difference between cities and other areas is very wide in some cases, in Bulgaria, Romania, Spain, Hungary and Poland, in particular, in all of which rural areas are lagging well behind.

In some countries, especially in the EU-15, towns and suburbs score better than cities. In France, the UK, Austria, Malta and, in particular, Belgium, cities score poorly, primarily due to low employment and high poverty rates.

While progress was made towards the targets in almost all countries between 2010 and 2015, though not enough to meet them by 2020, the situation deteriorated in all three types of area in Greece and Cyprus (Figure 2.19). The achievement index was also lower in 2015 than in 2010 in Danish and Belgian cities, in towns and suburbs in France and in rural areas in Spain.

Table 2.8 Europe 2020 regional achievement index (EU targets), 2010–2015

	2010	2015	Change
Less developed regions	36	46	10.0
Transition regions	55	56	0.6
More developed regions	76	80	4.5

Source: Dijkstra and Athanasoglou (2015) .

9. More women are studying, working and being elected to regional assemblies

Equality between women and men has been enshrined in the EU Treaties from the very beginning and is part of the 2009 Charter of Fundamental Rights.

In 2016, the employment rate of men aged 20–64 in the EU was 12 percentage points higher than that of women (Map 2.15). In 2001, the gap was 18 percentage points and has narrowed every year since then, including over the crisis years. Employment rates of men are higher than for women in all EU regions except Övre Norrland in Sweden and Corse in France. The difference is over 20 percentage points in Malta and several Greek, Italian and Romanian regions. In Malta, Greece and Italy, the difference narrowed between 2001 and 2016, but in Romania, it increased by 5 percentage points.

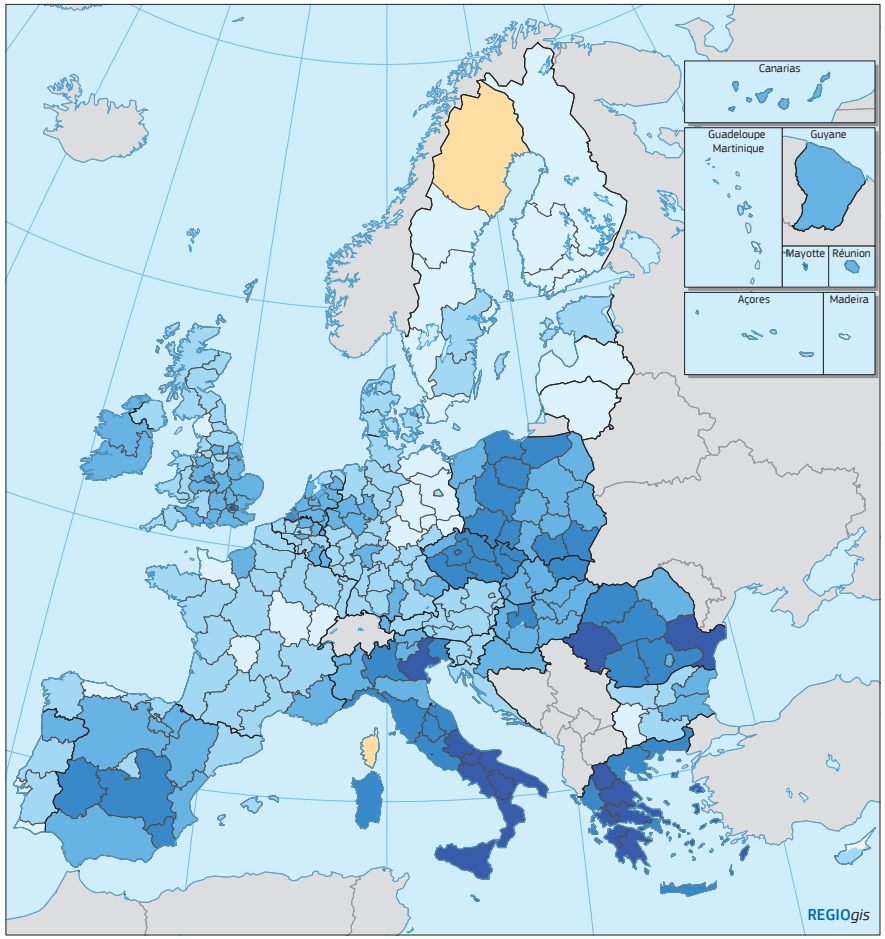
At the EU level, unemployment rates of men and women are much the same, the rate for women being only 0.4 of a percentage point higher than for men in 2016 (Map 2.16). This implies that the employment gap is primarily due to more women not participating in the work force. The Commission's Strategic engagement for gender equality has identified a number of ways of increasing employment rates of women:

- make it easier to balance caring and professional responsibilities;
- share time spent on care and household responsibilities more equally;
- provide childcare for 33% of children under 3 and 90% of children between 3 and mandatory school age (the targets set under the Barcelona agreement in 2002);
- provide support for care of other dependants;
- encourage more women to become entrepreneurs;
- promote gender equality in research;
- improve the integration of women migrants into the labour market.

More of the women aged 30–34 have tertiary education than men in the EU and this is the case in all regions, except in several German ones and a few others scattered across the EU (Map 2.17). On average, 43% of women in this age group had this level of education in 2014–2016 as opposed to only 34% of men. In Latvia, northern Sweden, Slovenia, some Polish regions and Molise in Italy, the share of women with tertiary education was 20 percentage points or more larger than for men.

Policies to support gender equality

- Gender equality is a key element of the recently adopted European Pillar of Social Rights which states that "equality of treatment and opportunities between women and men must be ensured and fostered in all areas".
- The Commission's Strategic Engagement for gender equality 2016–2019 identifies 5 priority areas: increasing female labour-market participation and the equal economic independence of women and men; reducing the gender pay and pension gaps and so combat poverty of women; promoting equality between women and men in decision-making; combating gender-based violence and protecting and supporting victims of this and; promoting gender equality and women's rights across the world.
- The Commission recently adopted the Work-Life Balance initiative aimed at tackling women's under-representation in the labour market by modernising the current EU legal and policy frameworks for family-related leave, flexible working arrangements and formal care services and reducing economic disincentives for second-earners to work.



Map 2.15 Difference between female and male employment rates (20–64), 2016

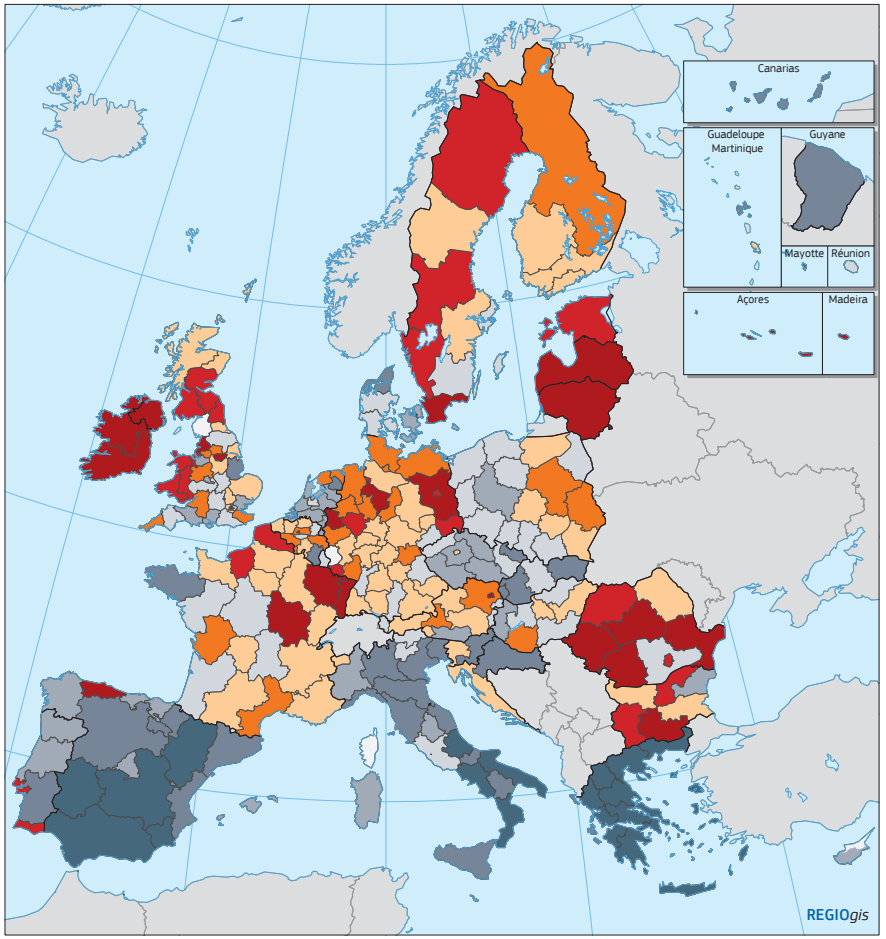
Percentage point difference (female - male)

- < -20
- -20 – -15
- -15 – -10
- -10 – -5
- -5 – 0
- > 0

EU-28 = -11.5
Source: Eurostat

0 500 km

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Map 2.16 Difference between female and male unemployment rates, 2016

Percentage point difference (female–male)

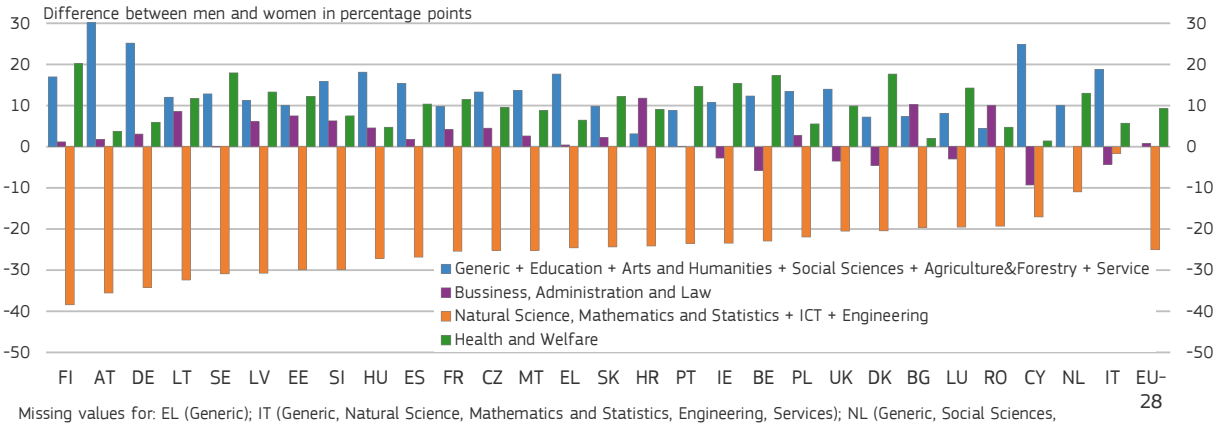
- < -1.8
- -1.8 – -1.2
- -1.2 – -0.6
- -0.6 – 0
- 0 – 0.8
- 0.8 – 1.8
- 1.8 – 4
- > 4

EU-28 = 0.3
Source: Eurostat

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Figure 2.20 Difference between shares of women graduates in different fields of education and shares of men, 2015



Missing values for: EL (Generic); IT (Generic, Natural Science, Mathematics and Statistics, Engineering, Services); NL (Generic, Social Sciences, Business-Administration-Law, Science, Mathematics and Statistics, ICT)
Source: Eurostat

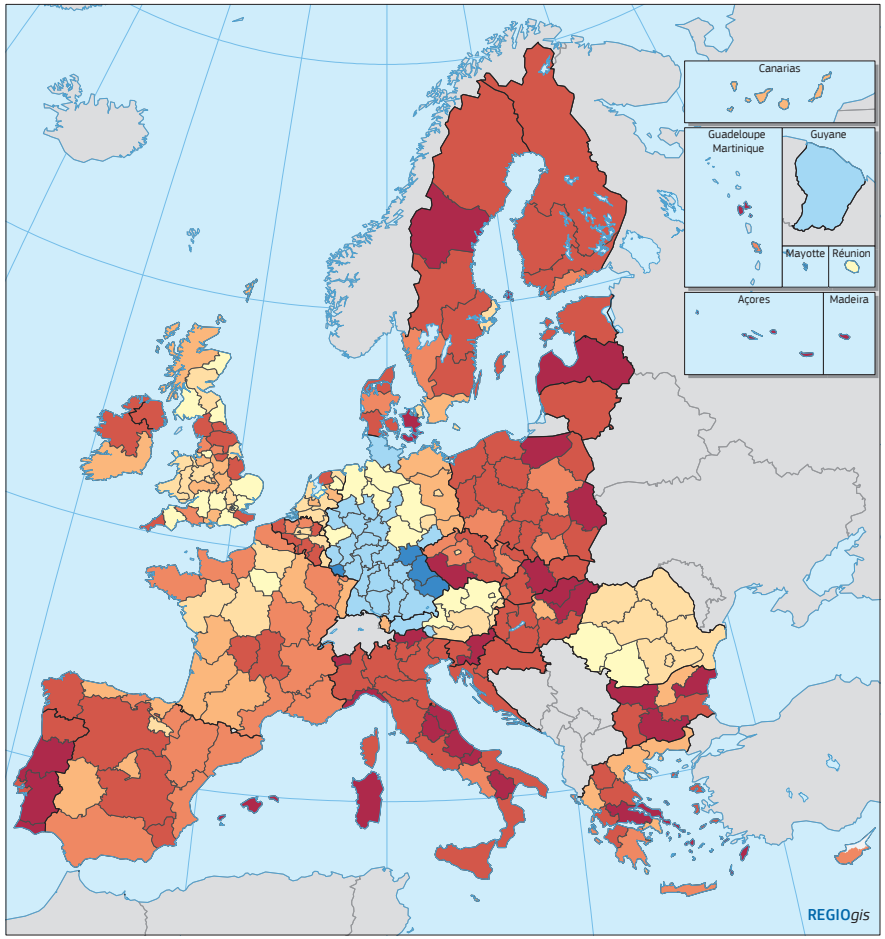
While more women than men have tertiary education, their fields of study differ substantially, which may partly be a factor underlying their lower employment rates. In particular, far more men than women opt for a natural science, mathematics, ICT or engineering degree in all Member States (Figure 2.20).

Women aged 18–24 are also less likely to have left education and training before completing upper secondary schooling than men. (Map 2.18). There are many reasons why young people may decide to leave school early. Personal or family problems, learning difficulties, a fragile socio-economic situation are all potential reasons but the school environment, teacher-pupil relations and the quality of teaching may also play an important role. The highest rates of early school-leaving are in regions in Spain, Portugal and Italy, mostly because of young men leaving early. In Sardegna, for example, around 28% of young men left education before completing upper secondary education as against just under 15% of young women. While more men than women leaving education early is the norm across the EU, there are a few regions (around 10% of the total) scattered across northern, central and eastern parts of the EU (but in Bulgaria especially), where the reverse is true, though only marginally so in most cases.

In 2017, women made up half or more of members of regional assemblies across the EU in only 17 out of 297 cases. Five regional assemblies in Hungary, Italy and Romania have no women members at all and in several regional assemblies in these three countries as well as in Slovakia, less than 10% of members were women. Women were most represented in assemblies in Belgium, Spain, France, Sweden and Finland, where they accounted for 40% or more of members (Map 2.19).

The average regional assembly in the EU had only 29% of members that were women in 2017, only slightly more than in 2007 (27%), so that at this rate of progress, it would take 100 years to reach 50%. There is also no indication of a larger increase in countries with a small share of women members than in others (Map 2.20).

In some countries, the share of women has increased without the need for a gender quota. In Sweden, for example, most political parties ensure that every second candidate for election is a woman. In Belgium, France, Spain, Portugal and Ireland, however, quotas have been used to raise the number of women at national and/or regional level of government (Ireland does not have any regional assemblies and Portugal has regional assemblies only in the Açores and Madeira).



Map 2.17 Gender balance of population aged 30–34 with tertiary education, average 2014–2016

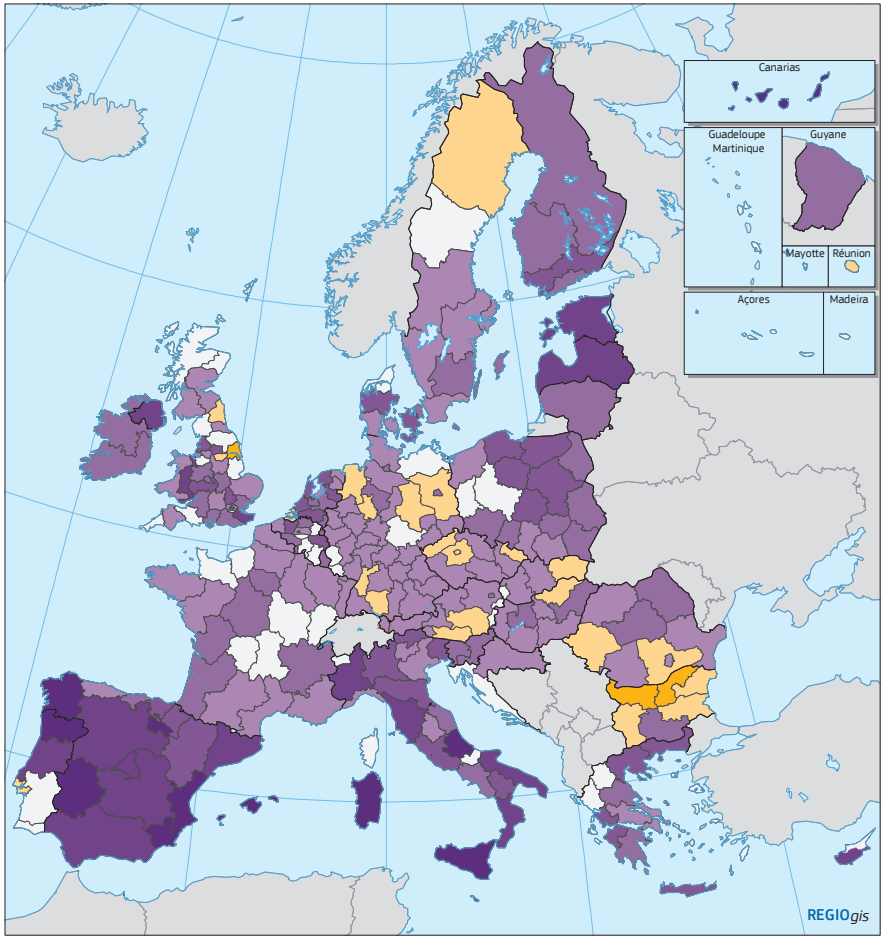
Women as % of men

- < 85
- 85 – 100
- 100 – 110
- 110 – 120
- 120 – 130
- 130 – 140
- 140 – 170
- > 170

EU-28 = 127
This indicator takes into account the proportion of each gender in the population.
Source: Eurostat

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Map 2.18 Gender gap (females–males) for early school-leavers (18–24), 2014–2016

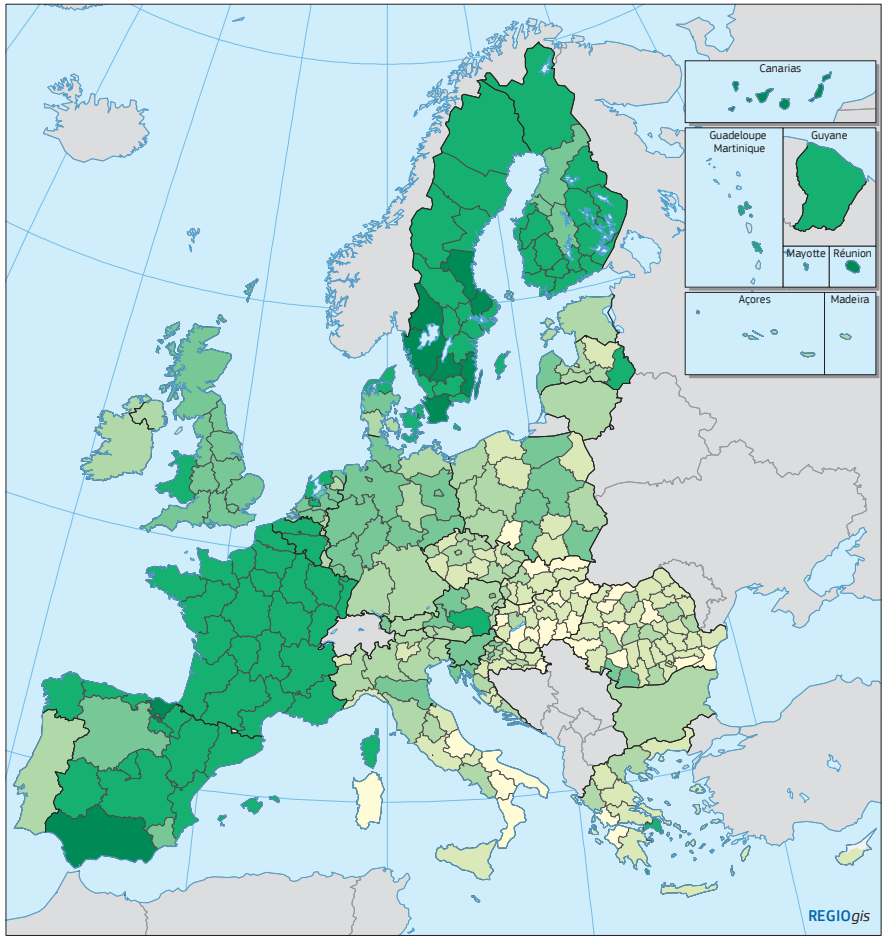
Percentage point difference

- < -8
- -8 – -6
- -6 – -4
- -4 – -2
- -2 – 0
- 0 - 2
- > 2
- no data

NUTS 1 level for DE2, DE7, DED, AT2, AT3, PL1, PL2, PL3, PL5, PL6.
EU-28 = -3
Source: Eurostat, DG REGIO

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Map 2.19 Women in regional assemblies, 2017

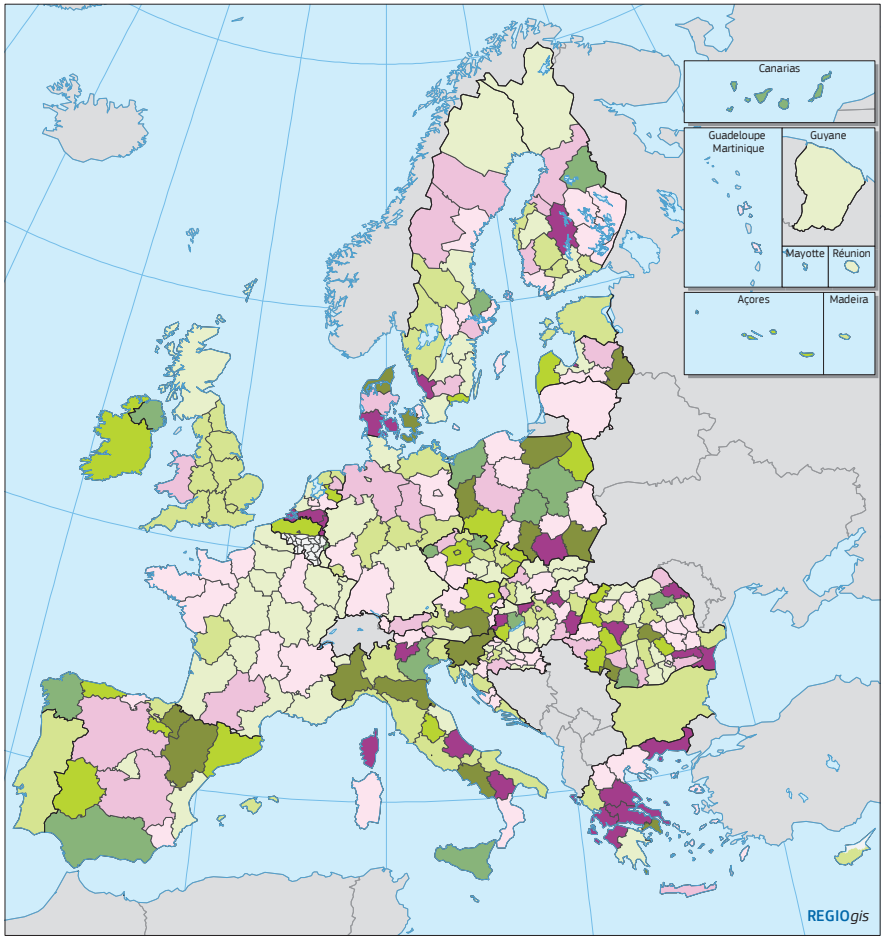
% of members

- 0 – 10
- 11 – 20
- 21 – 30
- 31 – 40
- 41 – 50
- > 50

Countries without regional assemblies: BG, EE, IE, CY, LT, LU, MT, SI (women in national assembly).
Regions without assembly: ES63, ES64, PT1, England excl. London (women in national assembly).
Source: European Institute of Gender Equality, JRC, DG REGIO

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Map 2.20 Change in the shares of women in regional assemblies, 2007–2017

Percentage point difference

- < -7
- -7 – -3.5
- -3.5 – 0
- 0 – 3.5
- 3.5 – 7
- 7 – 10.5
- 10.5 – 14
- > 14

For HR regions, changes between 2013 and 2017.
Source: European Institute of Gender Equality, JRC, DG REGIO

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10. Life in the EU is among the longest in the world but regional disparities persist

The EU has one of highest life expectancies at birth in the world, 80.6 years in 2015. Spaniards and Italians have the longest expectancy in the EU (83.0 and 82.7 years at birth, respectively), while Lithuanians have the shortest (74.6 years). Most EU Member States have a life expectancy higher than in the United States, which is ranked only 31st in the world in this regard, with an expected life span of 79.3 years in 2015 (World Health Organisation, 2017).

Differences between regions across the EU are, however, marked (Map 2.21). Life expectancy at birth is below 75 in many parts of Bulgaria and Romania and the eastern regions of Hungary as well as in Latvia and Lithuania. In 20 NUTS 2 regions (mainly located in France, Italy and Spain but also including the wealthiest part of London — Inner London West — which includes Westminster), life expectancy is over 83. Regional disparities in infant mortality (Map 2.22) and, to a lesser extent, road fatalities (Map 2.23) can partly explain the differences.

In 2015, an average of 3.6 children per 1 000 born alive died before reaching one year of age in the EU, a reduction from 3.8 in 2012. Infant mortality, however, was above 6 per 1 000 in 21 NUTS 2 regions in Romania and Bulgaria — all except the capital city ones — all the French overseas regions, the Spanish regions of Ceuta and Melilla (on the North coast of Africa), the most eastern region in Slovakia and the English region of Shropshire and Staffordshire in the West Midlands. By contrast, the rate was 2 per 1 000 or less in 18 regions scattered across the EU — in two or more in Austria, Finland, the Czech Republic, Slovenia and Spain and one each in Belgium, Germany, Greece, Spain, the Netherlands and the UK.

Road traffic fatalities vary equally widely across the EU. Although they declined overall by 45% between 2004 and 2014, the number still averaged 51 per one million inhabitants in 2015, though with large differences between regions (Map 2.23). (For comparison, the US figure was twice as high in 2015, at over 100 per million.).

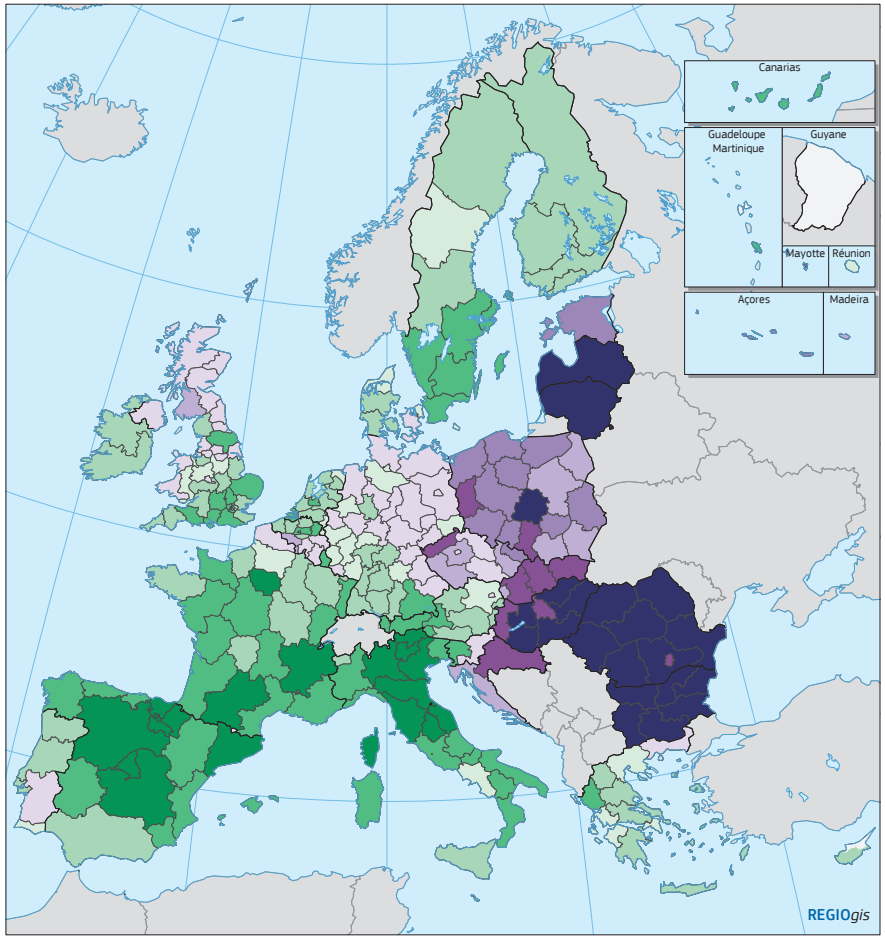
The Road Safety Programme

One of the objectives of the European Commission is to ensure that satisfactory standards of safety for all modes of transport throughout the EU are met. The Road Safety Programme adopted in 2011 is aimed at cutting road fatalities by half between 2010 and 2020 to 31 deaths per million inhabitants. The programme includes a mix of initiatives, at EU and national level, focusing on improving vehicle safety, road user behaviour and the roads themselves.

The regions with the highest figures, with over 99 deaths per million, are mostly in Bulgaria, Romania, Greece, Croatia and the north-eastern part of Poland though also in Portugal, Corse and, above all, the Belgian province of Luxembourg, where as many as 210 road fatalities per million inhabitants were recorded in 2015, 38% more than in 2010.

Road fatalities are, in many cases, less in capital city regions than in other parts of the country. The safest capital cities in the EU in which to drive are Stockholm and Wien, in both of which the number of road deaths was below 10 per million in 2015, while in London, Copenhagen, Paris, Madrid, Berlin and Prague, fatalities are less than in other regions (Map 2.24). This reflects in part low traffic speeds and good public transport, which gives people the option of not driving.

Cities, however, do not have lower fatality rates than other areas everywhere. In Romania, Italy, Belgium, Lithuania, Latvia and Poland, rates are relatively high in cities. In Bucharest and many other Romanian cities, there were more than 90 deaths per million in 2013–2014, far above the target of 31 deaths per million set by the European Road Safety Action Programme for 2020. In 2015, this target was reached in only 16% of regions.



Map 2.21 Life expectancy, 2015

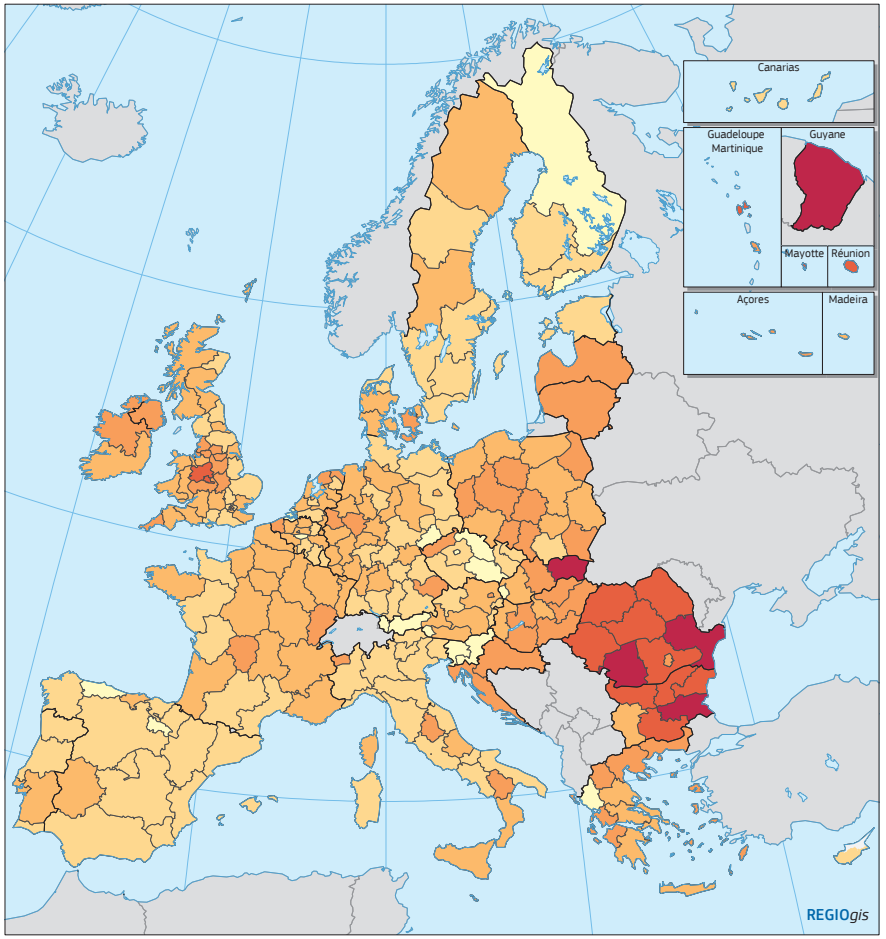
Life expectancy at birth in years

- < 76.0
- 76.0 – 77.0
- 77.0 – 78.0
- 78.0 – 79.0
- 79.0 – 80.6
- 80.6 – 81.0
- 81.0 – 82.0
- 82.0 – 83.0
- > 83.0

EU-28 = 80.6
Source: Eurostat

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Map 2.22 Infant mortality rate, 2015

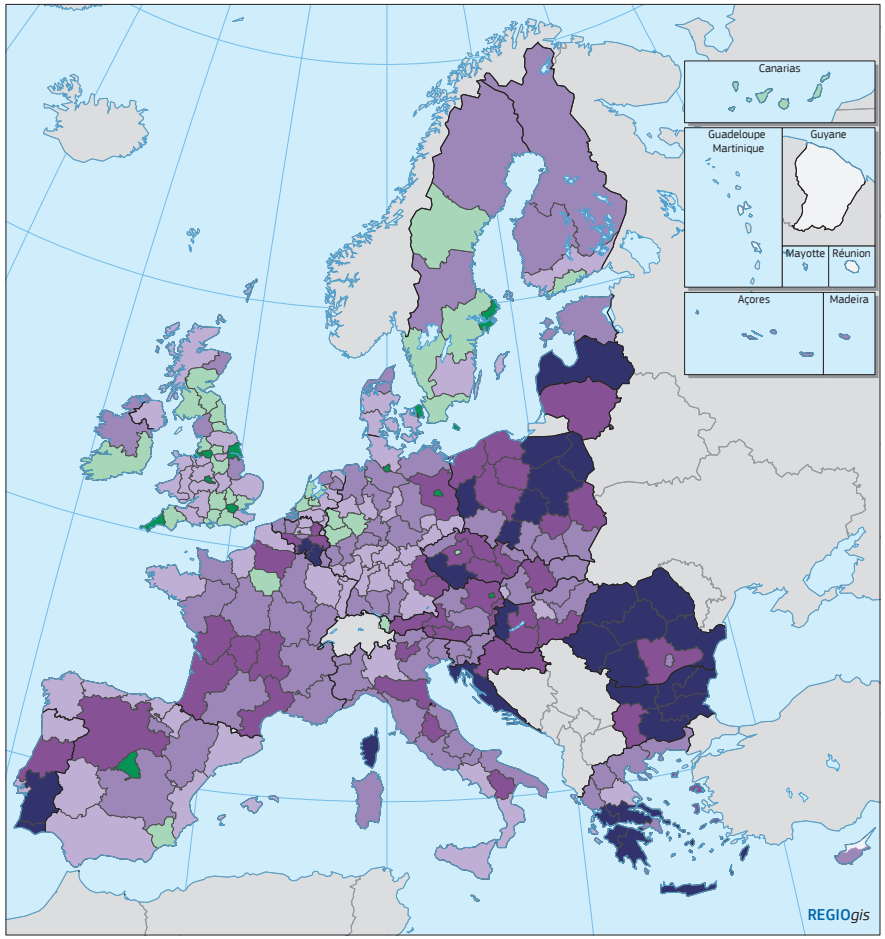
Deaths under 1 year of age / 1000 live births

- < 2
- 2 – 3
- 3 – 4
- 4 – 5
- 6 – 8
- > 8

EU-28 = 3.6
Source: Eurostat

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Map 2.23 Road traffic fatalities, 2015

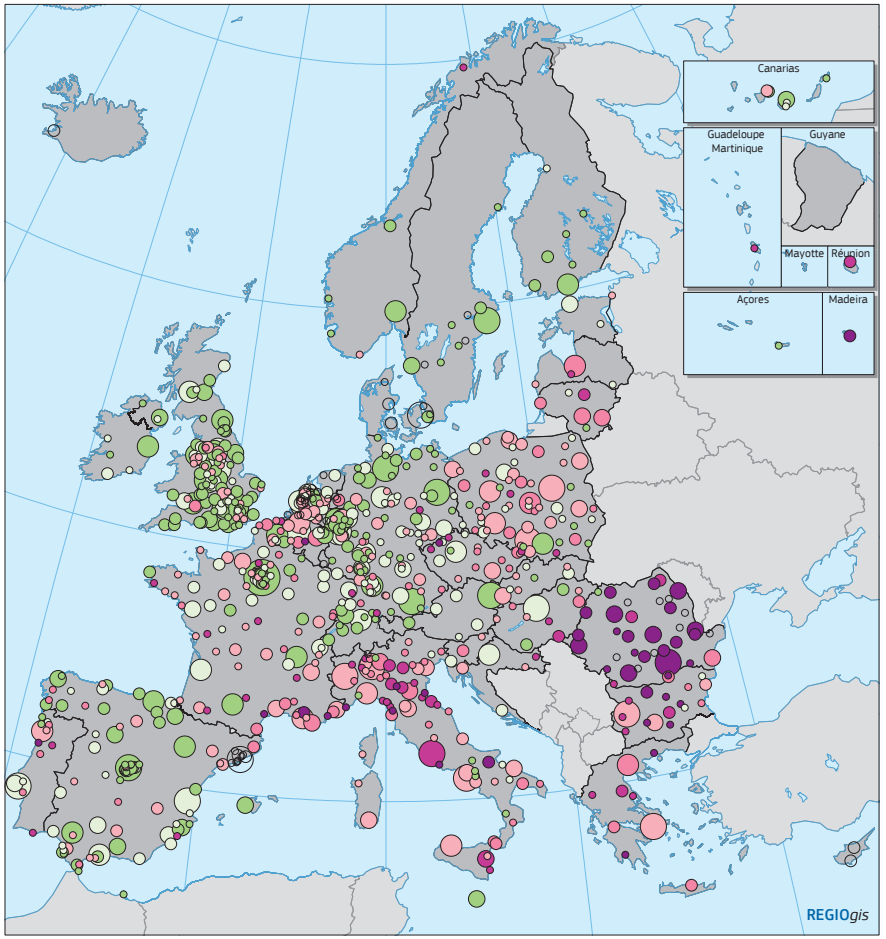
Deaths per million inhabitants

- < 20
- 20 – 30
- 30 – 50
- 50 – 70
- 70 – 90
- > 90
- no data

EU-28 = 51
The EU target for 2020 is a reduction of 50% relative to 2010: 30 road fatalities per million inhabitants.
Source: Eurostat, DG MOVE

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Map 2.24 Road traffic fatalities in cities, 2013–2014

Deaths per 100 000 inhabitants

- < 2
- 2 – 3
- 3 – 4.5
- 4.5 – 6
- 6 – 9
- > 9
- no data

Urban centre population

- < 100 000
- 100 000 – 250 000
- 250 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 5 000 000
- >= 5 000 000

The EU objective for 2020 is a rate below 3.
AT: 2013;
BG, LV, NL: 2012–2013;
FR: 2012;
IT, PL, PT, SK, NO: 2011–2012;
IE, EL: 2011;
CZ, SE: 2010–2011;
RO: 2008.
Source: Eurostat

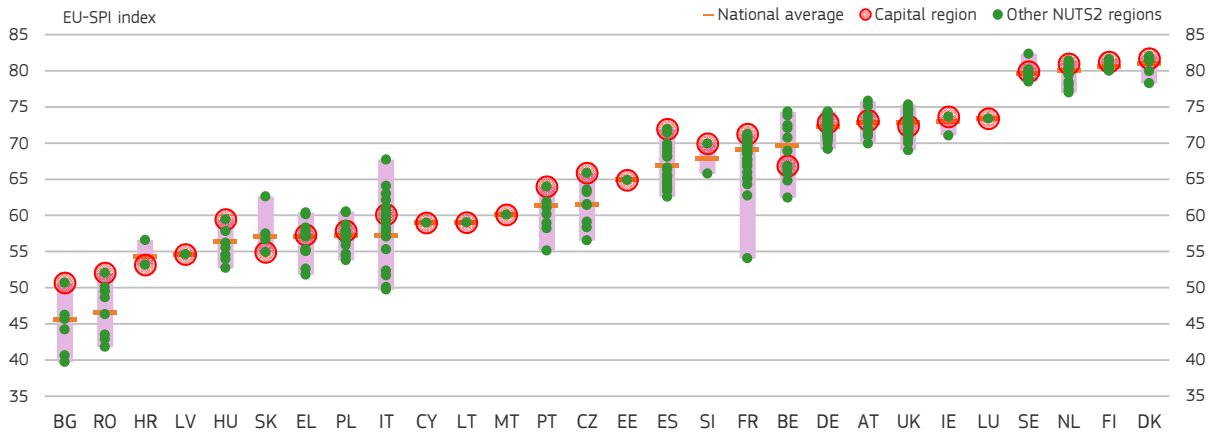
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Table 2.9 The framework of the EU-SPI index

Basic Human Needs	Foundations of Well-being	Opportunity
Nutrition and basic medical care	Acces to basic knowledge	Personal rights
Water and sanitation	Access to information and communication	Personal freedom and choice
Shelter	Health and wellness	Tolerance and inclusion
Personal safety	Environmental quality	Access to advanced education

Figure 2.21 Degree of within-country variability of the EU-SPI



Source: DG REGIO

Further efforts and more investment are, therefore, needed in most regions to improve road safety.

11. Measuring social progress at the regional level

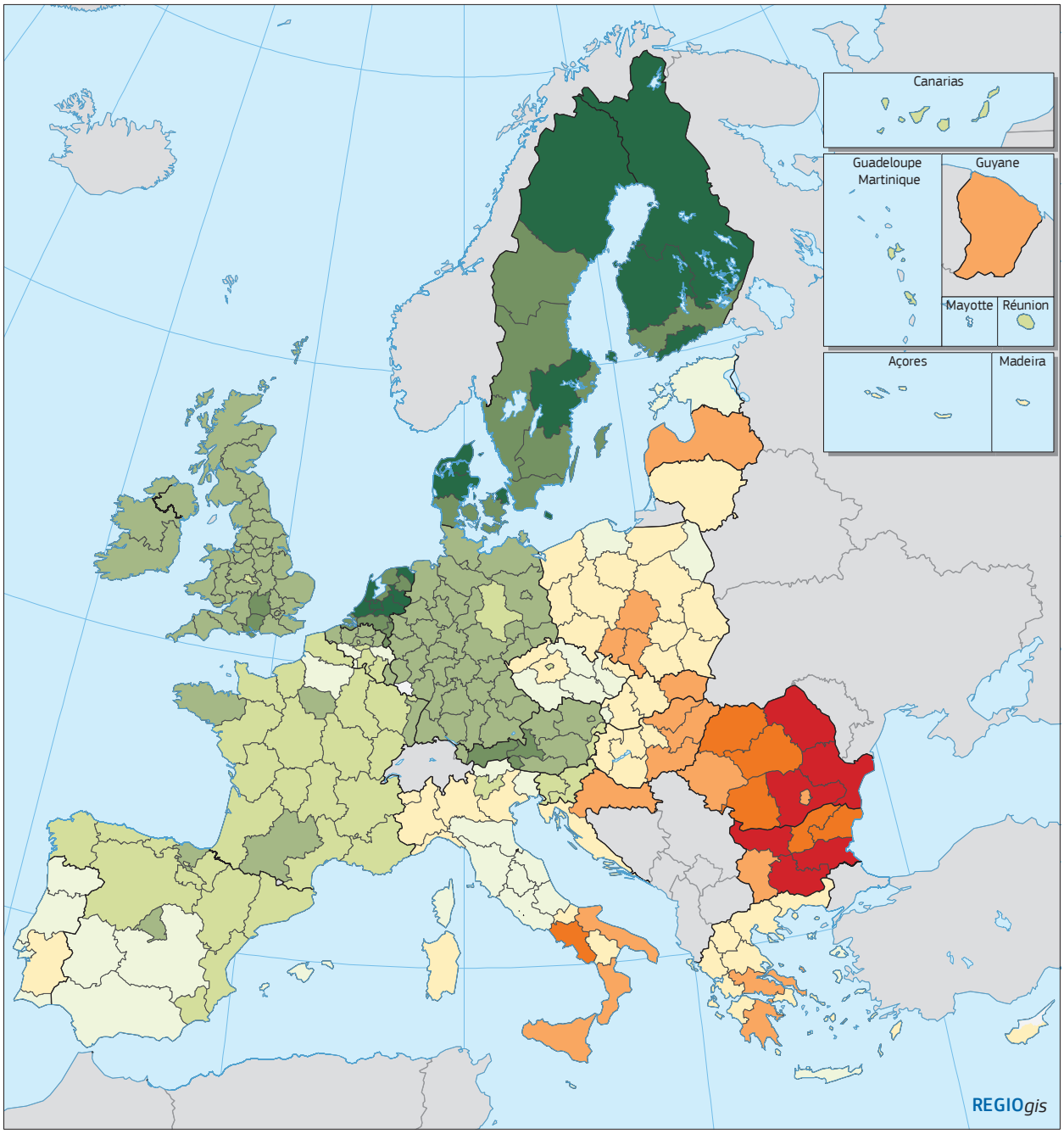
Social progress can be defined as a society's capacity to meet the basic human needs of its citizens, to establish the basis for people and communities to improve and sustain their quality of life and to create the conditions for people to reach their full potential. This definition underlies the Global Social Progress Index which measures social progress at the national level in about 130 countries worldwide[10]. In an attempt to measure social progress at the regional level in the EU, the European Commission recently published the EU Regional Social Progress Index (EU-SPI) that builds on and adapts the Global Social Progress Index. The EU-SPI is based on a set of 50 social and environmental indicators, drawn primarily, though not only, from Eurostat data. The EU-SPI is aimed at providing consistent, comparable and policy-relevant measures of the social and environmental situation in all NUTS 2 regions[11]. It covers three dimensions of social progress — basic human needs; the foundations of well-being and opportunity — each of which is broken down into four underlying components (Table 2.9).

Economic indicators are deliberately excluded which means that the EU-SPI measures social progress rather than economic performance and can be compared with economic indicators.

The index has been built to identify social and environmental strengths and weaknesses, to inform regional development strategies and to support peer learning between regions. It scores the various aspects covered on a scale from 0 to 100, where 0 represents the lowest possible level of social pro-

10 For more information on the Global Social Progress Index: https://www.socialprogressindex.com

11 For more information on the regional EU-SPI: http://ec.europa.eu/regional_policy/en/information/maps/social_progress



Map 2.25 EU Social Progress Index, 2016

Index

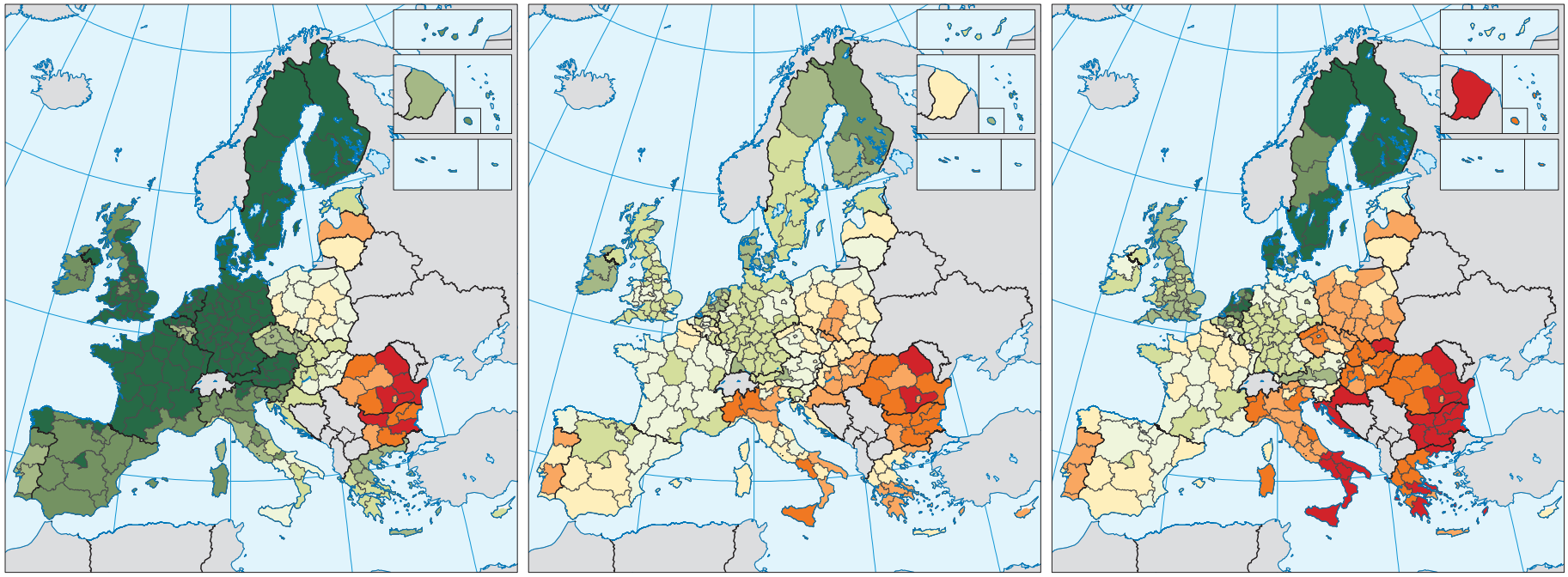
< 45	65 – 70
45 – 50	70 – 75
50 – 55	75 – 80
55 – 60	>= 80
60 – 65	

0 = lowest level of social development
100 = highest level of social development
Source: DG REGIO

0 500 km

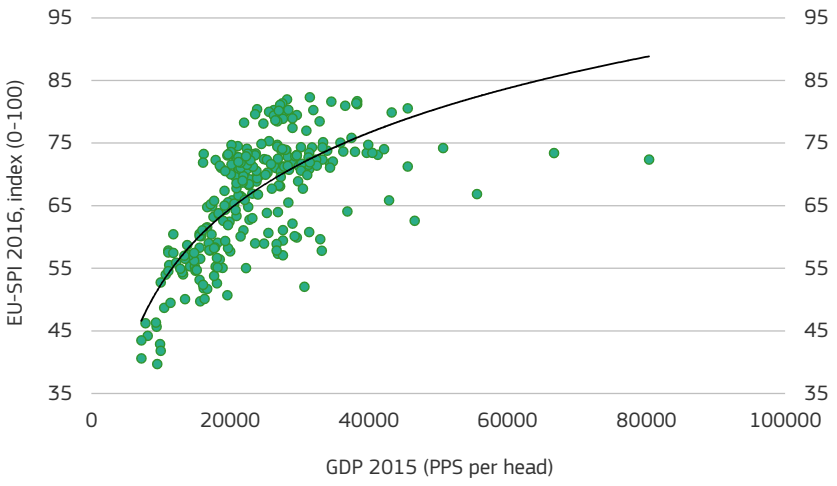
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Map 2.26 EU Social Progress Index — sub-indices (2016)



gress and 100 the highest. Results show that social progress in the EU is highest in Nordic and Dutch regions and lowest in Romanian and Bulgarian regions (Map 2.25). Social progress is also moderately high in Austria, Germany, Luxembourg, Ireland and the UK. Belgium and France score well too, though both show large internal differences. The largest regional variation is in Italy where central regions score higher than the rest of the country (Figure 2.21).

Figure 2.22 Relationship between EU-SPI and GDP per head



Source: DG REGIO

According to the SPI, except for some regions in Member States which joined the EU in 2004 or after, basic human needs are being met in almost all regions. The 'Foundations of well-being' dimension shows greater variation with only the Nordic Member States, the Netherlands and Ireland scoring highly in all regions. The largest differences relate to 'Opportunity', with low scores in many regions in the southern and central eastern countries (Map 2.26).

There is a close link between the EU-SPI and regional GDP per head, although the relationship indicates that at every level of economic performance there are opportunities for more social progress but also risks of less (Figure 2.22). In low GDP per head regions, every extra euro of GDP tends to lead to more social progress, while for high GDP per head regions, this is much less true. Among the high GDP per head regions, some regions such as the Nordic regions and most of the Dutch regions score higher than would be expected given their GDP her head.

In a small number of regions, commuting across NUTS 2 boundaries has a distorting effect on GDP per head of some significance since commuters increase GDP without being counted in the population. This is the case in Brussels and London, in particular, where around half the people working there live elsewhere. In these regions, GDP per head is an especially poor proxy for income and this may partly explain why some score poorly relative to GDP per head. Many other issues, however, make GDP per head a poor proxy for median disposable household income, such as the variable share of GDP going to wages (which on average has been shrinking), the differing degree of inequality of earnings and the varying extents of redistribution through taxes and social benefits, both between people and between regions.

chapter 3

Territorial cohesion

- Substantial progress has been made in the EU in limiting energy consumption and greenhouse emissions. Most Member States are close to reaching the targets set under the Europe 2020 strategy. Part of the progress, however, is due to the slowdown in economic activity during the crisis and there is a risk that the current recovery will make it more difficult to meet the targets.
- In transport, there needs to be a major shift towards using less energy, cleaner modes and more efficient use of infrastructure to reach the EU goals for greenhouse gas emissions.
- The impact of climate change is likely to be considerable for many EU regions, particularly the outermost regions, regions around the Mediterranean, along coastlines generally and mountainous ones. Further investment is needed to make EU regions and cities more resilient to the changes concerned.
- Despite general progress in reducing environmental pressures (notably as regards wastewater and waste treatment), more efforts are needed to meet EU environmental goals.
- Pollution is often more of a problem in cities than in other areas. Air pollution is a particular concern and nature-based solutions, such as the development of green urban spaces, can provide an efficient means of mitigating the problem.
- Cities can be more efficient in the use of resources than other places and can make it possible to adopt a low-carbon life style.
- Cross-border cooperation, a major EU policy objective, has helped to mitigate the adverse effects of internal borders, Support for cooperation has led to improvements in cross-border security and concrete achievements in transport, education, energy, healthcare and other areas.
- National borders still constitute obstacles to the movement of goods, services, people, capital and ideas and substantial gains to the regions concerned as well as to the EU as a whole could be obtained if remaining restrictions were removed.

Chapter 3

Territorial cohesion

1. Introduction

As argued in the 5th Cohesion Report, territorial cohesion highlights various issues which are central to cohesion policy. Among these are the environmental dimension of sustainable development and the use of flexible functional geographies for territorial development. The latter aims to adapt the geographical level of analysis and implementation of policy to the challenges to be addressed. Depending on the issue at stake, this ranges from macro regions, such as the Baltic Sea or the Danube region, to metropolitan and cross-border areas. This chapter, therefore, covers the major environmental challenges affecting the development of EU regions, on the one hand, and a number of major issues addressed by various territorial cooperation schemes, on the other.

Environmental challenges are increasing in number and importance. Global warming and the associated climate change is likely to have fundamental consequences for the EU economies and societies, notably with the increase in the frequency of extreme natural events that is expected to accompany the general rise in temperature. The extension of human settlements, built-up areas and industrial activities accentuates the pressure on the environment with effects notably in the form of air pollution, a deterioration in the quality of water bodies and the fragmentation of natural habitat, while the production of waste has reached levels which require a radical change in approach.

A large share of cohesion policy resources has always been invested in measures to improve the quality of the environment or to tackle key environmental challenges. The policy is geared towards supporting the shift to a low-carbon economy while at the same time helping Member States and regions to improve their capacity to mitigate the negative impact of climate change.

Cohesion policy invests heavily in the installation of facilities to improve the quality of drinking water and to treat wastewater and in waste management and recycling schemes as well as in measures to increase energy efficiency. It also helps to develop 'green' infrastructure across the EU and to establish a network of protected natural areas as part of Natura 2000, while supporting a shift towards more environmentally-friendly modes of transport, all with the objective of ensuring a sustainable path of development throughout the EU.

For the 2014–2020 period, around €78 billion of cohesion policy funding has been allocated to supporting the shift towards a low-carbon economy (thematic objective 4), adaption to climate change and risk prevention (thematic objective 5) and improving environmental protection and resource efficiency (thematic objective 6). This amounts to almost a third of ERDF and Cohesion Fund resources, the two sources of financing most concerned with environmental issues.

Territorial Cooperation is a key objective of cohesion policy, focusing on joint action and exchange of policy ideas and experience between national, regional and local authorities in different EU Member States. It helps to reduce the obstacles to development which stem from national borders and supports the adoption of common strategies to solve common problems. Around €10 billion have been allocated to such cooperation for the 2014–2020 period.

2. Energy Union and climate change

The EU has the objective of making a transition to a low-carbon economy and of ensuring that Europe has access to secure, affordable and climate-friendly energy. The Energy Union is a European priority project in which five dimensions are closely interlinked: energy security, solidarity and trust; a

fully integrated European energy market; energy efficiency to moderate demand; action on climate change to decarbonise the economy; and research, innovation and competitiveness.

As part of this, targets have been set for reducing greenhouse gas emissions progressively up to 2050. These are included in both the 2020 climate and energy package and the 2030 climate and energy framework.

The 2020 climate and energy package is aimed at achieving a 20% cut in greenhouse gas emissions, a 20% improvement in energy efficiency (both from 1990 levels) and a 20% share of renewables in final energy consumption. The 2030 climate and energy framework is more ambitious, increasing these targets to 40% for the first and to 27% for the other two[1].

Cohesion policy plays a central role as regards the Energy Union. By helping Member States achieve EU climate and energy targets, cohesion policy investments tackle energy poverty and enhance energy security, while furthering regional development, competitiveness, growth and jobs. By supporting the Energy Union, the policy also contributes to reducing air pollution which, according to the WHO, is one of the main environmental hazards facing us.

For the 2014–2020 period, around 21% of the ERDF and Cohesion Fund resources are allocated to climate-related interventions. While the ESF is by its nature less oriented towards this area, 1.4% of its resources still go towards combating the effects of climate change.

Cohesion policy supports a comprehensive range of climate-related measures, such as improving energy efficiency in public buildings, housing and small and medium-sized enterprises, smart grids; renewable energy sources; clean urban transport, railways, cycle tracks and footpaths; research on climate change and adaptation to it, including resilient infrastructure and risk prevention and management.

2.1 Increasing energy efficiency

Increasing energy efficiency is critical for reducing the energy dependence of the EU economies and protecting the environment. Energy efficiency can be improved at all stages of the energy chain, from generation to final consumption. EU measures focus on areas where the potential for savings is greatest, buildings, in particular. Increasing energy efficiency is one of the main objectives of the Energy Union and one of the primary targets of the Europe 2020 strategy. The aim is to lower EU primary energy consumption to less than 1483 million tonnes of oil-equivalent (Mtoe) a year and final energy consumption to less than 1086 Mtoe[2].

Between 2005 and 2015, EU primary energy consumption fell by 11% from 1713 Mtoe in 2005 to 1530 Mtoe in 2015[3] (Figure 3.1). Primary energy consumption fell in all Member States over this period, except Estonia and Poland where it increased (by 15% and 3%, respectively). Reductions were largest (20% or more) in Lithuania, Greece and Malta.

In 2015, primary energy consumption in the EU as a whole was still around 3% above the 2020 target. In Malta, France, Germany, the Netherland and Bulgaria, substantial reductions in energy consumption are still needed to meet the indicative national targets set in 2013. In 18 Member States, on the other hand, consumption was already below the targets[4].

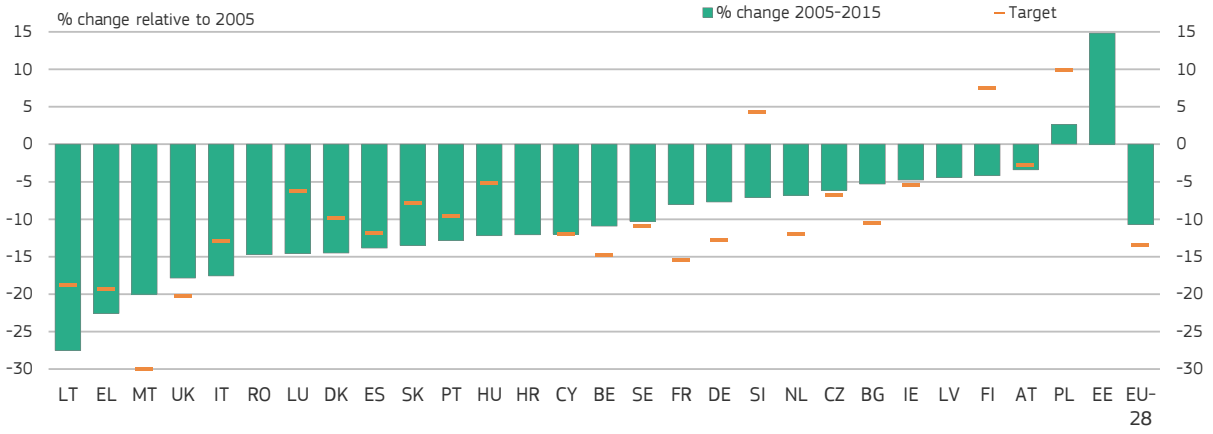
1 On 30 November 2016, the Commission proposed an update to the Energy Efficiency Directive including a new 30% energy efficiency target for 2030.

2 Note that these energy targets are not straight-forward to interpret in energy efficiency terms. The main determinants of energy use are GDP growth and the share of (heavy) manufacturing in the economy and in general, changes in energy consumption *per se* say very little about energy efficiency as such.

3 Primary energy consumption is the energy supplied to industry, transport, households, services and agriculture, including generation/ transformation losses, consumption of the energy transformation sector and network losses.

4 In most cases, targets reflect the objective to reduce energy consumption by 2020. However, for some countries the target allows an increase in primary energy consumption.

Figure 3.1 Primary energy consumption, change 2005-2015 and distance to target



Source: Eurostat

Final energy consumption in the EU fell by more than 9% between 2005 and 2015, from 1191 Mtoe to 1082 Mtoe, i.e. to slightly below the 2020 target. The largest reductions were in Greece (22%), Spain (18%) and Portugal (16%), countries in which GDP either declined over this period (Greece and Portugal) or increased relatively little. Final consumption increased only in Lithuania (by 4%), Poland (6%) and Malta (50%). Final consumption in 2015 was below the national 2020 targets in 16 Member States but still needed to be reduced further in the others, especially in Malta, Lithuania, Slovakia and Hungary.

Recent analysis shows that the reduction in energy consumption is a result not only of improvements in energy efficiency but also of structural changes in electricity generation and of the downturn in the economic activity from 2008[5]. The economic recovery now underway might, therefore, give rise to an upsurge in energy consumption across the EU if GDP growth were to be particularly high, so putting the achievement of targets at risk.

Heating and cooling in buildings and industry account for half of EU energy consumption. For the most part, the energy concerned is from fossil fuels and only 16% comes from renewables. A sharp reduction in both and in the use of fossil fuels would contribute greatly to meeting the EU's climate and energy goals. This would require significant investment, which can be supported to a major extent by cohesion policy in the majority of Member States.

2.2 Reducing greenhouse gas emissions

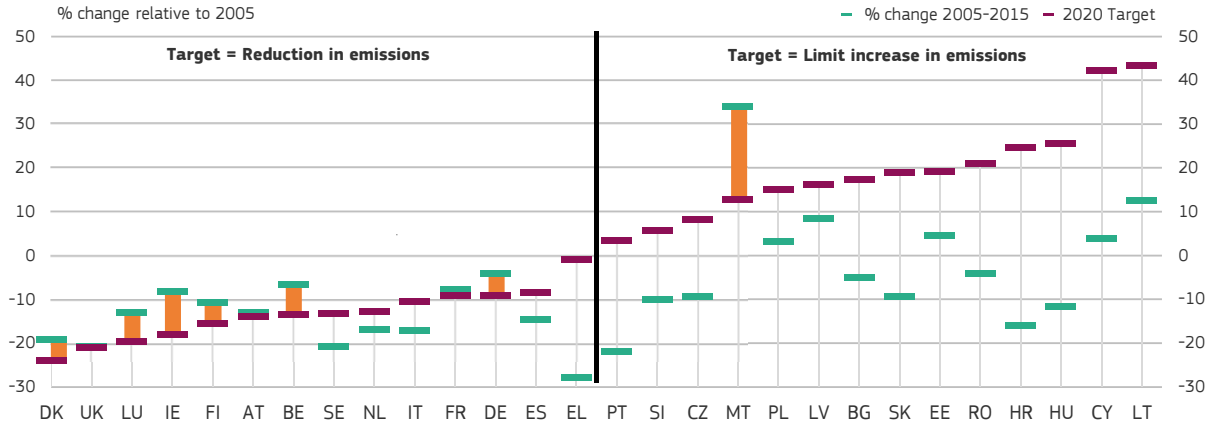
The EU emissions trading system (ETS) is a major means of cutting greenhouse gas emissions from power and heat generation, industry and aviation, covering around 45% of such emissions in the EU. The 2020 target requires a reduction in emissions in the areas concerned of 21% on the 2005 level, while the target for 2030 requires a cut of 43%.

In the other, non-ETS sectors, namely housing, agriculture, waste and transport (excluding aviation), Member States have set binding targets for cutting emissions under the Effort Sharing Decision (ESD). These differ between countries according to their national wealth, varying from a 20% cut relative to the 2005 level for the wealthiest to a 20% increase for the least developed. To achieve the 2030 target of a 40% reduction in EU greenhouse gas emissions, the ESD areas would need a cut of 30% (relative to 2005). It is in these areas that Cohesion policy funding can help Member States to achieve their targets.

Some Member States have already reduced emissions markedly in ESD sectors (Figure 3.2). Between 2005 and 2015, they were reduced by

5 See European Commission (2015c).

Figure 3.2 Changes in greenhouse gas emissions outside the Emissions Trading Scheme, 2005-2015 and Europe 2020 targets



Source: EEA, provisional calculation method

22% in Portugal and 27% in Greece. In other countries emissions increased, notably in Lithuania (by 12%) and Malta (by 34%). Variations in economic growth explain part of these differences, but other factors are important as well. For example, emissions were reduced by almost 21% in Sweden yet GDP grew on average by 1.7% a year over the period.

In 18 Member States, the level of emissions in 2015 was lower than the target set under the ESD, most especially in Croatia, which had committed to limiting the increase in emissions to 25% relative to the 2005 level but actually cut them by 16%. Some of the other countries have gone a long way to achieving the target and have only a little more to do. In particular, in the UK and Austria, emissions need to be reduced by less than 1%. In Ireland, on the other hand, they need to be reduced by almost 10%, while in Malta, emissions rose by much more than the increase agreed.

2.3 Increasing the share of renewable energy

The EU objective is to increase the share of renewables in energy consumption to 20% by 2020 (10% in the transport sector) and to 27% by 2030.

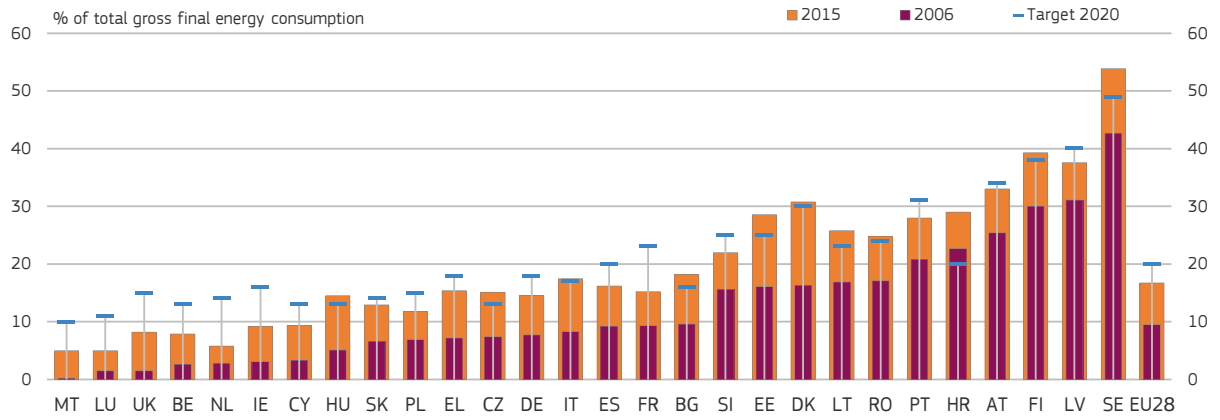
Under the Renewable Energy Directive[6], EU Member States have set binding targets for increasing their national shares by 2020, which vary from 10% in Malta to 49% in Sweden, reflecting differences in both the prevailing share and the potential for expanding it. In some Member States, therefore, the share is already large — almost 54% in Sweden in 2015 and 34% in Latvia — while it is well below 10% in Malta, Luxembourg and the UK (Figure 3.3).

In 2015, 11 Member States had already exceeded their targets and in another three, the share needed to be increased by less than 3 percentage points to meet them. In 10 countries, however, the required increase was more than this and in four of them — the UK, Ireland, France and the Netherlands — 7 percentage points or more.

The potential of countries or regions for producing renewable energy depends on their geo-physical characteristics. For instance, coastal regions generally have a high potential for producing wind energy, especially those along the shores of the North and Baltic Seas and some Mediterranean islands. The potential for solar energy production is obviously higher where there are large amounts of sunshine, while the production of hydroelectricity also requires suitable geo-physical features.

6 Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources.

Figure 3.3 Share of renewable energy in gross final energy consumption, 2006 and 2015 and target in 2020



Source: EEA, Eurostat

Realising whatever potential exists, however, depends on the policies implemented.

Accordingly, the production of renewable energy varies markedly from one region to another. This is well illustrated by electricity production. In some regions, electricity generation is still largely dependent on coal and lignite. This is particularly the case in most regions in Poland but also in Germany, the UK, Italy, Ireland, Spain, Romania and Croatia (Maps 3.1 and 3.2). In contrast, in other regions electricity is principally produced from renewables, notably in Cyprus, Greece, Austrian, Sweden, Finland and France, hydroelectricity, biogas, biomass and wind energy being the main sources[7].

2.4 Climate change

European regions differ widely in relation to the challenges they face from climate change. Mediterranean regions are likely to experience significant increases in days of extreme heat, growing risk of droughts, declining crop yields and more multiple climatic hazards[8]. Coastal areas face the risk of rising sea levels, increasing sea temperatures[9] and growing numbers of 'marine dead' zones[10]. The Atlantic region will experience increasing instances of heavy rainfall and more risk of river and coastal flooding and damage from winter storms. Mountain regions are expected to suffer higher increases in temperature than the European average, a shift of plant and animal species to higher ground and a greater risk of some of them becoming extinct, as well as more chance of rock falls and landslides and reduced potential for hydro-electricity generation.

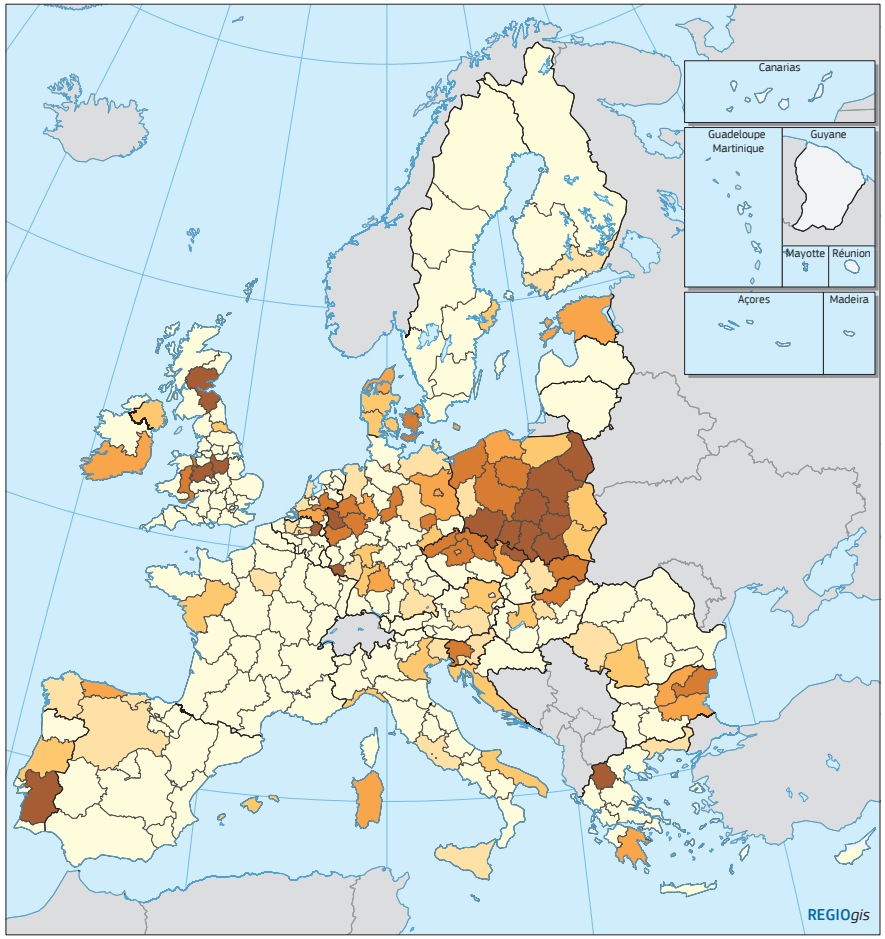
At the same time, climate change might create opportunities, such as an expected reduction in energy demand for heating in Northern European and Atlantic regions or new possibilities for exploiting natural resources and sea transport in Artic re-

7 Note that renewable energy is not necessarily environment-friendly: solar, wind, biomass or hydropower projects may have significantly adverse effects on e.g. biodiversity or water bodies (including through intensive land use and reduced connectivity of rivers). In consequence, strategic and integrated planning with early stakeholder involvement, in line with relevant EU legislation (SEA, EIA, WFD, Birds and Habitats Directives) is essential to maximize renewable energy production while reducing environmental impacts.

8 The number of hot days (those exceeding the 90th percentile threshold of a baseline period) has almost doubled since 1960 across Europe. Since the beginning of the 21st century, Europe has experienced several extreme heat waves (in 2003, 2006, 2007, 2010, 2014, 2015 and 2017). Under a high emissions scenario, very extreme heat waves are projected to occur as often as every other year in the second half of the 21st century (European Envirement Agency, 2017).

9 An increase in sea temperature is likely to have important consequences in term of biodiversity. Wild fish stocks are responding to changing temperatures and food supply by changing their distribution which can affect local communities dependent on them.

10 Dead zones are hypoxic (low-oxygen) areas caused by excessive nutrient pollution from human activity coupled with other factors that deplete the oxygen required to support most marine life in bottom and near-bottom water.



Map 3.1 Electricity generated from hard coal and lignite, 2015

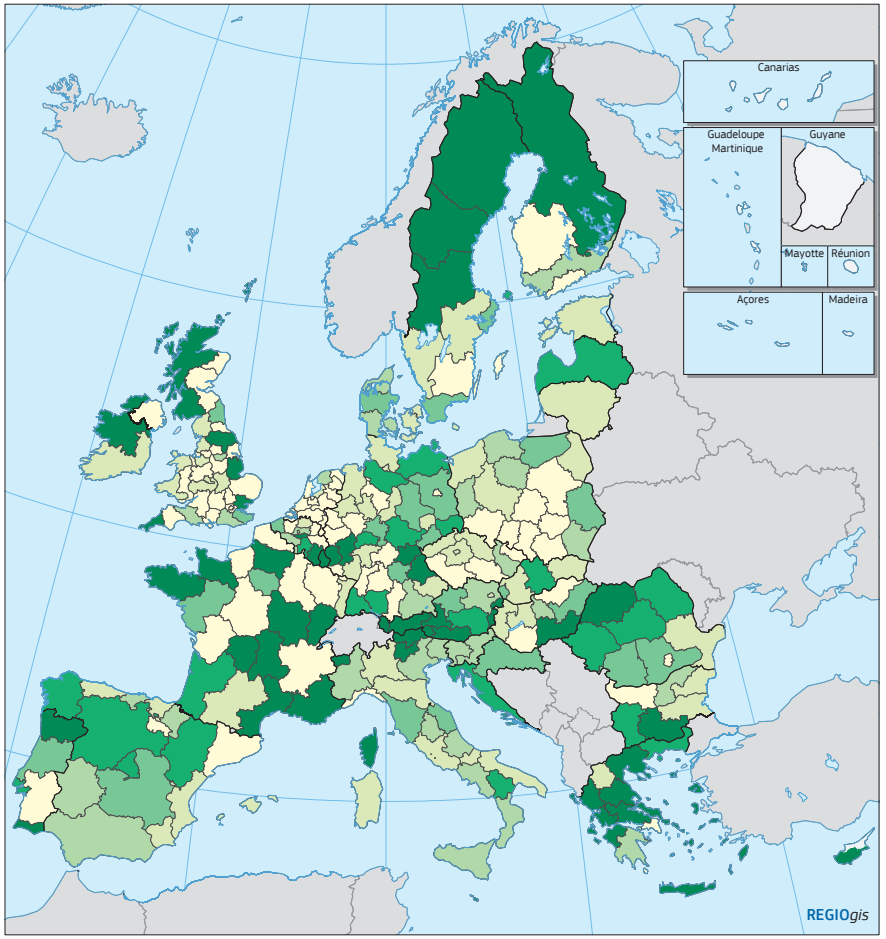
% of total electricity generated

- < 15
- 15 – 30
- 30 – 45
- 45 – 60
- 60 – 80
- > 80

Source: JRC

0 500 km

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Map 3.2 Electricity generated from renewable sources, 2015

% of total electricity generated

- < 15
- 15 – 30
- 30 – 45
- 45 – 60
- 60 – 80
- > 80

Source: JRC

0 500 km

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Outermost regions and environmental challenges

The outermost regions are particularly vulnerable to climate change and natural disasters as shown by dramatic impact of hurricane Irma on Saint Martin. Most of them are tropical or sub-tropical islands with difficult topographies and fragile economies and ecosystems. Climate change is also likely to impact on fauna and flora, with probable effects on agricultural products on which their economies rely, notably sugar cane and bananas.

Being greatly affected, the outermost regions realised at an early stage the need to combat climate change. For example, the French Guiana forest is an important source of decarbonisation of the planet and its preservation helps to limit the rise in global temperatures.

The regions are also increasingly reducing the use of fossil fuels for electricity generation. The share of renewable energy in electricity production in French Guiana is already 64%. Martinique, Guadeloupe and Reunion Island have ambitious targets of 100% production from renewables by 2030 mainly through combined use of solar, hydro-, wind and geothermal power as well as smart grids. Guadeloupe has imposed building regulations specifically adapted to local conditions.

The Canary Islands plan to reach total energy and water self-sustainability of the island of El Hierro by upgrading the capacity of the existing hydro power plant, installing additional wind power capacity, using only electric vehicles on the island and making further use of locally produced biomass.

gions. But, in general, climate change will have major adverse effects on the environment which it will be necessary, and often costly, to adapt to.

Vulnerability to climate change varies widely from one region to another. According to meta-analysis integrating assessments covering multiple areas (water, agriculture, tourism, ecosystems and so on)[11], Italy, Spain and southern and central France are likely to have the highest number of areas adversely affected, along with parts of south-eastern Europe (Map 3.3).

Climate change is also expected to increase the occurrence of natural hazards throughout the EU in the coming decades. Recent studies[12] show that places where the effects are likely to be particularly severe (i.e. affected by increase in the probability of hazard occurrences of at least 20% for three or even four of the 7 hazards considered) will progressively extend northwards to central and western Europe in the coming decades, covering, by 2050, many areas of the Netherlands, the UK and Ireland as well Spain, France, Italy, Bulgaria and Romania (Map 3.4).

Estimating the economic costs of climate change is particularly challenging, but most studies indicate that these costs could be high even for modest changes in climate[13]. The PESETA II study estimates total damages in the EU of up to €190 billion by the end of the 21st century under a high economic growth scenario[14], mostly from heat-related deaths and losses in agriculture and coastal areas.

The costs are expected to be far from evenly distributed across Europe, and much higher in southern Europe than elsewhere (the CIRCE project estimates that Mediterranean countries could lose an average of just over 1% of GDP by 2050 notably from damage to tourism and energy)[15].

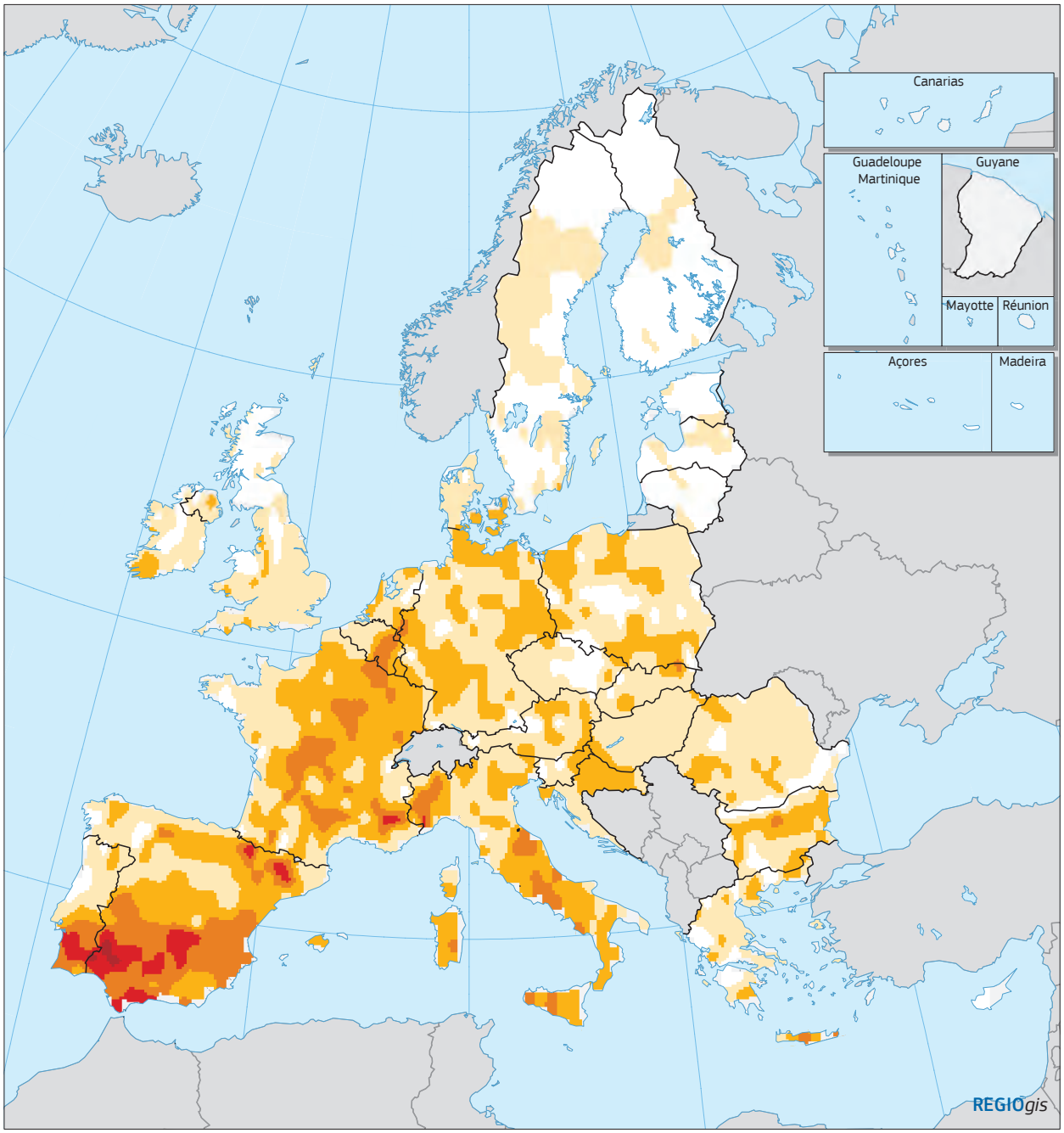
11 See European Environment Agency (2017) for a meta-analysis.

12 Forzieri, G., Feyen, L., Russo, S., Vousdoukas, M., Alfieri, L., Outten, S., Migliavacca, M., Bianchi, A., Rojas, R. and Cid, A. (2016).

13 Ciscar, J. C., Feyen, L., Soria, A., Lavalle, C., Raes, F., Perry, M., Nemry, F., Demirel, H., Rozsai, M., Dosio, A., Donatelli, M., Srivastava, A., Fumagalli, D., Niemeyer, S., Shrestha, S., Ciaian, P., Himics, M., Van Doorslaer, B., Barrios, S. (2014).

14 In 2000, the Inter-governmental Panel on Climate Change (IPCC) published the Special Report on Emissions Scenarios (SRES) which describes greenhouse gas emission scenarios used to make projections of possible future climate change. The SRA1B scenario assumes rapid economic growth, a global population that reaches 9 billion in 2050 and then gradually declines, the rapid spread of new and efficient technologies, a convergence of world income and ways of life and extensive worldwide social and cultural interaction.

15 Navarra, A. and Tubiana, L. (2013).



Map 3.3 Negative climate change impacts under a 2°C warming scenario

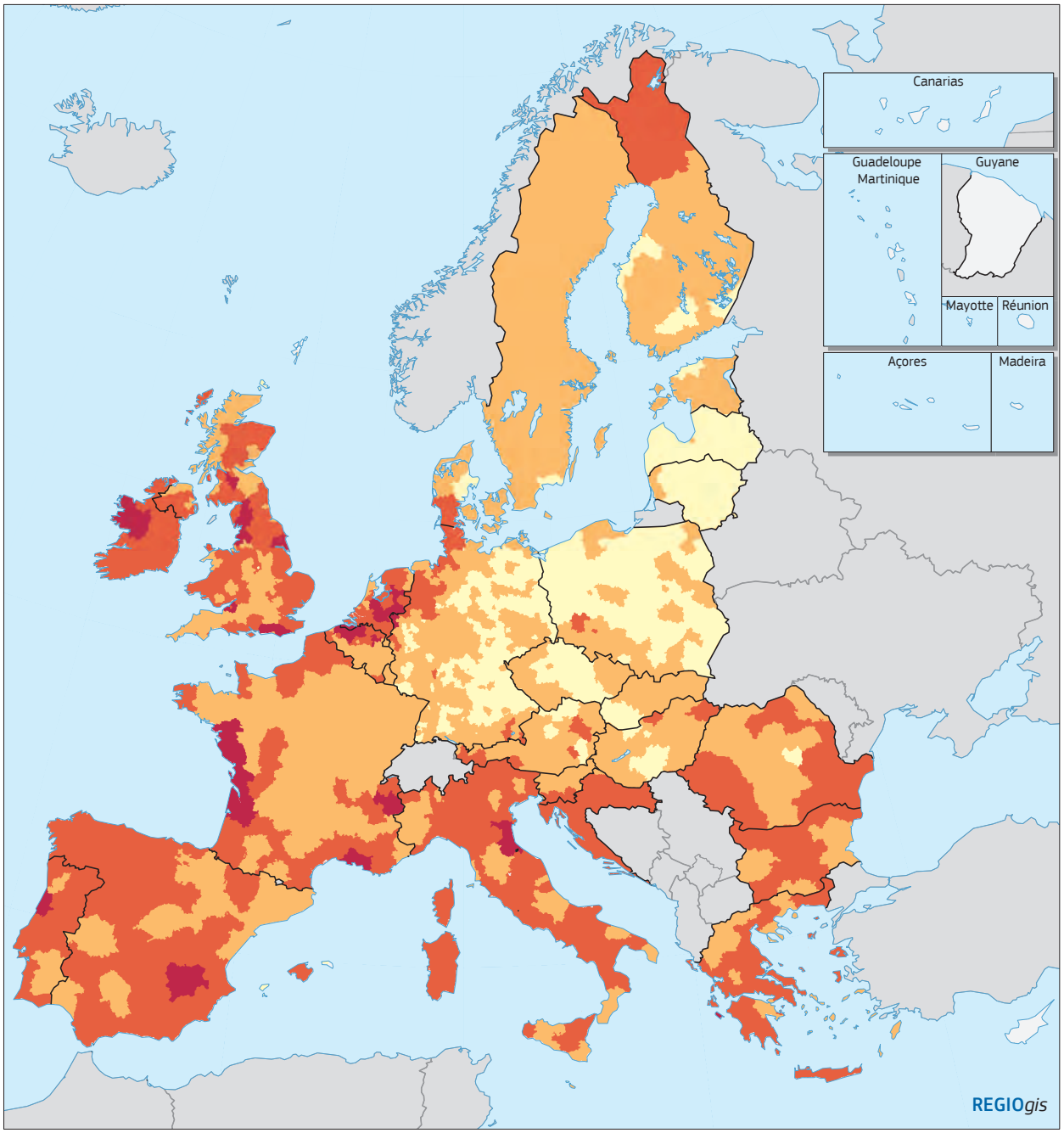
Number of sectors

- 0
- 1
- 2
- 2
- 4
- 5

Number of sectors negatively affected by climate change.
Source: EEA, adapted from IMPACT2C project, 2015

0 500 km

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Map 3.4 Projected increase in multi-hazard climate-related exposure, 2050

Number of hazards with moderate increase

- 1
- 2
- 3
- 4
- No data

Source: JRC, Forzieri et al., 2016

0 500 km

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3. State of environment

3.1 Water

One of the objectives of the Seventh Environment Action Programme (7th EAP) is to ensure the good status of transitional[16], coastal and fresh water by 2020. Surface water[17] is a major component of fresh water and improving its ecological state is critical to achieving this objective.

The Water Framework Directive[18] (WFD) and other water-related ones have contributed to improving water protection in the EU. In general, people throughout the EU can safely drink tap water and swim in many of the coastal areas, rivers and lakes. However, reducing pollution to meet the objectives of the WFD requires as a pre-condition that several other Directives and regulations are fully implemented[19].

Although progress in wastewater treatment and reductions in agricultural inputs of nitrogen and phosphorus have helped to improve the quality of surface water in the EU, pollution from agriculture (particularly nitrogen losses) as well as from urban and industrial wastewater remains significant. According to the EEA, in 2015, only 53% of water bodies are estimated to have good ecological status, making it unlikely that the objective of achieving good status of all water will be met by 2020[20].

Member States differ substantially in terms of the ecological status of their river basins (Map 3.5). In Belgium, northern Germany and the Netherlands, over 90% of surface water is reported to be in a 'less than good' ecological state. In the Czech Republic, southern England, northern France, southern Germany, Hungary and Poland, 70% to 90% of freshwater bodies (lakes and rivers) are reported to be in a similar state. The ecological status of coastal and transitional water is also poor in the Black Sea and greater North Sea regions. On the other hand, a much larger share of surface water is in good ecological state in Northern regions of Sweden and Finland and some regions of Northern Italy, Northern Spain, Latvia and Greece.

To achieve good status, Member States will have to do more to reduce the pressure on water bodies. This will require substantial investment in ways of reducing pollution or tackling over-abstraction of ground water and morphological and hydrological changes[21]. Such investment can be supported by cohesion policy (in the 2007–2013 programming period around €17.8 billion of the ERDF and Cohesion Fund was allocated to wastewater infrastructure in 22 Member States[22]).

Appropriate collection and treatment of wastewater to remove organic matter, nutrients (nitrogen and phosphorus) and other hazardous substances it contains is essential for improving the ecological status of water bodies (marine and freshwaters) as well as to reduce the risk to human health and biodiversity.

The Urban Waste Water Treatment Directive[23] (UWWTD) sets minimum requirements in respect of urban wastewater treatment, making it mandatory for settlements with the equivalent to

16 Transitional waters are bodies of surface water in the vicinity of river mouths which are partly saline as a result of their proximity to coastal waters but which are substantially affected by freshwater flows.

17 Surface water is water on the surface of the planet in rivers, lakes, wetlands and oceans, in contrast to groundwater and atmospheric water.

18 Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

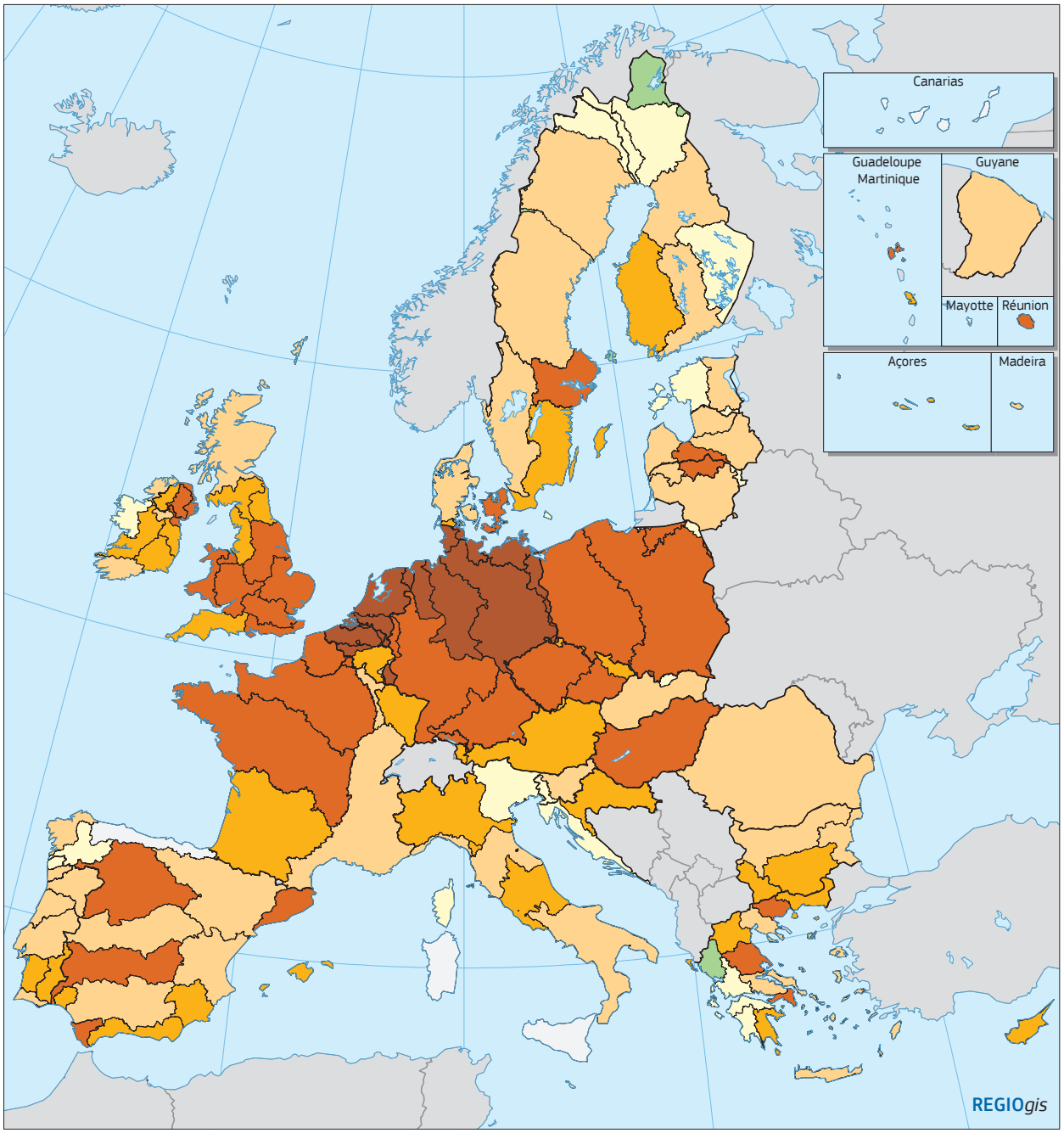
19 This includes the Urban Waste Water Treatment Directive, the Nitrates Directive, the Directive on Sustainable Use of Pesticides and the Industrial Emissions Directive.

20 Note that the picture is similarly bleak for marine ecosystems. In their initial assessments for the Marine Strategy Framework Directive, Member States indicated that only 4% of marine species and habitats have a 'good environmental status', while 80% are categorised as 'unknown'. The indication is that marine resources are being used unsustainably and as a number of human off-shore and on-shore activities depend on the health, cleanliness and productivity of the seas, there is a need for them to be used responsibly.

21 River morphology corresponds to the shapes of river channels. It is determined by a number of processes and environmental conditions, including the composition and erodibility of the river bed and banks, vegetation and the rate of plant growth, the availability, size and composition of sediments and human interaction. River hydrology refers to the movement, distribution and quality of water.

22 European Commission, Eighth Report on the Implementation Status concerning urban waste water treatment COM(2016) 105 of 4 March 2016.

23 Council Directive 91/271/EEC concerning urban waste water treatment.



Map 3.5 Rivers and lakes with less than good ecological status or potential

% of rivers and lakes

- < 10
- 10 – 30
- 30 – 50
- 50 – 70
- 70 – 90
- >= 90
- No data

Aggregated by River Basin District
Source: EEA River Basin Management Plans

0 500 km

© EuroGeographics Association for the administrative boundaries

2 000 inhabitants or more. Since its adoption in 1991, it has led to a considerable reduction in discharges of major pollutants but its implementation still needs to be improved in a number of Member States and regions.

The level of treatment required in the UWWTD depends on the sensitivity of the areas of discharge and on the size of the settlements. Sensitive areas are those where the environmental risks due to the adverse effects from wastewater discharge are particularly high (e.g. risk of eutrophication by excess of nutrients) or which require specific protection, such as drinking water abstraction areas and waters for bathing and those where shellfish live. Secondary (biological) treatment, which decomposes most of the organic matter responsible for oxygen depletion, is the minimum requirement in 'normal' or non-sensitive areas. Tertiary (or more stringent) treatment, which removes nutrients and disinfects the water, is required in large settlements (with the equivalent of 10 000 inhabitants or more) discharging into sensitive areas.

According to the UWWTD 9th Reporting Exercise (2014), high compliance rates are generally observed in most EU-15' Member States, especially in Austria, Germany and the Netherlands, which have largely implemented the Directive. However, there are still a number of EU-15 countries which have compliance gaps and have delayed the implementation of necessary measures. This is notably the case for Italy, Spain, Belgium, Luxembourg and Ireland.

The picture is different for EU-12 Member States (i.e. excluding Croatia, for which the deadline for compliance is 2018). This is partly a result of their later accession and the transitional periods for compliance which have been granted to them. The last available results, however, show a substantial improvement in compliance with collection obligations compared to previous years. The compliance rate is high, except for Cyprus (61%), Slovenia (65%) and above all Bulgaria (26%) and Romania (3%). Some Romanian regions as well as several Bulgarian regions and Eastern Slovenia show compliance rates below 40%, and even below 20% as in the case of Romania and of south-western Bulgaria. This regional concentration of non-compliant agglomerations has significant implication for the water quality of the affected river basins such as the Black Sea Basin.

The same applies to wastewater treatment. In the majority of EU-12 Member States, secondary treatment of wastewater shows high compliance rates of above 85% for eight of the countries, the exceptions being Romania, Bulgaria, Malta and Slovenia which have much lower compliance rates. In some regions, like Principado de Asturias (ES), Sicilia (IT), Slovenia and most Bulgarian regions, the share of agglomerations where secondary treatment is not taking place is below 40%. In these regions, human and ecosystem health is critically threatened due to the low degree of compliance.

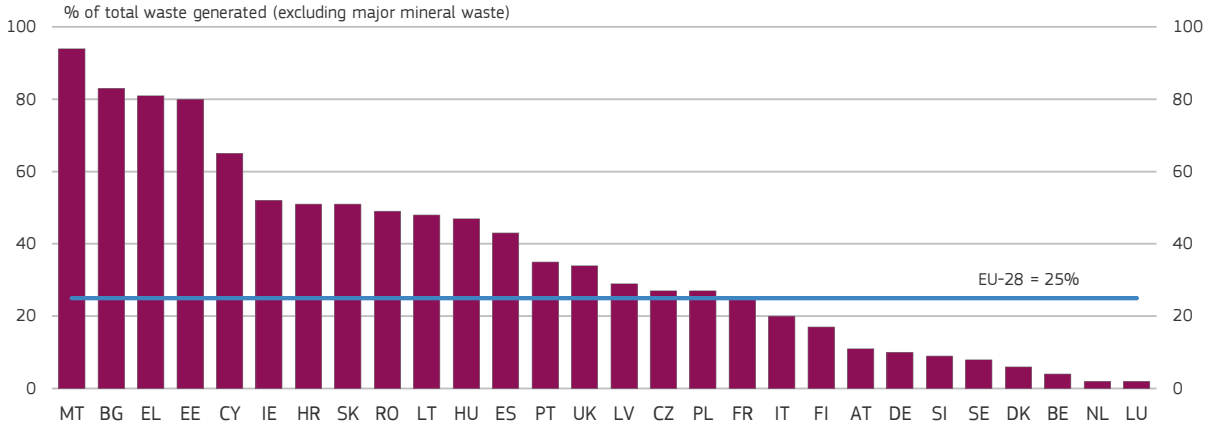
Compliance rates are also high in most cases in respect of stringent treatment, where applicable, varying between 50% and 100%, except in Romania, Bulgaria and Malta, where there are substantial delays in implementing the necessary measures.

3.2 Waste

Solid waste affects human health as well as the environment since it generates emissions of polluting substances into the air, soil, surface water and groundwater. It also presents major challenges for management as the quantity of waste produced per person has increased steadily over time. A transition to a more circular economy requires action throughout a product's life-cycle: from production to the creation of markets for waste-derived materials. Waste management is one of the main areas where further improvements are needed and which are within reach. Accordingly, reducing the generation of waste and promoting its reuse and recycling are key objectives of the EU action plan for the circular economy[24].

24 European Commission, Closing the loop — An EU action plan for the circular economy, COM(2015) 614 of 2 December 2015. A circular economy is one in which the value of products, materials and resources is maintained for as long as possible, minimising waste and resource use.

Figure 3.4 Share of waste landfilled in selected EU Member States, 2014



IE, RO, DE: 2012
Source: Eurostat

In 2014, an average of 4.9 tonnes of waste per person were generated in the EU. Much of this was produced by construction and demolition, mining, quarrying and manufacturing. Households also produced a substantial amount of waste, an average of 411 kg per person. Marine litter, escaping from waste management systems, is a growing concern. The total amount of waste generated (including mineral waste) in the EU increased by around 2% between 2010 and 2014 though there are wide variations between Member States.

Increasingly, waste is recycled or energy is recovered from it. Between 2010 and 2014, the proportion of treated waste (excluding mineral waste) recycled increased only slightly from 53% to 55%, while the proportion incinerated with energy recovery rose from 11% to 14%. The increase in recycling occurred against a background of measures designed to stimulate it, including EU and national legislation, support from the Structural Funds, landfill taxes and pay-as-you-throw schemes.

In 2014, the proportion of waste (excluding mineral waste) disposed of in landfill fell from 28% to 25% in the EU (Figure 3.4). There are, however, marked variations between Member States. Over 80% of waste is still landfilled in Bulgaria and Greece and over 50% in Estonia, Cyprus, Malta, Romania and Slovakia. By contrast, less than 5% goes to landfill in Belgium, Denmark and the Netherlands.

Circular economy

The EU action plan for the circular economy establishes a long-term approach to reducing waste generation, increasing recycling and reuse and reducing landfill and incineration. The circular economy is aimed at 'closing the loop' of product lifecycles by keeping resources within the economy so as to improve use of raw materials, products and waste. It contributes to meeting the EU's environmental and climate objectives and stimulates local and regional development. Waste prevention, eco-design and similar measures generate savings, increase turnover and create jobs, particularly in re-manufacturing, repair and product innovation. EU cohesion policy is important in making the circular economy a reality. In the 2014–2020 programmes, there is substantial funding for waste management as well as support for the circular economy through investment in innovation, SMEs, resource efficiency and renewables as well as green jobs.

3.3 Sustainable transport

Besides making transport more competitive and increasing the quality of the network, EU transport policy has also sought to reduce dependence on oil, greenhouse gas and other emissions (such as

SO_x, NO_x and fine dust), to limit congestion and to improve safety.

Over the past 20 years, the volume of goods and number of passengers transported within the EU has grown steadily, apart from during the global recession in 2008–2009. Between 1995 and 2014, both passenger and freight transport increased on average by just over 1% a year[25]. Transport increasingly faces serious social and environmental challenges. It is second only to energy in greenhouse gas emissions, accounting for 23% of the total and, unlike energy, its emissions have risen since 1990 (by around 20%). Transport may also have significantly damaging effects on the quality of the environment, such as by increasing fragmentation of natural habitats.

The aim, therefore, is to establish a 'sustainable mobility' model of transport, to develop an efficient and competitive transport sector as a key element of the EU internal market while at the same time reducing costs from road accidents, respiratory diseases, climate change, noise, environmental damage and traffic congestion. The model entails fostering environmentally-friendly modes of transport as well as combined and inter-modal transport.

In its 2011 White Paper on the future of transport up to 2050, the Commission set the objective of reducing greenhouse gas emissions from transport by at least 60% in relation to 1990 levels by 2050. The interim aim is to reduce emissions by 20% in relation to 2008 levels by 2020–2030, requiring a fundamental shift towards the use of less and cleaner energy and more efficient utilisation of transport infrastructure. To achieve these objectives, the White Paper called for a shift of 30% of freight being transported over 300 km by road to rail or water by 2030 and one of over 50% by 2050, a tripling of the length of the existing high-speed rail network by 2030 and a move of the majority of medium-distance passenger travel to rail by 2050. It also targets the establishment of a fully functional multimodal TEN-T in the EU by 2030 and a high-quality and high-capacity network by 2050. In many places, achieving these objectives implies improving markedly the quality of transport infrastructure and new construction. Transport is the main beneficiary of the Connecting Europe Facility which has a budget of €24 billion for the period up to 2020.)

Cars remain by far the predominant mode of passenger transport in the EU. In 2014, they accounted for over 83% of all inland passenger km travelled in the Union[26], varying from 68% in Hungary to almost 90% in Portugal and Lithuania (Figure 3.5).

Buses accounted for 9% of passenger km travelled, the share varying from 3% in the Netherlands to 23% in Hungary. Trains accounted for 8%, though the figure varies according to the size and state of the rail network. In France, Austria and Sweden, which have fast and frequent trains, around 10% of travel was by rail, while in Greece, Estonia, Lithuania, where the rail network is limited and of low quality, the figure was less than 2%.

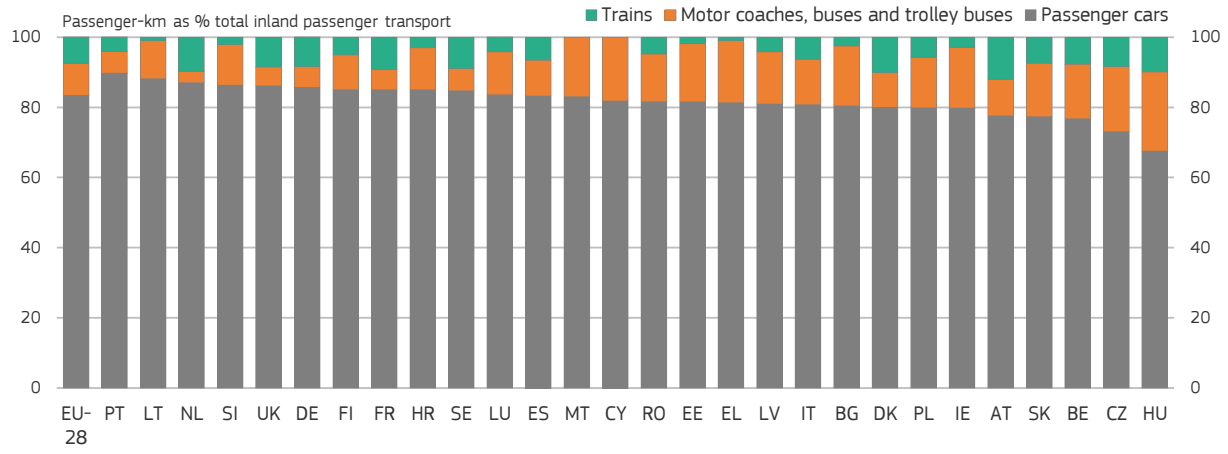
In the case of freight, around 75% of goods were transported by road in 2014 (Figure 3.6). In Cyprus, Malta, Ireland and Greece, all or almost all were. Only 18% on average went by rail, though in Austria, the proportion was 44% and in Latvia, 59%. In Romania, Belgium and the Netherlands, there is an extensive network of inland waterways and these carried around 20% of freight in the first two and almost 40% in the last.

These figures have been remarkably stable over time both for passenger and freight transport, except in a few Member States, particularly Romania and Estonia, where the share of freight going by road increased by 10 and 18 percentage points, respectively, between 2011 and 2014. Significant effort is, therefore, needed to achieve a shift to more environmentally-friendly modes of transport.

25 European Commission (2016i).

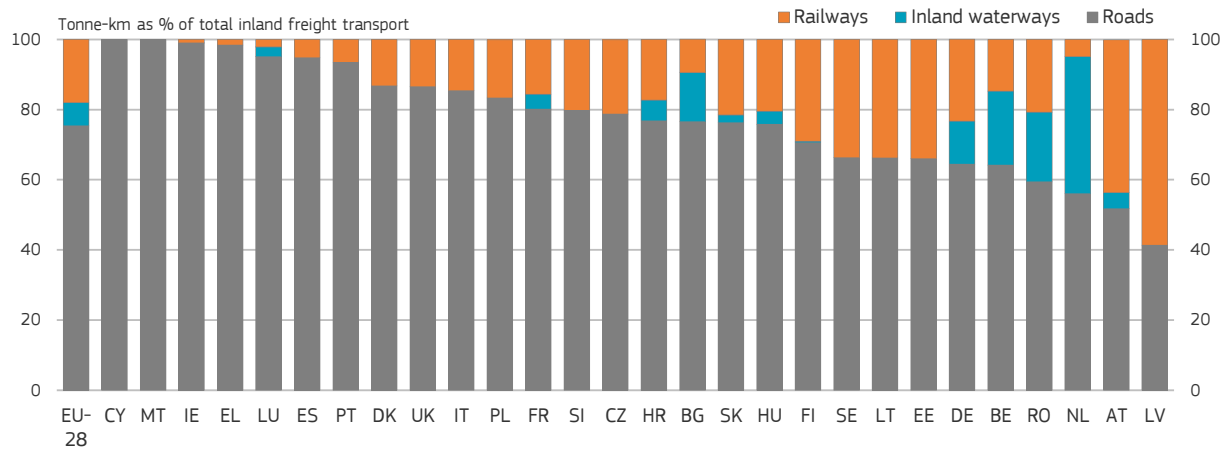
26 Passenger-kilometre represents one passenger travelling a distance of one kilometre. The share is the percentage of transport by passenger cars in total inland passenger transport, measured in passenger-kilometres.

Figure 3.5 Passenger travel by transport mode, 2014



Source: Eurostat

Figure 3.6 Freight transport by mode, 2014



Source: Eurostat

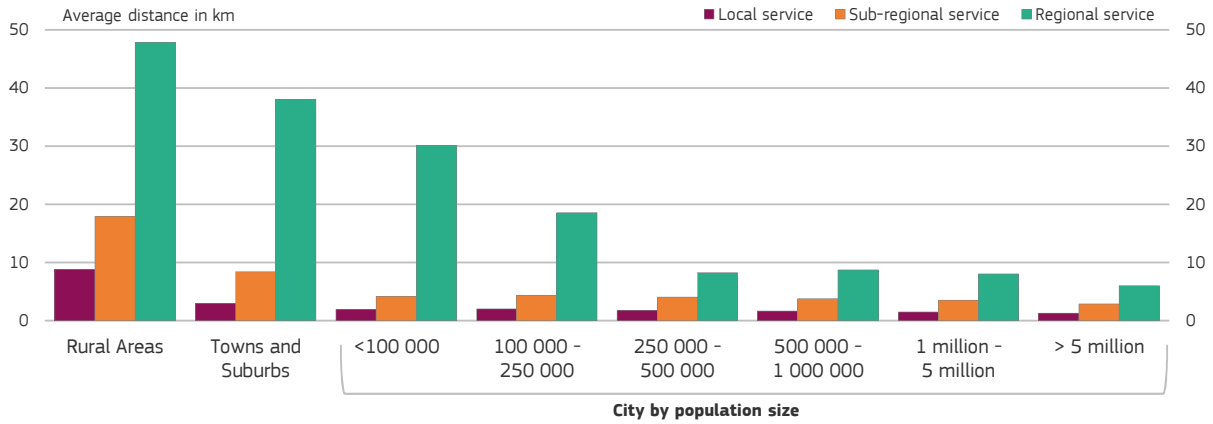
4. Sustainable cities

4.1 Cities can be environment-friendly

Cities are often considered to be inherently harmful for the environment. In practice however, cities are not just a source of pollution but also a potential solution to current environmental challenges. While urban areas in the EU generally face more environmental challenges than other places, they can often prove to be more resource- and energy-efficient than other areas where low-density settlements, energy-intensive buildings (e.g. detached houses) and the level of dependency on the car for transport are generally more common. Housing in cities tends not only to occupy less land but also more frequently takes the form of apartments and townhouses which generally require less energy to heat and cool.

Cities also offer more possibility adopting a low carbon lifestyle. Living in cities tends to make it possible to access a large number of services using less energy-consuming modes of transport. People generally prefer to be close to the services and facilities they regularly have need of, such as schools, healthcare services, childcare, cultural and sports facilities and shops. The average distance to

Figure 3.7 Distance to services by type of municipality in the EU



The location of services has been simulated taking into account population distribution and distances.
Source: JRC

such services is usually much less for people living in cities than in towns and suburbs or rural areas.

On average in the EU, the distance to access services by road is 4.5 times greater in rural areas (almost 9 km) than in cities (less than 2 km). In countries which are more urbanised, the difference is smaller, as in Malta (1.4 times greater in rural areas), the Netherlands (2.3 times), Belgium (2.9 times) and the UK (2.8 times). In countries where urban areas are more dispersed, the difference can be much larger (at the extreme, in Finland, it is 13 times greater).

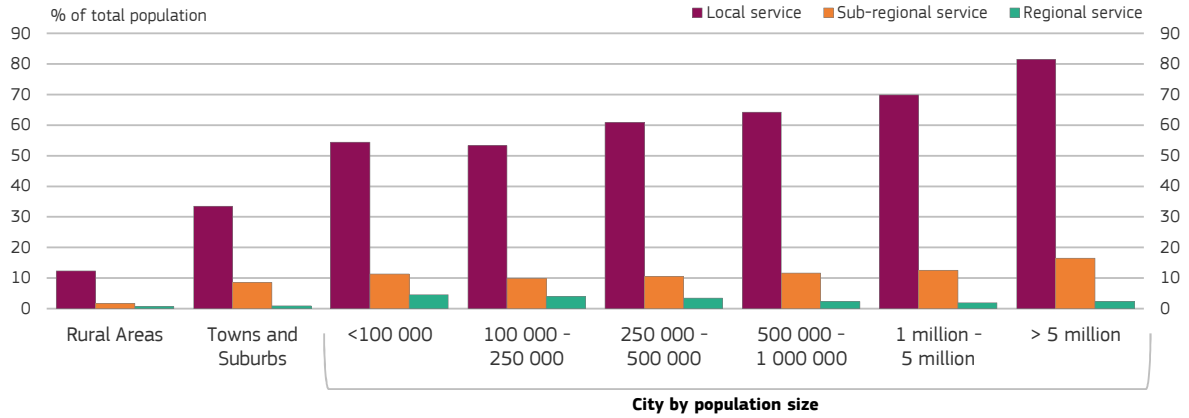
The difference between cities and other areas in terms of accessing services varies according to the service concerned. Local services (such as schools, general health services, childcare, sports facilities and shops) are generally available in all types of municipality, even though they take longer to reach in rural and suburban areas (Figure 3.7 Distance to services by type of municipality in the EU). The difference is greater for 'sub-regional' services, such as high schools, hospitals, theatres, cultural facilities and supermarkets, and greatest of all for regional services, such as specialised education and healthcare centres, large sports and cultural facilities or government offices. The average distance to reach such services in the EU is 48 km in rural areas, 38 km in towns and suburbs and less than 10 km in cities with a population of more than 250 000.

Accordingly, large cities offer the possibility of accessing services by walking or by bicycle while in rural areas or in smaller towns, it is much more difficult, or impossible, to do so. For instance, the average share of population in the EU living within 1 km of local services increases rapidly with the degree of urbanisation and the size of city, rising from 12% in rural areas to over 80% in cities of more than 5 million inhabitants (Figure 3.8)

Cities also tend to be more efficient in their use of land. Built-up areas per person in cities are only a quarter of those in rural areas. This reflects the fact that the availability of land and its cost make cities more attractive for less land-intensive activities, such as services, company headquarters or leisure facilities, than suburbs or rural areas. Land scarcity also increases the incentive to economise on land use for housing, which is generally smaller in cities than in other areas where the average area occupied per household tends to be much larger.

Although land use per inhabitant is usually greater in large cities than in smaller ones, there are wide variations across the EU. In particular, cities in northern and western Europe are often more densely populated than in southern and central-eastern EU countries and the built-up area per in-

Figure 3.8 Share of population living within 1km of different services, by city size and degree of urbanisation in the EU



The location of services has been simulated taking into account population distribution and distances.
Source: JRC

habitant, therefore, tends to be smaller (Map 3.6). This difference tends to increase over time. Between 2006 and 2012, the built-up area per inhabitant increased most in cities in the southern and central-eastern EU while it declined in a number of large cities in northern and western Europe (Map 3.7).

4.2 Changes in land use per person

The process of urbanisation is driven by a range of factors that can be influenced by various types of policy, including cohesion policy. According to a recent study[27], land use per person in the EU increased steadily from 0.94 of a hectare per 100 people in 1975 to 1.3 hectares in 2010. The overall increase in land use per person is consistent with an 'urban sprawl' phenomenon, or the rapid, and sometimes uncontrolled, expansion of built-up areas around towns and cities, creating widespread and relatively low density urban suburbs, often inefficient in terms of energy and land consumption[28].

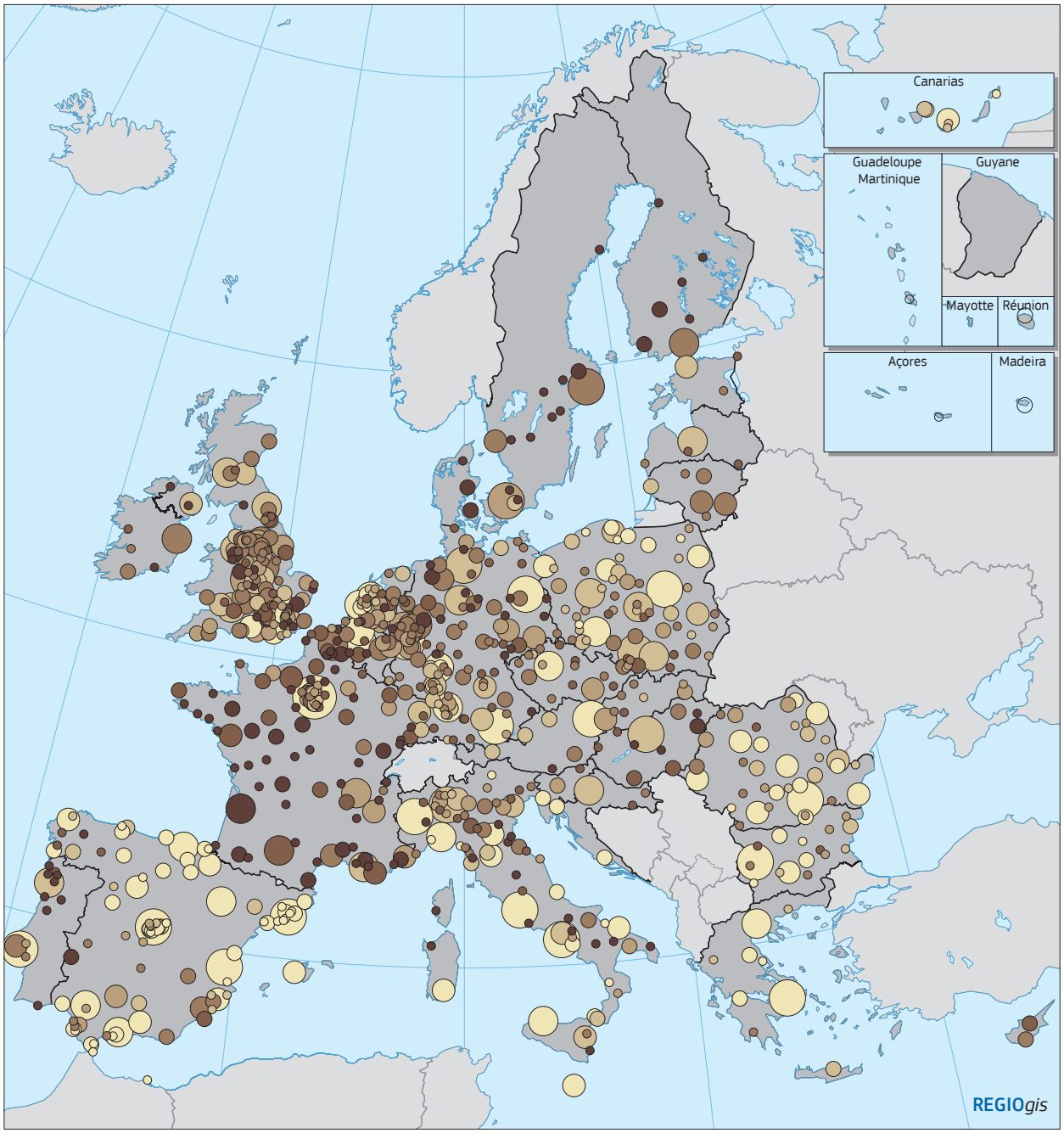
The observed increase in land use per person, however, seems to be running out of steam as urban areas in many EU regions have become more densely populated over more recent years. The main increase in land use per person occurred over the period 1975–1990. In the period 2000–2010, despite a continuing slight increase at EU level, many regions experienced decreases.

The main developments in land use per person in different types of EU region are as follows:

- Metro and capital city regions: a NUTS 3 region which is a metropolitan area or part of one is more likely to experience increases in population density, and even more so if it contains the national capital city.
- Rural regions: a rural NUTS 3 region is likely to experience a decline in population density, which means that built-up areas are expanding at a faster pace than population.
- Increases in population, GDP per head, employment and accessibility are all positively associated with growth of population density. In general, socio-economic factors are major determinants of a region's attractiveness.
- Regions with a high Percentage of Available Land (PAL) have few or no physical constraints on development which discourages growth of population density. Pressure on land prices is likely to be low and so extensive land development is relatively inexpensive. Conversely, re-

27 Batista e Silva F, Alvarez M, Vizcaino P, Jacobs Crisioni C, Ghisetti C, Pontarollo N, Lavalle C, D'Hombres B (2017).

28 See for instance Jaeger J., Bertiller R, Schwick C. and Kienast F., (2010).



Map 3.6 Residential, industrial and commercial areas per inhabitant by city, 2012

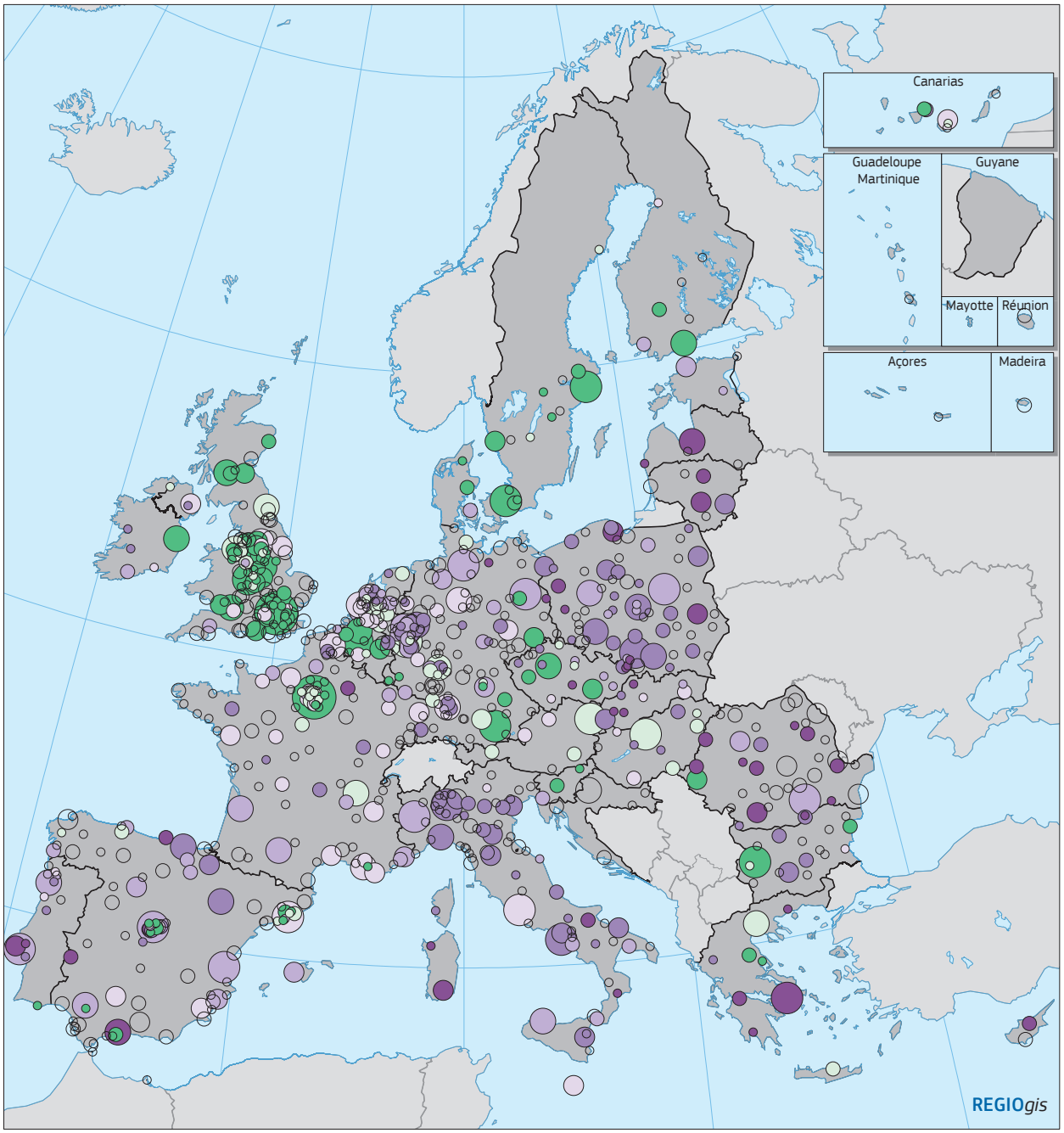
m²/inh.
- < 140
- 140 – 175
- 175 – 200
- 200 – 250
- 250 – 300
- >= 300
- No data

Urban center population
- < 100 000
- 100 000 – 250 000
- 250 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 5 000 000
- >= 5 000 000

Residential, industrial, commercial, public and private built-up areas.
Source: Copernicus Urban Atlas, Eurostat, DG REGIO

0 500 km

© EuroGeographics Association for the administrative boundaries



Map 3.7 Change in residential, industrial and commercial areas per inhabitant by city, 2006–2012

Total % change
- < -2
- -2 – 0
- 0 – 2
- 2 – 4
- 4 – 8
- >= 8
- No data

Urban centre population
- < 100 000
- 100 000 – 250 000
- 250 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 5 000 000
- >= 5 000 000

Residential, industrial, commercial, public and private built-up areas.
Source: Copernicus Urban Atlas, Eurostat, DG REGIO

0 500 km

© EuroGeographics Association for the administrative boundaries

gions with limited space for development tend to experience upward pressure on land prices, leading to denser urban development.

- Places with high initial levels of population density generally experience lower growth of density, suggesting that further densification may be discouraged in such regions. This could be because of two possible complementary reasons: a concern to avoid or reduce the diseconomies resulting from densification and technical or legal constraints on population growth.

4.3 Urban transport

Public transport is equally more accessible in large cities. In the vast majority of large cities, the share of the population with high or very high access to public transport is above 60%, and up to 98% in Madrid (Figure 3.9 which shows the situation in a sample of large cities)[29]. The only exception is Dublin where the figure is only 38%. The figures tend to be slightly lower for mid-size cities. The proportion of inhabitants with high or very high access to public transport is less than 50% in Toulouse and Vilnius but close to 90% or more in Bologna, Sevilla and Edinburgh (Figure 3.10).

4.4 People living in cities suffer more from pollution

In 2015, the proportion of people in cities in the EU reporting to live in an area with environmental problems (19%) was larger than for those in towns and suburbs (13%) and rural areas (8%) (Figure 3.11). The proportion for those in cities was particularly large in Malta (34%), Germany (33%) and Greece (30%), while it was only around 10% or less in Ireland, Cyprus, Denmark, Croatia and Finland, where environmental problems seem less common[30].

Air pollution remains a major environmental concern in the EU. Nine out of 10 people in urban areas in the EU are exposed to pollution concentrations above the levels recommended by the World Health Organisation (WHO). Air pollution has a major impact on human health, with an estimated 400 000 premature deaths each year due to high levels of fine particles and ozone. It also has a significant effect on ecosystems. Excessive nitrogen deposits (eutrophication) and ozone concentrations adversely affect biodiversity and crop yields and cause other material damage in over half of the EU.

At the same time, emission of air pollutants, notably of carbon monoxide, sulphur oxides and lead,

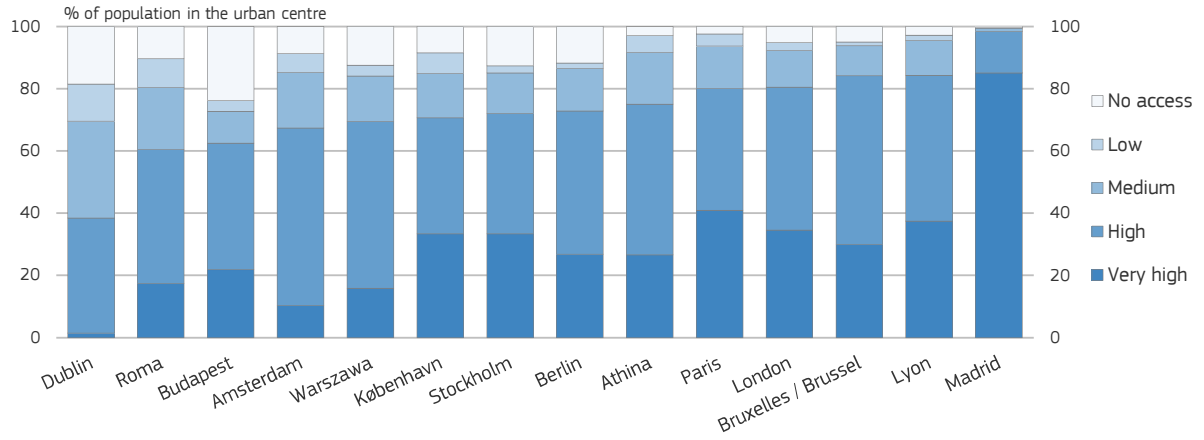
Urban ecosystems and Green Infrastructure (GI)

Cities have high concentrations of people who could profit from nature to improve their health and well-being. They have limited space which needs to be better used in a multi-functional way; they suffer from air, soil and water pollution and from the effects of climate change such as heat waves and flash floods — all of which have effects on their economy and social security system. Improving biodiversity and the provision of multiple ecosystem services though GI would help to improve the quality of life, health and well-being, protect against the adverse effects of climate change and natural disasters, be a source of regeneration and diversification and create new businesses and innovative and sustainable jobs in a cost-effective way. Implementing GI and nature-based solutions in urban areas could also create a greater sense of community and help combat social exclusion and isolation.

29 No access: it takes more than 5 minutes to walk to a bus or tram stop and over 10 minutes to reach a metro or train station; Low access: it takes less than this to walk to a public transport stop — i.e. people can easily walk there — with less than four departures an hour; Medium access: it people can easily walk to a public transport stop with between 4 and ten departures an hour; High access: people can easily walk to a bus or tram stop with more than 10 departures an hour OR people can easily walk to a metro or train station with more than 10 departures an hour (but not both); Very high access: people can easily walk to a bus or tram stop with more than 10 departures an hour AND a metro or train station with more than 10 departures an hour. See Dijkstra, L. and Poelman, H. (2015).

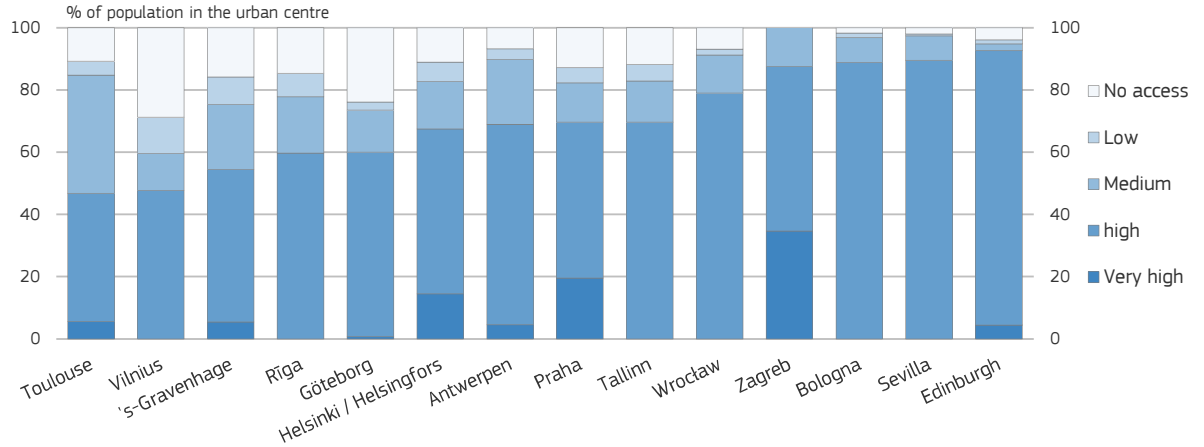
30 Note that these figures relate to perceived problems which might differ from actual problems as a result of differences in expectations about the state of the environment.

Figure 3.9 Access to public transport in large European cities, 2014-2016



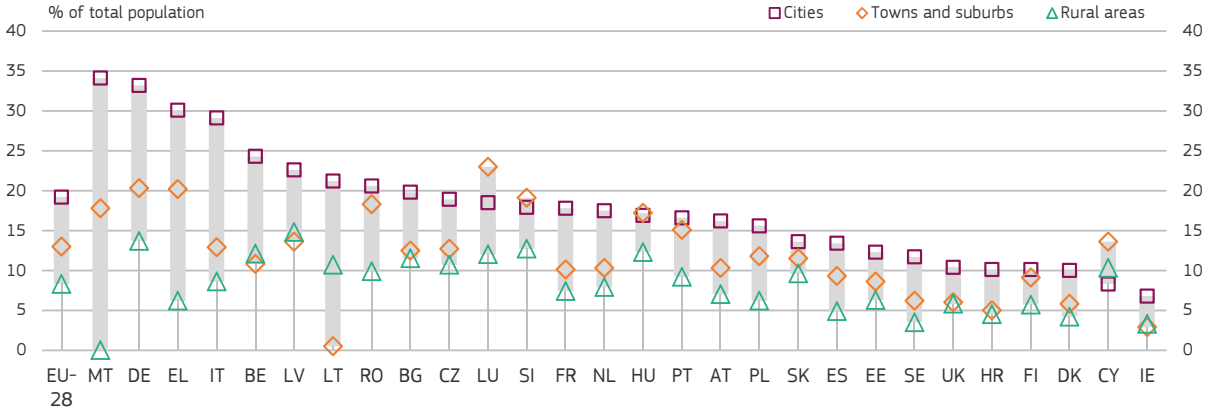
Source: Poelman and Dijkstra 2015

Figure 3.10 Access to public transport in mid-sized European cities, 2014-2016



Source: Poelman and Dijkstra 2015

Figure 3.11 People reporting they live in an area affected by pollution, grime or other environmental problems, by degree of urbanisation, 2015



Source: Eurostat

has declined markedly in the EU over the years, partly as a result of EU legislation[31]. The application of European standards has also been successful in reducing vehicle emissions (such as after the introduction of the diesel particle filter), and the progressive renewal of the vehicle fleet means that air quality in the EU is likely to improve over the long-term. However, more needs to be done to address the issue, such as introducing regional or local incentives to favour very low pollutant emitting vehicles or even zero emission ones.

Some areas are still far from complying with agreed EU air quality standards[32]. This is notably the case in cities, where the majority of the EU population lives and where levels of sulphur dioxide, nitrogen oxides (NO_2), volatile organic compounds, ammonia, fine particulate matter ($PM_{2.5}$ and PM_{10}[33]) and ground level ozone (O_3) remain high.

Air pollution is severe in a number of cities in southern and central Poland, the Czech Republic, Romania and Bulgaria (Map 3.8) but also in Southern Europe (Po Valley, Naples, Cyprus and Greece). According to the EEA, in 2014 around 17% of the urban population in the EU was exposed to PM_{10} levels above the daily limit and 9% to $PM_{2.5}$ levels above the EU target[34].

To a large extent, concentration of airborne particulate matter is caused by emissions from diesel engines or from coal mining and other heavy industry. It is also affected by atmospheric conditions, pollution levels rising with sunshine and hot temperatures. These factors explain the geographical distribution of high PM concentrations. In 2013, for example, the average concentration rose above 40 µg per cubic metre in 9 cities in Bulgaria (including Sofia), peaking at 62.2 per cubic metre in Plovdiv, the second city[35]. The Czech cities of Havírov, Karviná and Ostrava in the coal mining region of Moravia-Silesia also recorded very high concentrations of PM. At the other end of the spectrum, most cities with relatively low levels of air pollution are located in the Nordic and the Baltic Member States.

Concentration of ground-level ozone can cause breathing and cardiovascular problems, asthma and lung disease. High concentrations occur mostly in cities in Northern Italy, Spain (e.g. Jaén and Toledo), the East and South of France (e.g. Sophia-Antipolis, Martigues, Mulhouse, Colmar and Aix-en-Provence) and Southern Germany (e.g. Freiburg im Breisgau, Karlsruhe, Hanau, Friedrichshafen and Heidelberg) (Map 3.9). Around 15% of the urban population in the EU live in areas in which the EU O_3 target threshold for protecting human health was exceeded in 2013[36].

Other types of pollution are also important in an urban environment, including noise pollution. A perception survey on the quality of life in 79 European cities conducted in 2015[37] suggests that in most cities, the level of noise is not a major problem (Figure 3.12). In 62 cities, less than half of respondents reported a problem with noise levels, though the proportion was generally larger in capital cities than in others. The proportion was particularly small in the Nordic Member States (Oulu, Finland, 12%; Aalborg, Denmark, 13%) and the UK (Tyneside and Belfast, 14%). However, in a number of other cities noise pollution seems to cause discomfort and stress, particularly in Bucharest, Palermo and Athens, in each of which around two-thirds reported problems.

31 Directive 2010/75/EU on industrial emissions, Directive (EU) 2015/2193 on medium combustion plants, Directive (EU) 2016/2284 on national emission ceilings and Directive 2008/50/EC on ambient air quality.

32 Directive 2008/50/EC on ambient air quality and cleaner air for Europe fixes air quality standards, with a limit of 40 µg/m³ for the annual mean concentration of nitrogen dioxide. For fine particles, the limit is not more than 35 days per year with a daily average concentration exceeding 50 µg/m³ and a mean annual concentration not exceeding 40 µg/m³. For ozone, the limit is a daily 8-hour mean concentration not exceeding 120 µg/m³ on more than 25 days per year.

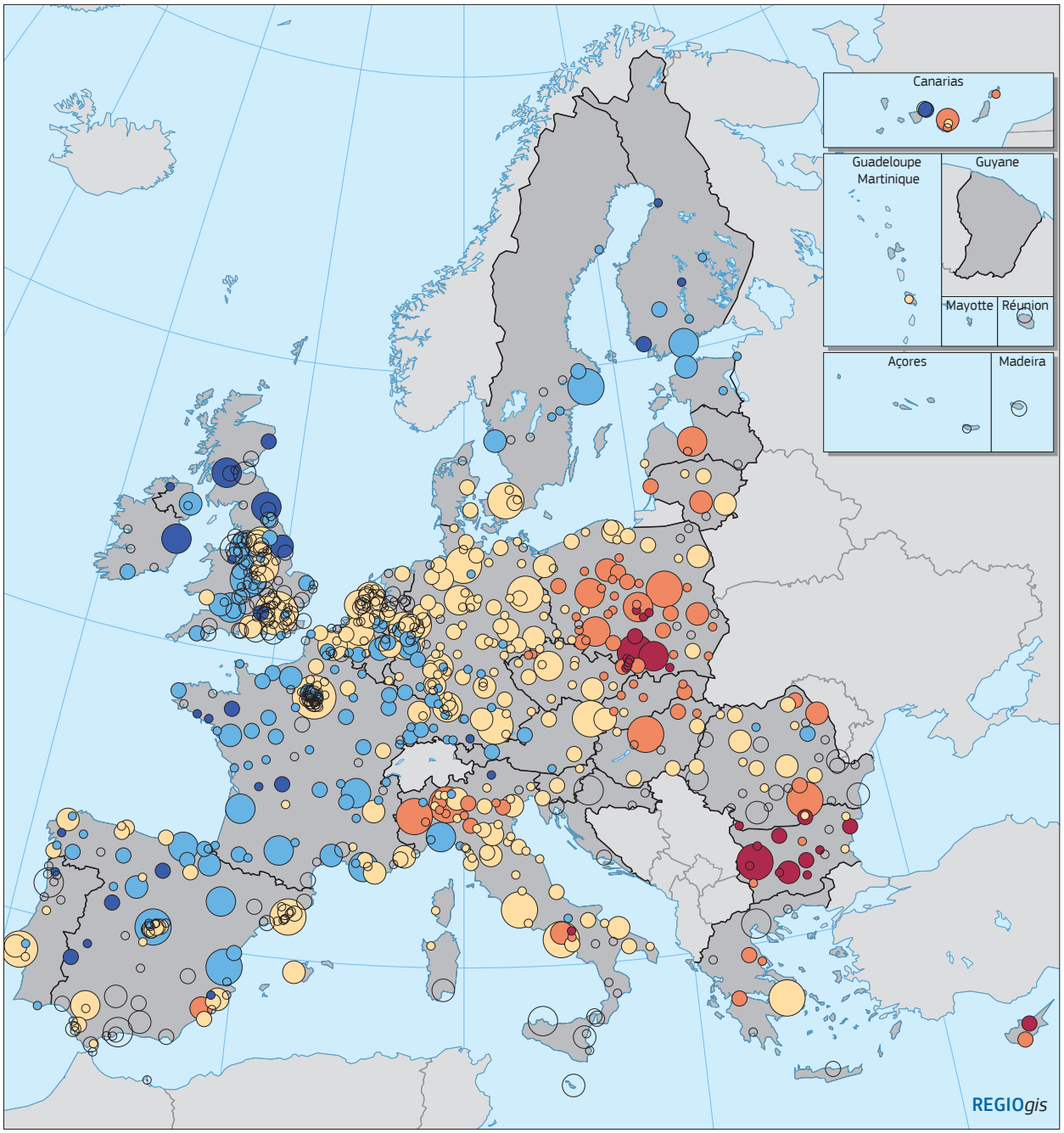
33 Particulate matter (PM) are microscopic solid or liquid matter suspended in the atmosphere. Subtypes of atmospheric particulate matter include respirable particles with a diameter between 2.5 and 10 micrometres (µm).

34 European Environment Agency (2015a).

35 EUROSTAT (2016).

36 European Environment Agency (2015a).

37 European Commission, (2016h).



Map 3.8 Concentration of airborne particulate matter (PM_{10}) in cities, 2014

Annual average concentration (µg/m³)

- < 15
- 15 – 20
- 20 – 30
- 30 – 40
- >= 40
- No data

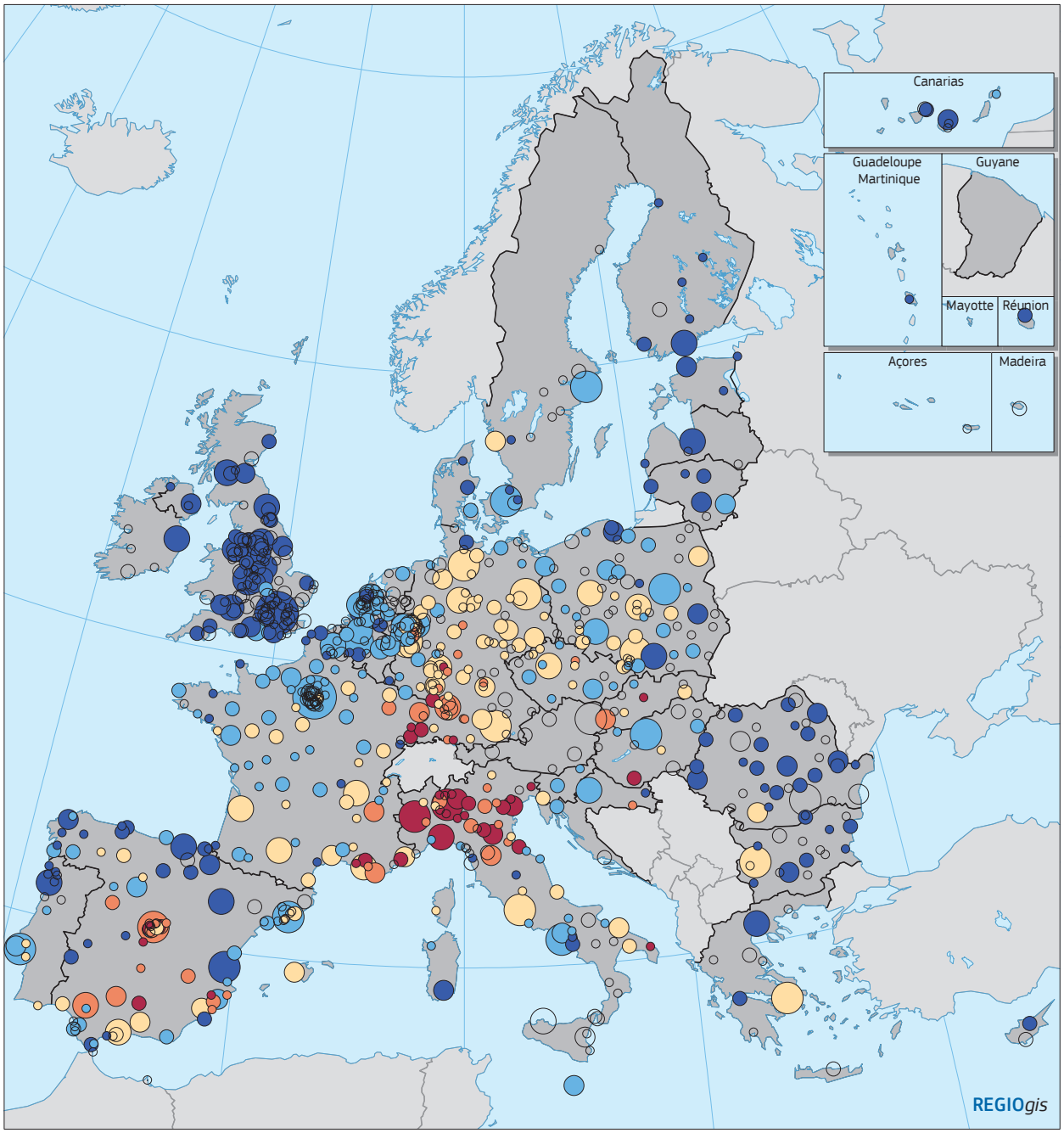
Urban center population

- < 100 000
- 100 000 – 250 000
- 250 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 5 000 000
- >= 5 000 000

Average recorded by measuring stations within city boundaries.
WHO guideline: < 20 µg/m³
EU limit value: 40 µg/m³
Source: EEA, DG REGIO

0 500 km

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Map 3.9 Concentration of ground-level ozone (O_3) in cities, 2014

Number of days with more than 120 µg/m³

- < 2
- 2 – 8
- 8 – 15
- 15 – 25
- >= 25
- No data

Urban center population

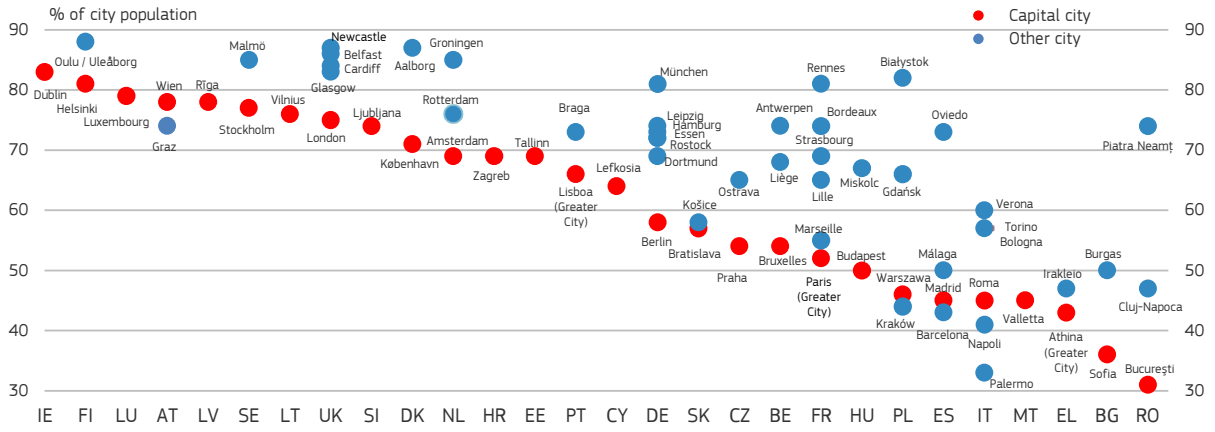
- < 100 000
- 100 000 – 250 000
- 250 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 5 000 000
- >= 5 000 000

Average recorded by measuring stations within city boundaries.
EU target value of 120 µg/m³ should not be exceeded more than 25 days per year (averaged over 3 years).
Source: EEA, DG REGIO

0 500 km

© EuroGeographics Association for the administrative boundaries

Figure 3.12 People reporting to be satisfied with the level of noise in their city, 2015



Source: Eurostat

4.5 Access to green spaces

Green Infrastructure (GI) is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. Ecosystem services are the contribution of nature to human well-being, such as the provision of clean air and water, pollination of fruit and vegetables by bees and the recreation provided by natural areas.

The EU Habitats and Birds Directives have given rise to Natura 2000 areas, the EU network of protected areas, which is the backbone of EU Green Infrastructure deployment, and is designated to protect the most threatened habitats and species. Natura 2000 also provides opportunities, for the development of tourism, recreation, agriculture, forestry, sustainable fisheries and aquaculture as well as nature-based means of controlling floods, mitigating and adapting to climate change and producing other ecosystem services. Recent studies have shown that the economic benefits generated by the Natura 2000 network can be substantial[38].

The establishment of Natura 2000 is to a large extent complete on land (with more than 18% of the EU's landmass protected as a result). Progress in designating marine areas for protection has been slower, though 6% of EU seas and oceans are now covered.

Improving the environment in less favoured regions increases their attractiveness for external investors and tourists and helps to strengthen their regional identity, but there remain shortcomings in the implementation of the Directives concerned, partly as a result of a lack of adequate funding[39].

Deploying Green Infrastructure in rural areas in the EU can give rise to a wide range of ecosystem services, but more investment is needed in it in and around urban areas in order to increase the beneficial effects of the services it produces, even though the costs are likely to be higher for a given level of nature protection[40].

Green urban spaces are a good example of this general principle. Green urban spaces can mitigate pollution problems and help to absorb carbon from the atmosphere as well as rainwater. They also offer shade and so help to limit temperature increases, as well as being important places for social interaction and for the quality of life in general. Access to green urban areas varies

38 European Commission (2013).

39 European Court of Auditors (2017).

40 Vallecillo, S., Polce, C., Barbosa, A., Perpiña Castillo, C., Zulian, G., Vandecasteele, I., Rusch, G. and Maes, J. (2016).

A significant part of the Natura 2000 network lies within functional urban areas

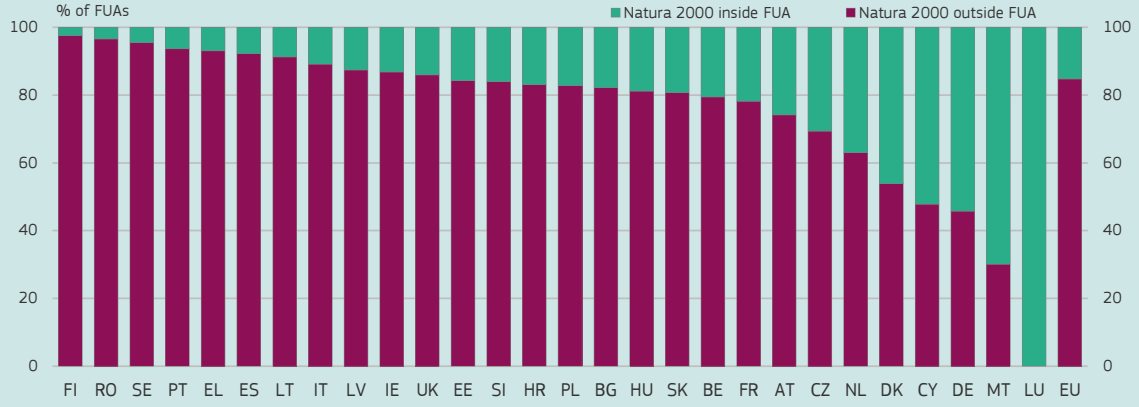
Urban green infrastructure — trees, parks, green roofs, gardens and urban forests — helps to improve air quality, reduce noise and mitigate extreme summer temperatures and the risk from floods. It also provides a source of recreation. Significantly, people who live in neighbourhoods with a high density of trees on their streets or with large amounts of green space report themselves as being healthier than others. While the importance of urban green infrastructure in this regard is increasingly recognised, the potential role of protected areas to support biodiversity in cities is often overlooked. But it can be expected that in the near future cities will play an increasingly important role in the management of vulnerable ecosystems and biodiversity.

This is evidenced by linking spatial data on urban areas with sites which are part of the Natura 2000 network, which is a key means of protecting biodiversity in the EU. While some Natura 2000 sites are located in remote areas, most of them are part of the surrounding landscape, including in urban areas. Overlaying spatial data for FUAs[1] in the EU on top of the Natura 2000 network[2] shows that 11 041 Natura 2000 sites lie at least partly in FUAs, 15.2% of the surface area, in practice. As would be expected, more urbanised countries, like Malta or Belgium, have a larger share of Natura 2000 sites inside FUAs than countries like Finland or Sweden But the configuration of the network also matters — for example, Germany has created a dense network of relatively small protected sites which often overlap with urban areas.

1 http://ec.europa.eu/eurostat/web/gisco/geodata/reference-data/administrative-units-statistical-units/urban-audit#ua11-14

2 Natura 2000 sites (2016) (https://www.eea.europa.eu/data-and-maps/data/natura-8#tab-metadata)

Figure 3.13 Share of the Natura 2000 network intersecting with Functional Urban Areas

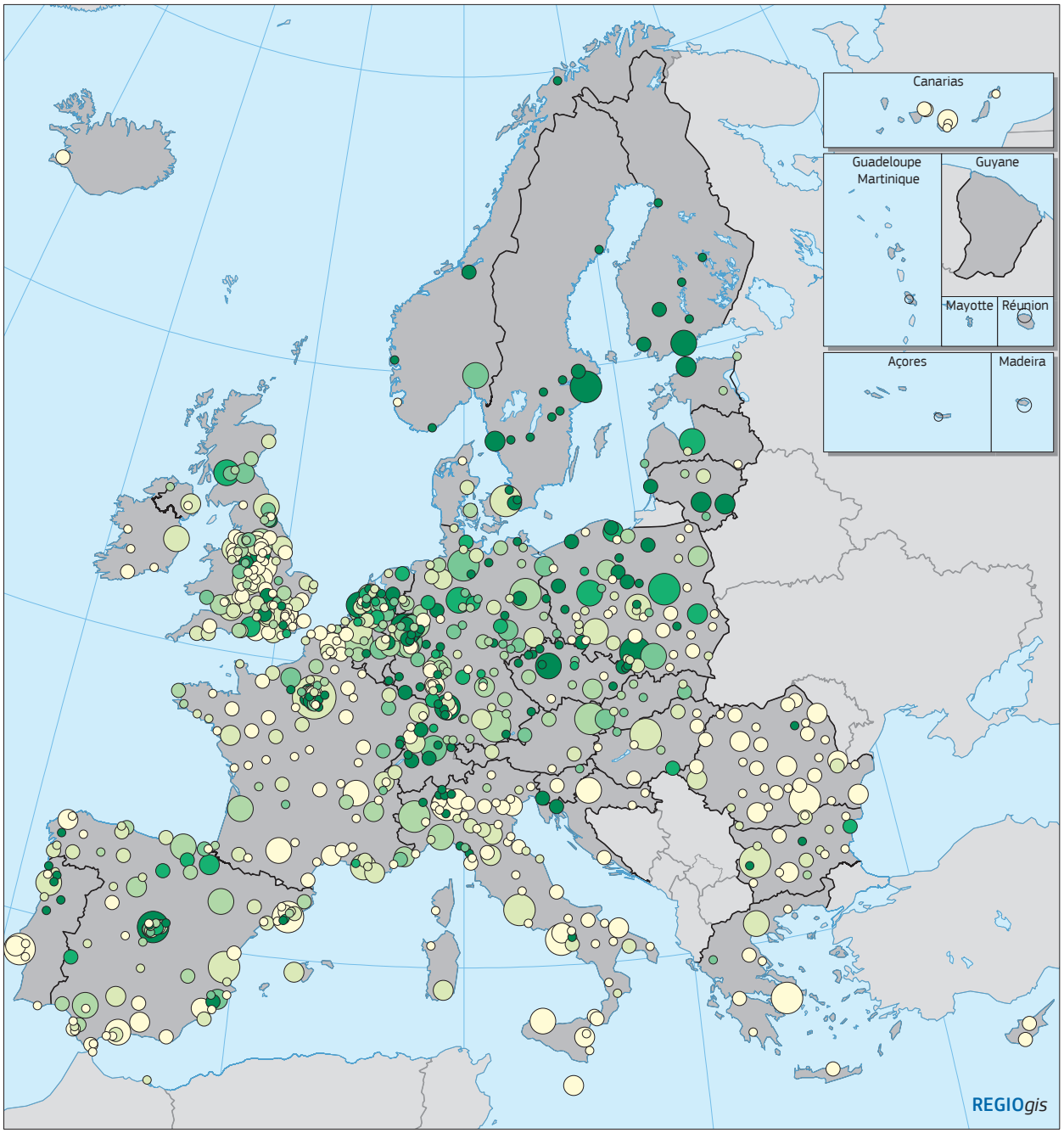


The entire territory of Luxembourg is classified as functional urban area

Source: JRC

widely across EU cities (Map 3.10). In many cities in western, central and northern Europe, people have access to vast areas of green space. In Chomutov-Jirkov in the Czech Republic, for example, over 13 000 hectares of green space can be accessed in less than 10 minutes walking. On the other hand, such spaces are less present in many eastern and southern EU cities, partly because of the climate which often makes it costly to maintain them, given the need for extensive watering systems.

Urban green spaces also play an important role in regulating air quality, as evidenced by many studies (Escobedo and Nowak. 2009, Litschke and Kuttler, 2008, Nowak et al. 2006, Nowak et al.,



Map 3.10 Access to green urban areas in cities, 2012

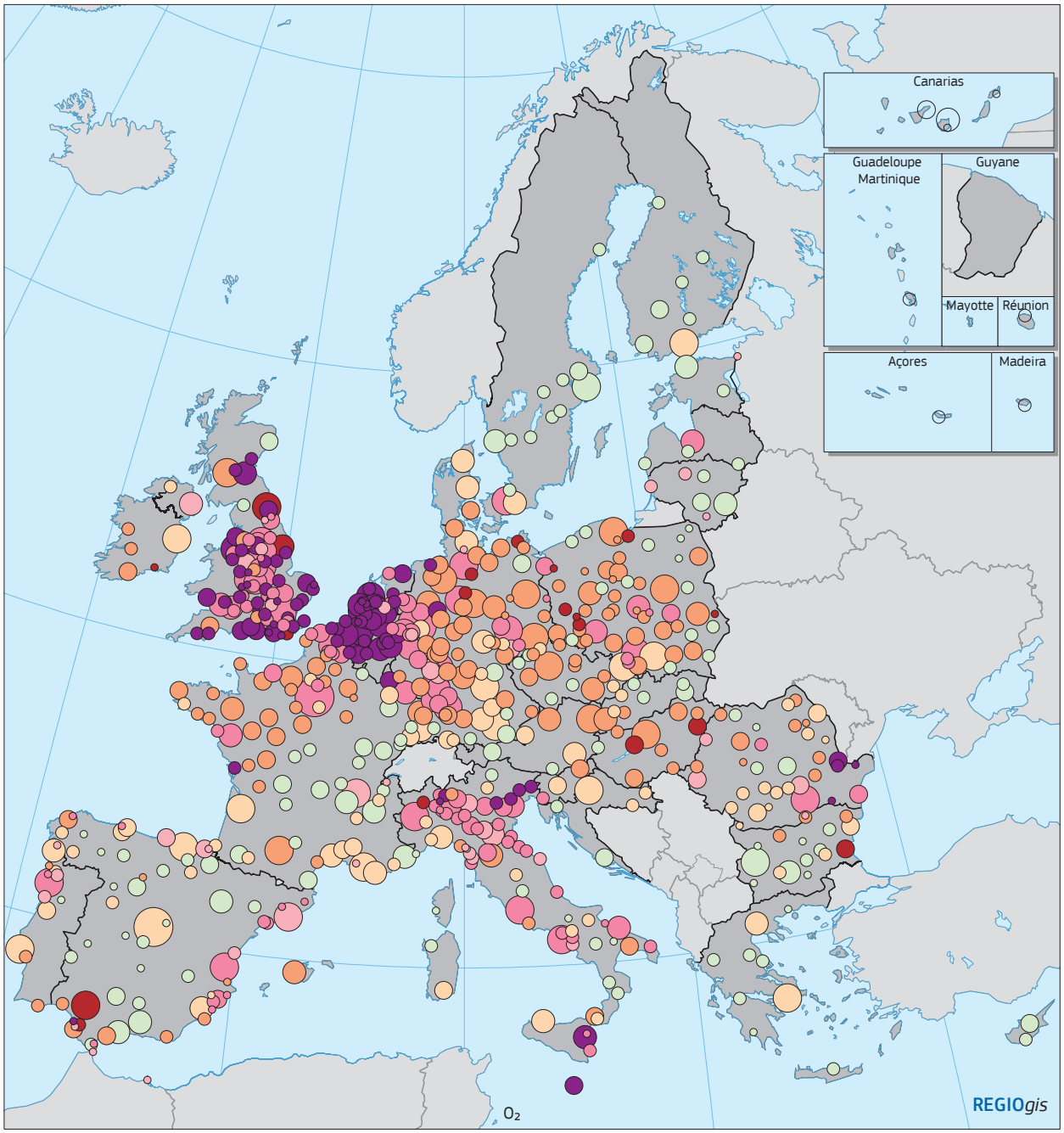
Hectares
- < 10
- 10 – 15
- 15 – 20
- 20 – 25
- 25 – 30
- >= 30
- no data

Urban center population
- < 100 000
- 100 000 – 250 000
- 250 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 5 000 000
- >= 5 000 000

Population-weighted median area of green urban areas and forests that can be reached within 10 minutes walking time.
Source: Poelman 2016

0 500 km

© EuroGeographics Association for the administrative boundaries



Map 3.11 Share of NO_2 concentration removed by vegetation in cities, 2010

Share

- Low for NO_2
- Low removal capacity and medium for NO_2
- Medium removal capacity and medium for NO_2
- High removal capacity and medium for NO_2
- Low removal capacity and high for NO_2
- Medium removal capacity and high for NO_2
- High removal capacity and high for NO_2
- No data

FUA population

- < 100 000
- 100 000 – 250 000
- 250 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 5 000 000
- >= 5 000 000

Source: JRC, DG REGIO

0 500 km

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2013). The latest (Vizcaino et al., 2017), which focuses on European functional urban areas (FUAs)[41], finds that the contribution of green urban spaces to reducing NO_2 concentration varies widely across the EU. In a number of Swedish cities (Gothenburg, Uppsala, Umeå, Örebro and Jönköping), Târgovişte in Romania, Vilnius in Lithuania and Ioannina in Greece, more than 50% of NO_2 concentration is removed by green spaces (Map 3.11). By contrast, in many cities in the southern UK, Belgium, the Netherlands and northern Italy, because of low levels of vegetation, only a small fraction is removed.

4.6 River flooding

There is a significant risk that large parts of Europe will be confronted with an increase in the occurrence and frequency of floods as a result of climate change. Effective water management, as required by the WFD, will help Member States to prepare for extreme weather events which can cause substantial damage[42].

Following the WFD, the Floods Directive[43], adopted in 2007, is intended to create a pan-European framework that can support Member States to identify, assess and tackle flood risk. Since its introduction, the management of flood risk has been strengthened and new models and methods for assessing and/or managing the risk have been developed. A more systematic, coordinated and holistic implementation of management plans has been achieved with a better understanding of priorities, along with a more focused discussion and improved awareness of the risk and the development of partnerships, involving spatial and land use planning and civil protection, to reduce it.

River flooding is a frequently occurring natural hazard in Europe. It is of particular concern in urban areas, where physical and human losses can be high. The flood impact indicator developed by Lund et al. (2013)[44] enables the impact of flooding at both regional and urban level to be assessed. The methodology takes account of both the estimated natural risk and the capacity of the region or city to mitigate the event and recover from it. When applied to Europe's major FUAs, it shows that, though the degree to which areas are affected varies greatly depending on their location and the hydrological characteristics of their surrounding (upstream) area, the risk of flooding exists in many cities right across the EU (Map 3.12). In a large number of FUAs in the Netherlands, Italy and Hungary, over 50% of the population is at risk in the event of the biggest flood in the last 100 years reoccurring. There is also a high risk in FUAs in Southern Germany, Poland, Romania, Spain and France.

5. Cross-border cooperation and territorial dimension of cohesion policy

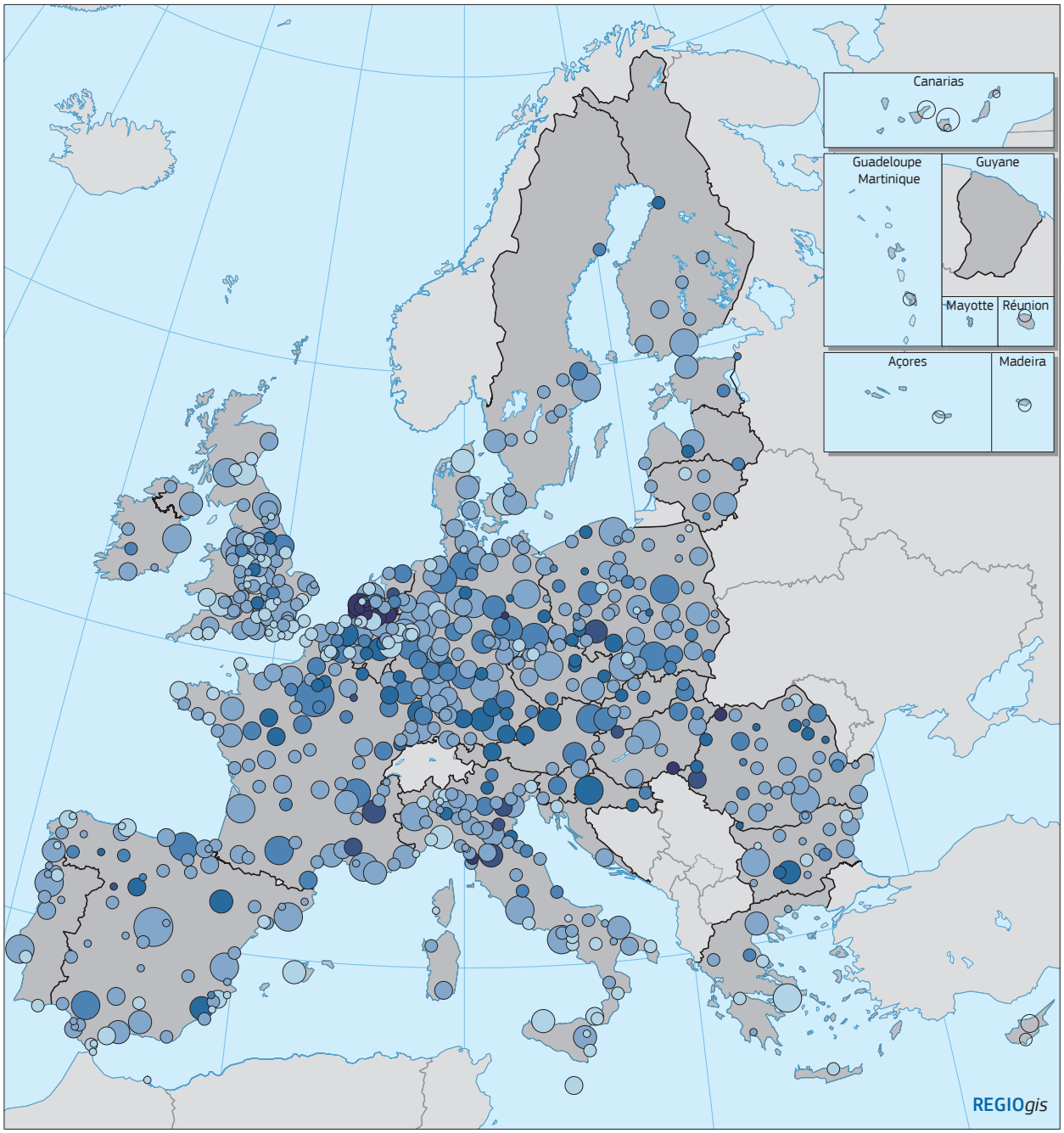
The EU is facing an increasing number of new global challenges which have a significant impact on the economic, social and territorial cohesion in Europe. To respond to many of these challenges, European territorial cooperation enables countries and regions to identify solutions to common problems in border regions and other functional areas of cooperation.

41 The functional urban area consists of a city plus its commuting area; see the EU-OECD FUA definition at http://ec.europa.eu/eurostat/statistics-explained/index.php/European_cities_%E2%80%93_the_EU-OECD_functional_urban_area_definition.

42 Under a no-adaptation scenario (i.e. assuming continuation of the current protection against river floods up to a current 100-year event), EU damages from the combined effect of climate and socio-economic changes are projected to rise from €6.9 billion a year to €20.4 billion a year by the 2020s, €45.9 billion a year by the 2050s and €97.9 billion a year by the 2080s. See Rojas Mujica, R.F., Feyen L., Watkiss, P. (2013).

43 Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks, OJ L 288, 6/11/2007.

44 Lung T., Lavalle C., Hiederer R., Dosio A. and Bouwer L. M. (2013).



Map 3.12 Population flooded in case of the biggest 100-year flood in Functional Urban Areas

% of FUA population

- 0
- < 5
- 5 – 10
- 10 – 20
- 20 – 30
- >= 30
- No data

FUA population

- < 100 000
- 100 000 – 250 000
- 250 000 – 500 000
- 500 000 – 1 000 000
- 1 000 000 – 5 000 000
- >= 5 000 000

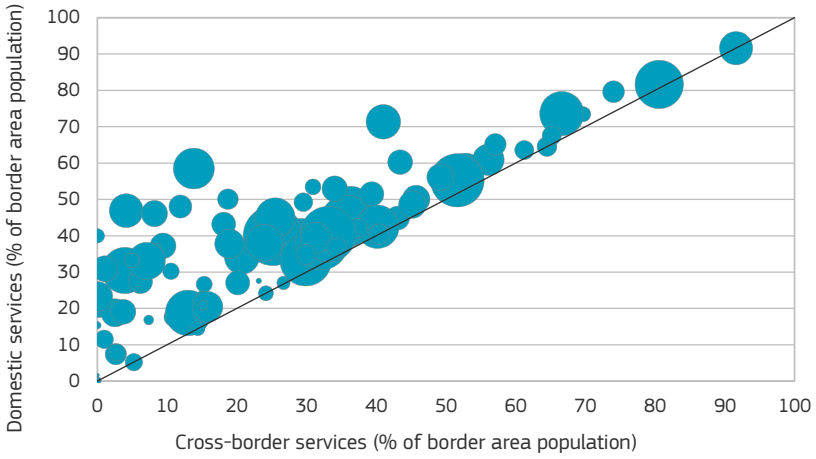
Source: JRC

0 500 km

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5.1 Border regions

Figure 3.14 Population of border areas having access to rail passenger services, 2014



Bubble size is relative to the border area population
Source: UIC, rail operators, TomTom, OpenStreetMap, EuroGeographics, Eurostat, DG REGIO

For analytical purposes, border regions are defined as NUTS 3 regions located along or very close to land and maritime borders between EU Member States and other countries. There are two types of border region: internal ones, i.e. regions located on borders between EU Member States and/or European Free Trade Area (EFTA) countries, and external ones, i.e. those located on borders between an EU country and a non-EU or EFTA one (Map 3.13).

As the severity of border effects is likely to diminish with the distance from the border, the definition of border regions is complemented by that of border areas, which are those covering a 25 km zone on both sides of the border. Indicators can be defined for border regions or border areas or for a combination of both. NUTS 3 regions not being formally along land borders but which lie at least partly inside the 25 km wide area along borders are also considered to be border regions.

In the last few decades, integration among EU Member States as well as with neighbouring countries has been progressively extended. However, despite the elimination of many institutional and regulatory barriers, borders still continue to obstruct the movement of goods, services, people, capital and ideas, which prevents the benefits of integration from being fully realised.

In this context, European Territorial Cooperation has played an important role in mitigating the adverse effects of internal borders and has realised many concrete achievements with regard to cross-border security, transport, education, energy, health care, training and job creation. For the 2014–2020 period, €6.6 billion has been allocated to 60 cross-border cooperation programmes[45].

In 2014, around a third of the EU population lived in land border regions, the GDP of which was some 28% of the EU total, implying a GDP per head of 88% of the EU average. This average hides wide variations, reflecting the differences in GDP per head between different parts of the EU, with border regions with a high GDP per head being located in the north and west and those with a low level being located in central and eastern Europe.

Recent research has identified some of the main obstacles to the development of border regions. There are often socioeconomic disparities between regions on the two sides of the border which reduce the opportunities to cooperate and hinder integration. For some regions, physical obstacles and poor transport infrastructure limit access to markets and services on the other side of the border, while cultural and language differences can restrict interaction between people or businesses. Legal and/or administrative difficulties can also limit the scope for regional integration and labour

45 In the case of external border regions, the Instrument for Pre-Accession Assistance (IPA) supports cross-border cooperation between candidate countries, potential candidate countries and EU Member States while the European Neighbourhood Instrument (ENI) provides support to EU regions bordering Neighbourhood countries to the East and the South.

Table 3.1 Demographic changes in border and non-border regions, 2005–2015

2005–2015	Terrestrial border region	Non-border region	Total
EU-15			
Total change	4	4.3	4.2
Natural change	0.7	1.4	1.2
Net migration	3.4	2.9	3
EU-13			
Total change	-3.5	-1.2	-2.5
Natural change	-1.5	-0.9	-1.3
Net migration	-1.9	-0.3	-1.2
EU-28			
Total change	1.3	3.6	2.8
Natural change	-0.1	1.1	0.7
Net migration	1.4	2.5	2.1

Source: Eurostat and DG REGIO calculations

mobility even in places which are potentially functional regions.

A recent study[46] suggests that if only 20% of the existing legal and administrative obstacles were removed, border regions could gain up to 2% in GDP. Regions located along borders in central EU and EFTA countries may have a lower GDP due to these obstacles (Map 3.14).

The state of the cross-border road network varies considerably across the EU. In some places, it is good, even better than elsewhere in the region, such as along the Belgian-French or Belgian-Dutch borders (Map 3.15). In other places, the cross-border road network is poor and limits the capacity of the regions to develop. This can be due to geophysical barriers, such as the mountain chain which forms the border between France and Spain, but it can also reflect the orientation of transport policy.

Access to cross-border transport also varies across the EU. While in some cases access to cross-border rail services is as good as to services elsewhere in the region (observations on the diagonal of Figure 3.14), in many others, it is more limited (observations above the diagonal).

A number of border regions face more serious demographic challenges than other areas. Many located in the EU-13 have experienced substantial loss of population over recent years as a result of both a natural reduction (reflecting their older population) and outward migration (Table 3.1). Between 2005 and 2015, population in the EU-13 land border regions fell by 3.5% as against 1.2% in non-border regions, outward migration reducing population by 1.9% combined with a natural reduction of 1.5%.

The situation is different in the EU-15, where population increased in border regions as in non-border ones, though at a slightly slower pace partly because of less inward migration.

5.2 Interregional, transnational and macro-regional cooperation

Interregional cooperation is needed to tackle in an effective way common problems which affect most regions to differing extents, to enable examples of good practice and know-how to be shared, to build networks and to support analysis of major territorial development issues. Four interregional cooperation programmes are currently in operation (Interreg EUROPE, INTERACT, URBACT and ESPON) which cover all EU Member States and a number of third countries and which are allocated around €1 billion for the 2014–2020 period.

There are, in addition, 15 transnational cooperation programmes which group together regions in different EU countries to tackle issues that are of common concern to them and to which, together, have been allocated €2.1 billion for the present period (Map 3.16). They support a range of projects relating to innovation, the environment, transport, communication and sustainable urban development. Transnational Cooperation can help to establish functional links in a given area, such as through sea basin strategies, the arctic framework or macro-regional strategies. Under the ESF, transnational cooperation helps improve the delivery of employment and social policies and contributes to the implementation of reforms by enabling stake-

46 Camagni et al. (2017).



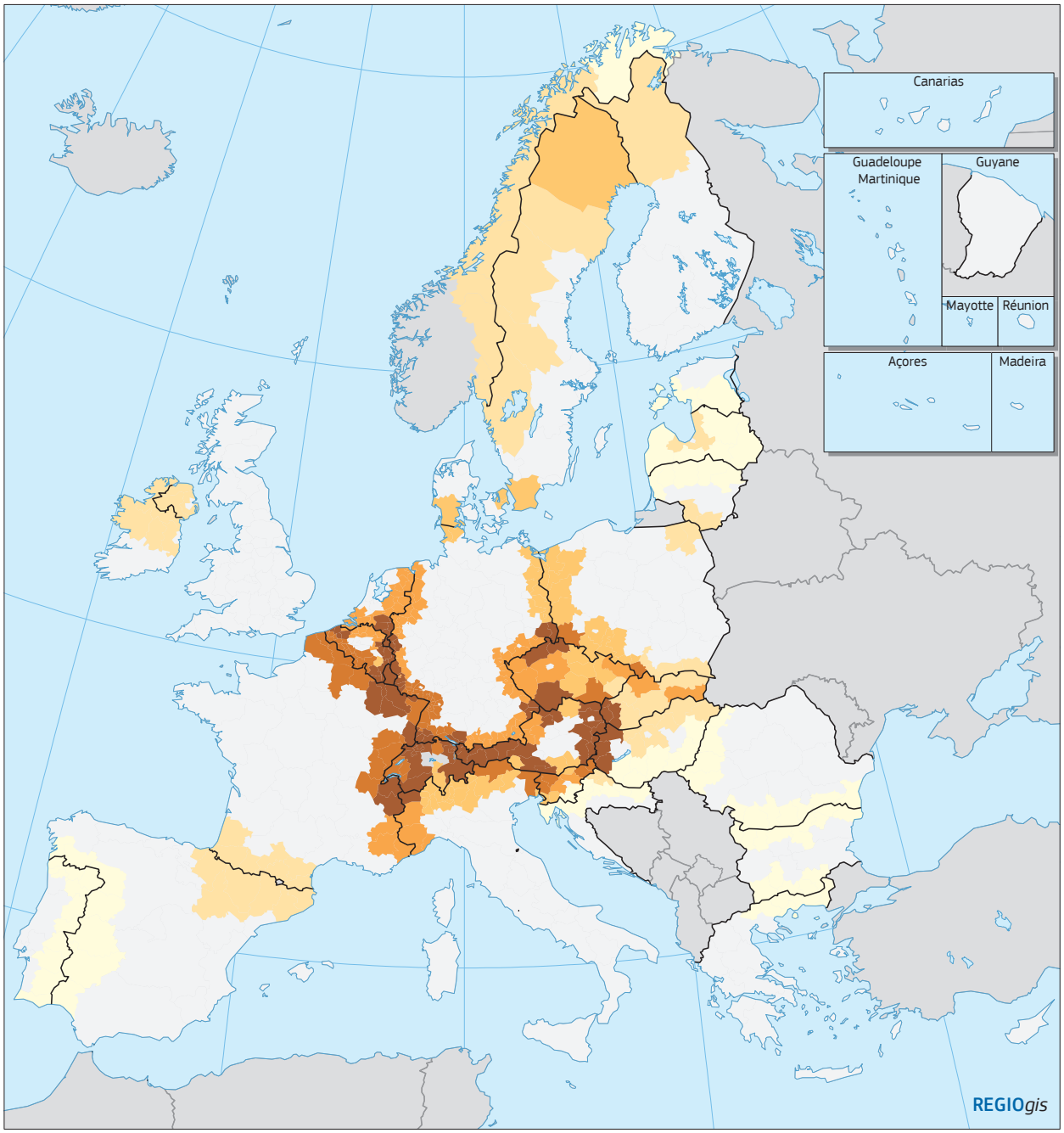
Map 3.13 Border regions

NUTS 3 regions

- Land border regions
- Maritime border regions
- Land and maritime border regions

0 500 km

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Map 3.14 Loss of GDP in EU NUTS 3 land border regions due to cross-border obstacles

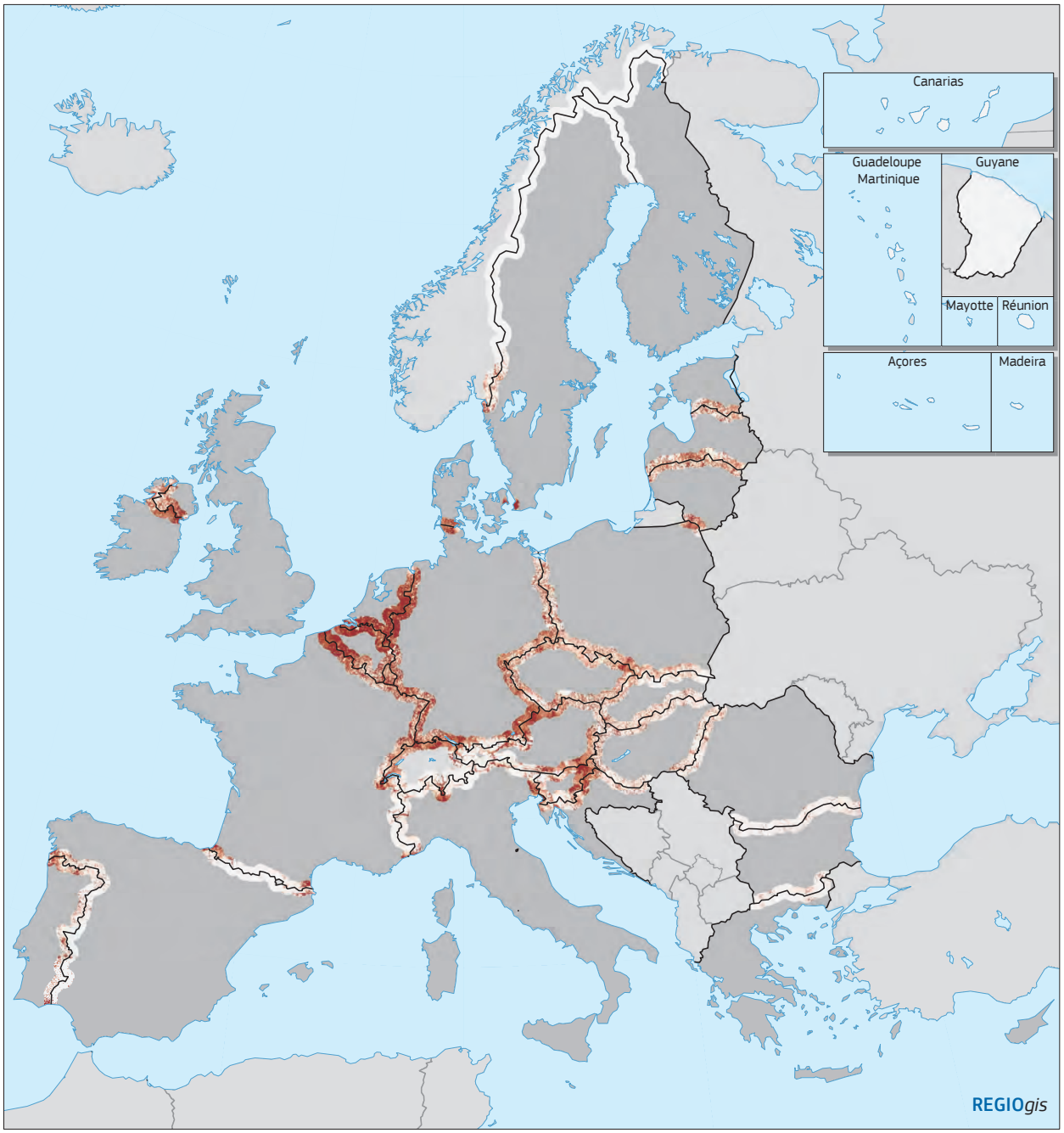
Total GDP loss as % of NUTS 3 GDP

- < 3
- 3.1 – 6
- 6.1 – 9
- 9.1 – 12
- 12.1 – 15
- > 15

Source: Study "Quantification of the effects of legal and administrative border obstacles in land border regions", Politecnico di Milano 2017

0 500 km

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Map 3.15 Cross-border road network efficiency in border areas, 2015

Ratio between 0 and 1

- 0.00 – 0.35
- 0.36 – 0.40
- 0.41 – 0.45
- 0.46 – 0.50
- >= 0.50
- No population / no data

Source: JRC

0 500 km

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holders to learn from experience and examples of good practice in other countries.

Macro-regional strategies are a form of territorial cooperation between countries which help to improve the implementation of EU policies. They are equally designed to tackle common problems, such as relating to the environment or climate change. Macro-regional strategies can also provide an appropriate framework for cross-border institutional cooperation. They are not, however, directly financed under cohesion policy but are intended to improve the use of existing financial sources (e.g. the ESIF, Horizon 2020, COSME, LIFE) and institutions and the implementation of existing legislation.

Since the European Council endorsed the EU Strategy for the Baltic Sea Region (EUSBSR) in 2009, three further macro-regional strategies have been developed: the EU Strategy for the Danube Region (EUSDR) in 2011, the EU Strategy for the Adriatic and Ionian Region (EUSAIR) in 2014 and the EU Strategy for the Alpine Region (EUSALP) in 2016 (Map 3.16).

At present 19 EU and 8 non-EU countries are involved in macro-regional strategies which have become an integral part of the EU policy framework. They have increased interest in territorial cooperation and cohesion and awareness of its added-value. They have led to increased coordination and strengthened cooperation in a number of areas (such as navigability, energy and climate change) and intensified cooperation with non-EU countries, helping to mitigate possible adverse effects on the EU's external borders.

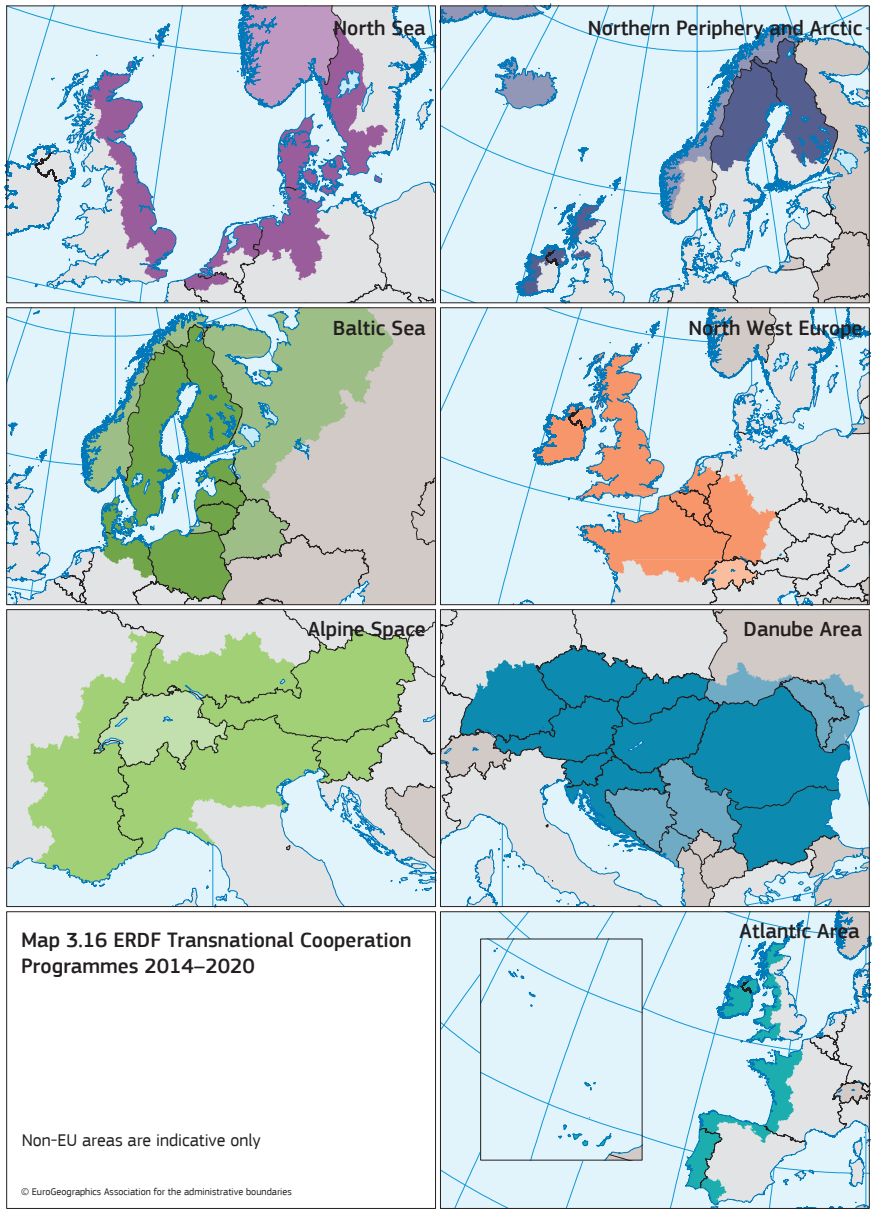
Each macro-regional strategy has achieved specific results:

- EUSBSR: the quality of the Baltic Sea water is being improved and nutrient inflows reduced through projects such as PRESTO or Interactive water management (IWAMA), while the SUBMARINER Network is further encouraging the innovative and sustainable use of marine resources;
- EUSDR: the coordinated management of water in the Danube river basin, though projects such as SEERISK is reducing the risk of damage by floods, while projects such as FAIRWAY and DARIF are reducing bottlenecks to navigability and improving the safety of navigation;
- EUSAIR: cooperation with EU countries on issues of common interest is helping Western Balkan participating countries prepare for EU accession; green/blue corridors linking land and sea in the Adriatic and Ionian Sea have been identified as areas where strategic projects should be undertaken to achieve sustainable economic growth respectful of the environment;
- EUSALP: projects such as 'mountErasmus' are helping to establish a cross-border educational space for dual vocational training in the Alpine region, while 'AlpinfoNet' is being developed into a cross-border information system to improve passenger transport in the region.

5.3 Local, urban and metropolitan development

Cohesion policy promotes integrated and place-based approaches to foster economic, social and territorial cohesion, while at the same time recognising the role of sustainable urban development in realising overall EU objectives. To allow more flexibility in tailoring the provision of ESI Funds to territorial needs, new and improved delivery mechanisms were put in place for the 2014–2020 programming period, in particular Integrated Territorial Investment (ITI) and Community-Led Local Development (CLLD).

Almost 9% of the cohesion policy budget (around €31 billion) is allocated to integrated territorial and urban development in the current period, the ERDF contributing the largest part (€25.5 billion) and the rest coming from the other ESI Funds. Over half the total is being provided using the new territorial instruments. Overall, the new territorial provisions are used in around 150 programmes, creating bet-


North Sea
Northern Periphery and Arctic
Baltic Sea
North West Europe
Alpine Space
Danube Area
Atlantic Area
Central Europe
Adriatic-Ionian
South West Europe
Mediterranean Area
Balkan-Mediterranean
Caribbean Area
Amazonia
Indian Ocean Area
Map 3.16 ERDF Transnational Cooperation Programmes 2014–2020
Non-EU areas are indicative only
© EuroGeographics Association for the administrative boundaries

ter links between the local strategies and the thematic objectives set out in the programmes.

The rationale for applying integrated, place-based approaches relates either to territorial integration, to thematic integration, to the blending of different financial resources or to institutional knowledge.

- Territorial integration: around half of the integrated strategies are using a functional approach, under which horizontal coordination arrangements help to improve the governance of a functional area and promote urban-rural or even cross-border links, though often it also requires new coordination arrangements between the administrative units involved.

Urban Agenda for the EU

The Urban Agenda for the EU which is designed to strengthen the urban dimension in EU policy-making is a further development of the integrated territorial approach.

The Urban Agenda is aimed at promoting cooperation between Member States, cities, the European Commission and other stakeholders in order to maximise the growth potential of cities and to tackle social problems and so to improve the quality of life in urban areas. Partnerships have been established around 12 priority themes of EU and urban relevance, the intention being to identify common problems and to recommend action plans (to the EU, Member States and cities) to tackle them. The action concerned could, for example, be a proposal to amend an EU Directive or for the new ESI Funds or a project that worked well and could be scaled-up and adopted more widely.

The Urban Agenda should lead to more effective regulation and funding that is better adapted to needs and is easier to access and better knowledge (through more data, examples of good practice or projects and exchange of experience).

A new website (The EU Urban Agenda) enables stakeholders to contribute to the Urban Agenda as a whole or to specific Partnerships.

- Thematic integration: ITI was specifically designed to combine investment under different priority axes or from different programmes, since a strategy supported through an integrated multi-thematic priority axis can only be financed through one programme. As a result, strategies implemented through ITI include on average more thematic objectives than those implemented through a priority axis.

- Blending different financial sources: the ERDF provides in most cases the bulk of financing together with the ESF, but the other ESI Funds, other EU instruments and national or regional public and private funding can also make a significant contribution in some Member States, especially for ITI strategies. In most cases, the strategies will be funded by non-repayable grants, but financial instruments are also important in several strategies or for particular types of investment, such as for improving energy efficiency.

- Institutional knowledge: the strategic planning process and, more especially, the delegation requirements for sustainable urban development and CLLD have led in a number of Member States to the creation of new collaborative arrangements and bodies responsible for project selection and other tasks. In other Member States, this delegation has also resulted in capacity building and advisory measures, such as the establishment of new bodies or internal departments to support urban authorities' decision making.

Empowering cities: sustainable urban development

The urban dimension is at the heart of cohesion policy. for the 2014–2020 period, at least 50% of the ERDF is invested in urban areas. Around €14,5 billion (8%) of the total ERDF budget has been allocated directly to support over 900 integrated sustainable urban development strategies, with considerable additional financing from the

ESF and from other EU or domestic sources in a number of Member States.

Three options were provided for Member States to implement sustainable urban development strategies in the current period — through a dedicated multi-thematic priority axis, a dedicated programme or the use of the new ITI instrument. The ITIs have been relatively slow to be taken up but have been adopted in 13 Member States, where well-functioning domestic programming and spatial planning arrangements were already in place or technical assistance was provided to help develop the strategies concerned.

Going beyond administrative boundaries: Integrated Territorial Investments (ITI)

Cohesion policy pays particular attention to the specific socio-economic characteristics of functional areas, making a wide range of investments available and promoting the adoption of integrated strategies targeted at specific needs.

Despite its novelty, ITI is being used flexibly for multidimensional place-based interventions for tackling complex territorial problems in 13 Member States. It has been adopted by around 150 different territorial strategies, which were developed not only for administrative regions to replace regional programmes but also for functional areas such as remote and sparsely populated rural areas, islands and coastal areas, environmental protection sites and functional urban areas.

Strengthening local communities: Community-led Local Development

Community-led Local Development (CLLD) has been introduced under cohesion policy as a voluntary instrument, extending the existing LEADER approach for rural development and fisheries policies, its territorial focus depending very much on coordination with the EAFRD and EMFF. Complementary arrangements are usually targeted at rural areas with small or medium-sized towns or cities nearby, while in some Member States, the ERDF and ESF are used to support urban participatory measures targeted at social inclusion and urban regeneration.

Joint Programming Initiative (JPI) Urban Europe

The Urban Europe Joint Programming Initiative (JPI) is a network of Member States and associated countries of the EU intended to provide answers to the major challenge of urbanisation in Europe and beyond. It was set up in late-2011 as one of 10 JPIs following a decision of the European Council to address challenges which cannot be effectively met by countries acting individually. The idea is that it should foster a transnational research and innovation programme between European countries which is independent from the research and innovation programmes set up by the European Commission but complementary to them and collaborating with them. Apart from finding solutions to the challenges concerned, the vision is to bring to life the European Research Area through increased collaboration between Member States.

Since 2012, the Urban Europe JPI has launched annual joint calls for proposals that have resulted in over 50 projects being undertaken with around 200 participants, comprising researchers, urban practitioners and civil society. The initiative is also in the process of establishing a Stakeholder Involvement Platform to facilitate the implementation of its Strategic Research and Innovation Agenda by reaching new countries and cities. The platform is intended to support experimentation with different kinds of measure and different ways of cooperating as well as to mobilise interested parties and to reflect on urban polices.

chapter 4

Improving institutions

- There is substantial evidence that the quality of government matters for social and economic development across the EU and that it is an important determinant of regional growth.
- The way that national regulations are implemented and their effect on development varies within countries reflecting differences in the efficiency of regional and local authorities. Institutional capacity affects the attainment of long-term policy objectives and the ability to implement structural reforms which have the potential to boost growth and employment.
- The perception of corruption remains widespread in a number of EU Member States and this erodes trust in governments and their policies. In many regions across the EU, public procurement is open to the risk of corruption and a lack of competition for contracts as reflected in a number of instances where a contract was awarded when only one bid had been submitted.
- Professional and impartial public authorities are of major importance in combating corruption; however the degree to which meritocracy is a feature of the public sector, rather than nepotism, varies greatly between and within EU countries.
- Doing business is easier in the north of Europe than elsewhere in the EU, but central and eastern European countries are making significant efforts to catch up. There are major variations in the ease of doing business between regions in a number counties which point to differences in the administrative capacity of regional and local governments.
- Governments in many parts of the EU have made significant progress in providing online access to services, but there has been insufficient focus on their quality and ease of use, so limiting their take-up and growth.
- A suitable institutional framework is important to facilitate the creation of new firms and to boost the effectiveness of cohesion policy support for entrepreneurship and business start-ups.

Chapter 4
Improving institutions

1. Good governance affects economic growth and the quality of life

According to the dominant economic theories[1], economic growth is the result of a combination of three factors — physical capital, human capital (or labour) and innovation (or technical progress). By and large, investment in these areas has borne fruit in terms of greater convergence[2]. However, there has been an apparent decline in the return on investment in all three areas and the variation in economic growth across EU regions that they are capable of explaining[3]. This suggests that an important factor underlying growth is missing. According to a number of studies that factor is the quality of governance.

Many studies in recent years have highlighted the importance of this factor for economic performance and the fact that poor government in lagging areas in the EU represents a significant obstacle to development. Indeed, it has been found not only to adversely affect economic growth, but also the returns to cohesion policy investment and regional competitiveness, while corrupt or inefficient government undermines the regional potential for innovation and entrepreneurship. It has equally been found that low quality of government affects regional environmental performance and decisions on public investment and threatens inclusiveness and participation in the political process[4].

Institutional quality is a determinant of investment, and foreign direct investment (FDI) in particular, for a number of reasons. First, good governance is associated with higher economic growth, which should attract more FDI inflows. Secondly, low-quality institutions that enable corruption to occur add to the costs of investment and reduce profits. Thirdly, the high sunk cost involved in FDI makes investors highly sensitive to the political uncertainty inherent in low-quality institutions[5].

High-quality government has been found to be of utmost importance for the well-being of society, and there is broad consensus that good governance is a pre-requisite for long-term, sustainable increases in living standards. It has equally been found that the quality of governance strongly influences people's health, their access to basic services, social trust and political legitimacy. It helps to explain why living conditions vary between countries and regions with much the same level of GDP per head[6].

High quality institutions can be defined as those which feature an "*absence of corruption, a workable approach to competition and procurement policy, an effective legal environment, and an independent and efficient judicial system. [...] strong institutional and administrative capacity, reducing the administrative burden and improving the quality of legislation*" (European Commission, 2014, p. 161). Such a broad definition is in line with academic studies which view good governance as the impartial exercise of public power, focusing on policy implementation rather than the content of policies or the democratic process through which they are decided[7].

In sum, there is a growing consensus that the quality of governance and institutions is a fundamental

1 Neoclassical growth: Solow (1956); Swan (1956); endogenous growth approach: Romer (1986): Lucas (1988).

2 Cappelen et al. (2003); Becker et al. (2010); Pellegrini et al. (2013).

3 Rodriguez-Pose (2016a and 2016b).

4 Rodríguez-Pose and Garcilazo, (2015), Rodríguez-Pose and Di Cataldo, (2015), Annoni, (2013), Nistotskaya et al. (2015), Halkos et al., (2015), Crescenzi et al. (2016), Sundström and Wängnerud, (2014).

5 Kaufman et al. (1999), Wei (2000), Habib and Zurawicki (2002), Kaufmann and Kraay (2002), Kinoshina and Campos (2003), Levchenko (2004), Walsh and Yu (2010).

6 Dahlström et al. (2015); Acemoglu and Robison (2012), North (1990); Ostrom (1990); Rothstein (2011) and Holmberg and Rothstein (2012), Dellepiane-Avellaneda (2010), Halleröd et al. (2013); Holmberg and Rothstein (2012); Rothstein (2011); Uslaner (2008); Tavits (2008); Svallfors (2013).

7 Rothstein & Teorell, (2008).

precondition for sustained increases in prosperity, well-being and territorial cohesion in the EU.

2. Quality of governance varies substantially in Europe

Governance encompasses the traditions and institutions by which authority in a country is exercised. This includes the process by which governments are selected, monitored and replaced; the capacity to formulate and implement sound policies and the respect of citizens for the institutions that govern economic and social interactions between them[8]. The institutional environment of a country depends on the efficiency and behaviour not only of public but also of private stakeholders[9].

Every year the World Bank produces the Worldwide Governance Indicators (WGI), covering over 200 economies, to denote the quality of the institutions responsible for governance. Governance itself is defined according to dimensions related to accountability, political stability, government effectiveness, regulatory quality, confidence in institutions and absence of violence and control of corruption. The changes between 1996 and 2015 in the indicators of the effectiveness of government and citizens' confidence in institutions are set out in Figures 4.1 and 4.2.

The indicator for government effectiveness takes account of government policies, the quality of public services provided and the extent of independence of the civil service from political pressure as well as the credibility of the government. All these aspects contribute to creating the stable political environment needed for sustained economic growth.

The EU countries assessed as having the most effective governments in 2015 were Denmark, the Netherlands, Finland and Sweden. Those with the least effective were Romania, Bulgaria, Greece and Italy, the difference between the two groups being substantial. While Denmark, Netherlands, Finland and Sweden were among the 10 best performing countries in the world, Romania was ranked below the global average.

Between 1996 and 2015, government effectiveness diminished in 7 EU countries (Luxembourg, Austria, Belgium, Spain, Hungary, Italy and Greece) and increased in 8, all of them in the EU-13, most notably in Latvia, Lithuania and Estonia, which climbed to the middle of the EU ranking. Among the Member States with the least effective governments, the situation improved in Romania, Bulgaria and Croatia and worsened in Greece, Italy and Hungary.

Guaranteeing opportunities for democratic participation and respect for the rules of a society, its institutions and civil rights help to generate the confidence of people in the legitimacy of actions taken by political leaders and to establish the support for them which is necessary to make them effective[10].

The indicator of citizens' confidence in institutions relates to the confidence people have in social rules (like contract enforcement or property rights), social institutions (the police and law courts) and their own safety (measured by the likelihood of being affected by crime and violence). It shows a similar pattern to the government effectiveness indicator (Figure 4.2). Finland, Sweden, Denmark and the Netherlands are ranked highest, Romania and Bulgaria, lowest. The three Baltic countries again show the biggest improvement, once more climbing to the middle of the EU ranking, and there is a similar improvement for Croatia, though it remains at the lower end of the ranking.

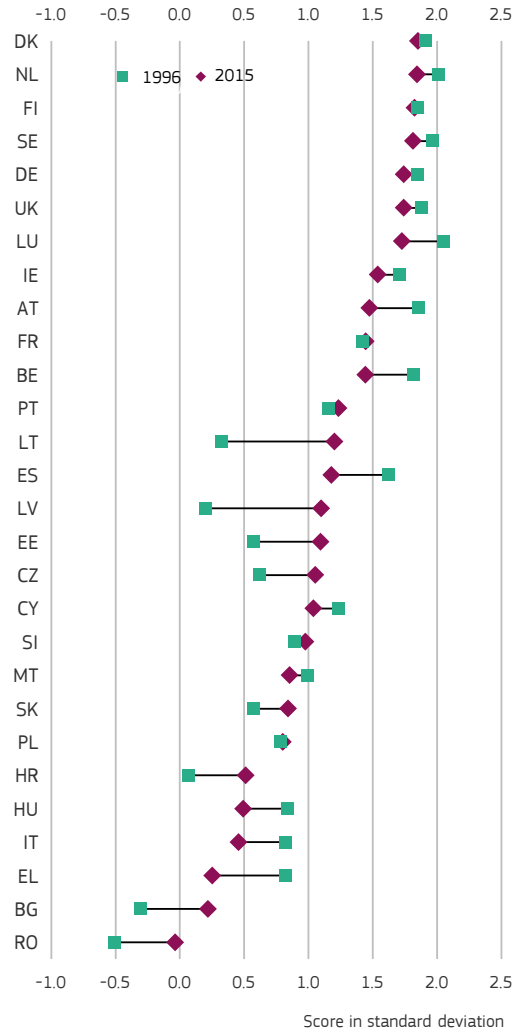
There is a close correlation between government effectiveness and economic competitiveness (Figure 4.3). Whereas, however, the most competitive countries tend to have the most effective governments, the fastest growing EU economies in recent years (Bulgaria, Romania and Poland) tend to have the least effective ones. This suggests perhaps that in the early stages of development,

8 http://info.worldbank.org/governance/wgi/index.aspx#doc

9 World Economic Forum (2017).

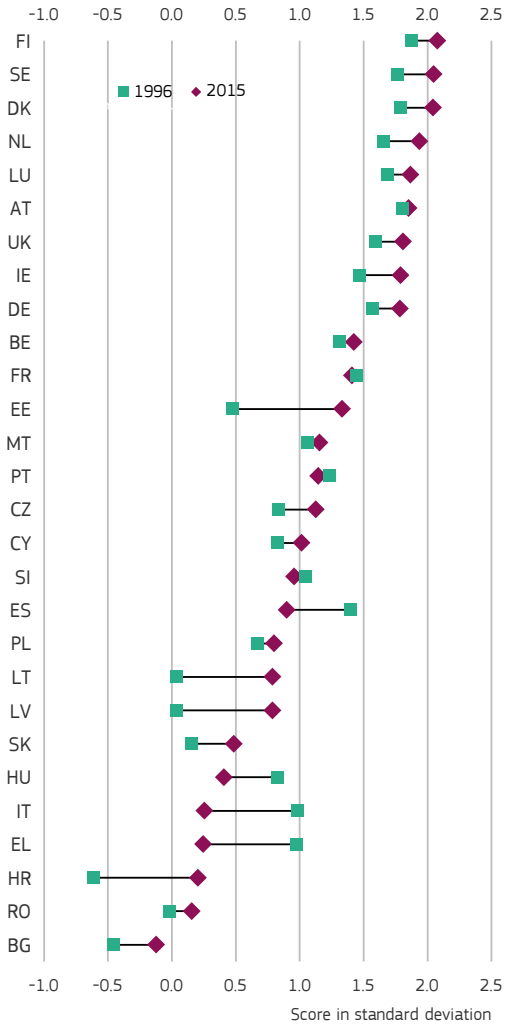
10 http://www.sgi-network.org/docs/2016/basics/SGI2016_Overview.pdf

Figure 4.1 Government effectiveness, 1996 and 2015



Source: World Bank Government effectiveness indicators

Figure 4.2 Citizen's confidence in institutions, 1996 and 2015



Source: World Bank Rule of law 2015

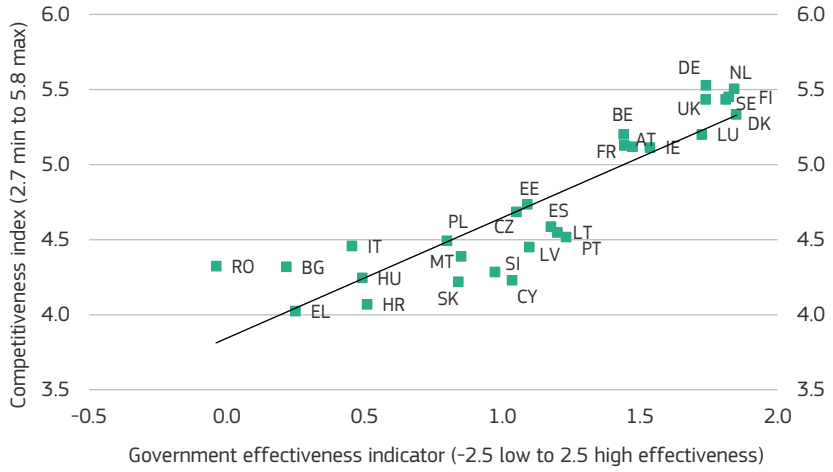
other factors play a dominant role, but to sustain growth requires improvements in the quality of government. The correlation between government effectiveness and life satisfaction is equally close and confirms the importance of the quality of government for people's lives (Figure 4.4).

There are significant variations across regions in the quality of government which reflect the way in which national regulations are implemented and differences in the efficiency of regional and local authorities in this respect. These differences are important to take into account when assessing the quality of governance in relation to economic and social development. A regional European quality of governance index (EQI)[11], constructed by the Gothenburg Institute of Quality of Government, which measures people's perceptions of this in different policy areas, enables this to be done (Map 4.1).

11 EQI is based on an extensive survey covering the perceptions of people of public sector services (education, healthcare law enforcement) based on the experience they have of them. It specifically measures the extent to which people feel that the services concerned are not affected by corruption, are of a good quality and are accessible in an impartial way.

The perceived quality of government varies markedly between and within EU Member States. People in Sweden, Finland, Denmark, the Netherlands and Germany are the most positive about the quality and impartiality of education, healthcare and law enforcement. People living in regions in Romania, Bulgaria and Italy are the least positive.

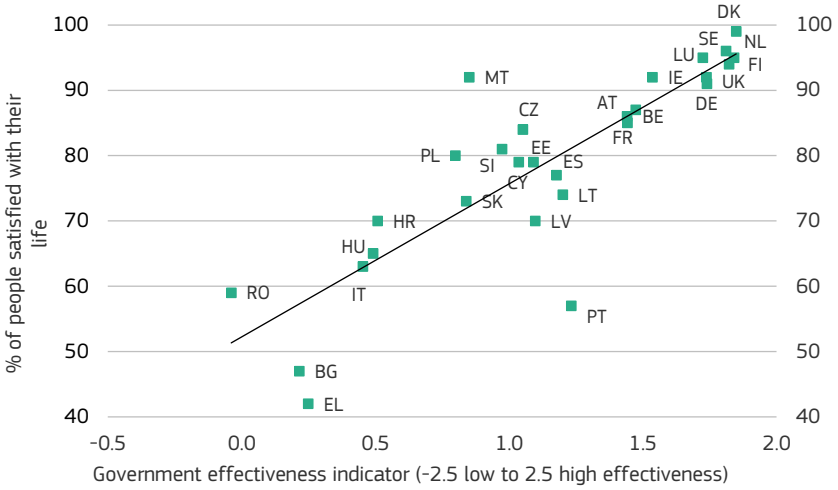
Figure 4.3 Economic impact of government effectiveness, 2015



Standard deviation (0 = global average)
Source: World Bank Government Effectiveness 2015; World Economic Forum. Global Competitiveness 2016-2017

The index shows the greatest variation between regions in Spain, Italy, Belgium, Romania, Bulgaria, Hungary and the Czech Republic. This suggests that the quality of services provided locally may vary substantially in countries with regions that are both politically and administratively relatively autonomous (Spain, Italy and Belgium) as well as in countries which are more centralised.

Figure 4.4 Social impact of government effectiveness, 2015



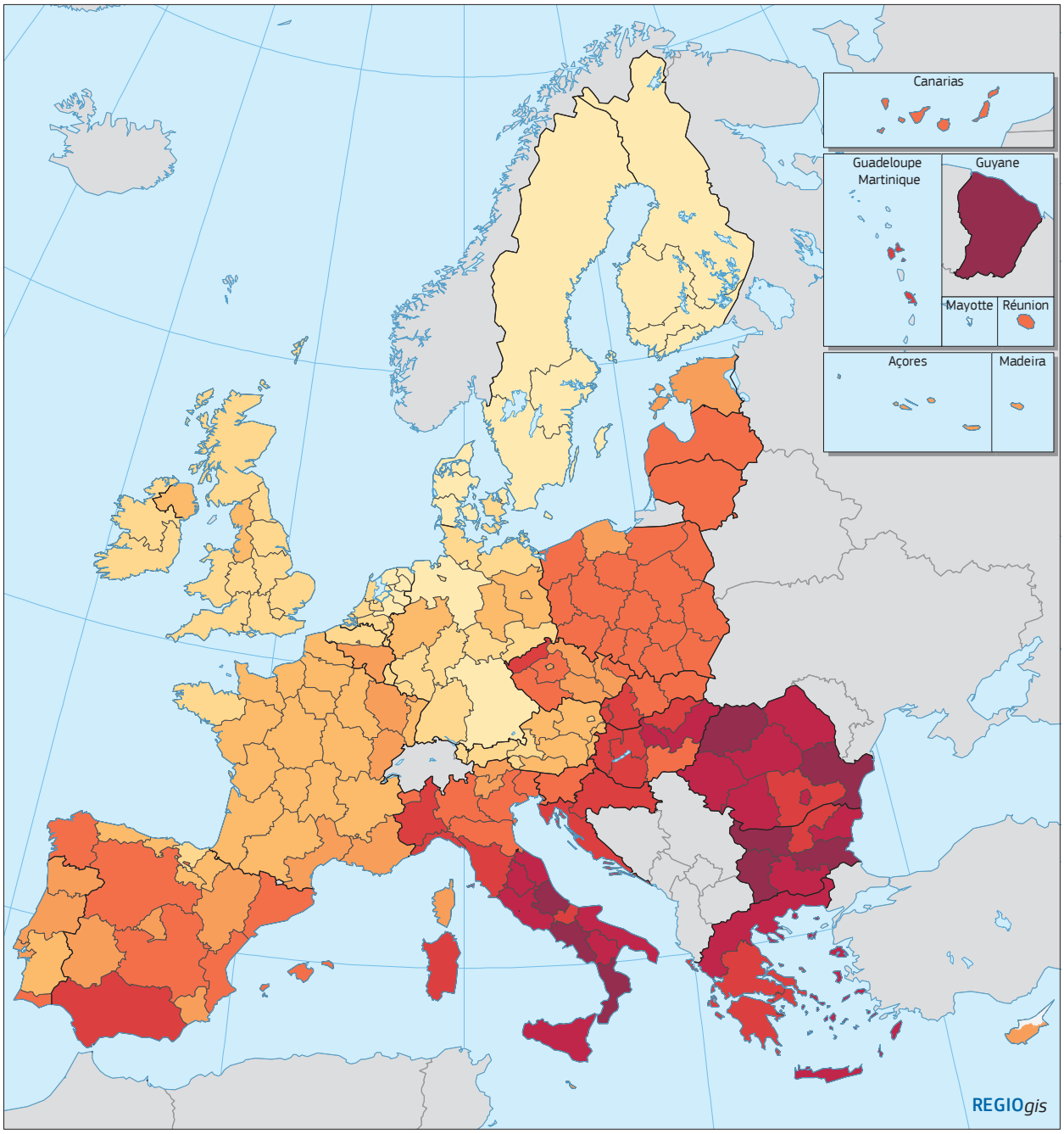
Standard deviation (0 = global average)
Source: World Bank Government Effectiveness 2015; Standard Eurobarometer 83, Spring 2015.

The quality of government and institutions appears to be the main obstacle to development in regions with persistently low growth rates[12]. Indeed, the 2017 EQI results for Italy, Greece and Spain imply that some less advantaged regions in these countries may be stuck in a low-administrative quality, low-growth trap. In regions in the east of the EU, especially in those in Bulgaria and Romania, which have enjoyed relatively high growth over the past decade or so, the poor quality of government which is evident, may eventually put a break on development and the move to a higher value-added economy (A. Rodriguez-Pose, T. Ketterer, 2016).

The results of the 2017 survey are much the, same as for 2013[13] indicating that improvements in government may take time. Indeed, for them to occur

12 European Commission (2017a).

13 Due to slight changes in the methodology the two surveys are not fully comparable.



Map 4.1 European Quality of Government index, 2017

Standard deviation, range from poor quality (negative) to high quality (positive)

- < -1.75
- -1.75 – -1.25
- -1.25 – -0.75
- -0.75 – -0.25
- -0.25 – 0.25
- 0.25 – 0.75
- 0.75 – 1.25
- > 1.25
- no data

EU = 0

Source: World Bank data and a regional quality of government survey.

0 500 km

© EuroGeographics Association for the administrative boundaries

Table 4.1 Summary of fixed effects analysis

Results of all growth determinants		Results by institutional index components	
Dependent variable: GDP per capita growth (1999–2013)	**All EU regions**	**Dependent variable: GDP per capita growth (1999–2013)**	**All EU regions**
Initial GDP per capita		Level of corruption index	
Investment		Change of corruption index	
Population growth		Level of rule of law index	
Agglomeration		Change of rule of law index	
Level of accessibility index		Level of government effectiveness	
Change of accessibility index		Change of government effectiveness	
Level of human capital & innovation index		Level of government accountability	
Change of human capital & innovation index		Change of government accountability	
Level of institutional quality (QoG)			
Change of institutional quality (QoG)			

Key:

- Positive and statistically significant impact
- Negative and statistically significant impact
- No statistically significant impact

Panel data analysis for 249 NUTS 2 regions in the European Union using a standard Solow-Swan-type growth framework. Investment is proxied by regional gross fixed capital formation as a percentage of GDP. All independent variables are included with a five year lag. Natural logarithms have been taken for most regressors apart from the population growth variable. All regressions include constant time dummies.
Source: DG REGIO calculations on the basis of A. Rodriguez-Pose, T. Ketterer (2016).

is likely to require concerted efforts at all levels of the administration as well as the active involvement of the public at large.

2.1 Quality of governance as a determinant of regional growth

A recent study on the determinants of regional growth between 1999 and 2013 (Rodriguez-Pose & Ketterer, 2016) was aimed at differentiating between the role of traditional aspects of investment policy, such as infrastructure, human capital and innovation, and that of various institutional aspects.

The effect of the quality of regional government and changes in this is included in the regression analysis as both an aggregate measure (Table 4.1, left panel) and separately in terms of the four main constituent aspects distinguished: corruption, confidence in police and regional law enforcement, government effectiveness, and government accountability (Table 4.1, right panel).

In line with the predictions of neoclassical growth theory, there is a significant and negative relationship between growth rates and initial GDP per head, so implying a tendency towards convergence.

The three basic factors identified by growth theory do not seem to have been important in determining changes in GDP per head of regions over the period of economic expansion followed by recession. Following the abrupt change in economic conditions in 2008, the determinants of growth during the boom years no longer seem to work in the same way. The initial level of regional investment, accessibility, population growth and the quality of regional institutions do not appear to be important in explaining differences in the growth of GDP per head between regions over the crisis years. The same is true of human capital accumulation and R&D expenditure relative to GDP (as a measure of innovation efforts), though employment of those

with tertiary education continues to have a significant positive effect on growth. On the other hand, changes in the quality of institutions show a continuously positive and statistically significant effect over the period.

Indeed, improvements in the quality of institutions appear to have been among the most consistent factors underlying economic growth and resilience across the EU. Accordingly, the implication is that bringing about such improvements, by either tackling widespread corruption or introducing measures aimed at making government decisions more efficient and transparent, is important for regional development — as important, indeed, as physical investment.

2.2 Corruption remains widespread in many EU countries and may erode social capital

Corruption is a drag on economic growth. The true social cost of corruption cannot be measured solely by the amount of bribes paid or public funds diverted. It also includes the loss of output due to the misallocation of resources, distortion of incentives and other inefficiencies that it causes. Corruption can also have perverse effects on the distribution of income and give rise to a disregard for environmental protection. Most importantly, corruption undermines trust in legitimate institutions, diminishing their ability to provide adequate public services and an environment conducive to business development. In extreme cases, it may lead to the state losing its legitimacy, giving rise to political and economic instability, so reducing business investment and making sustainable development harder to achieve. (OECD, 2013b).

The Corruption Perceptions Index (CPI), first launched in 1995 by Transparency International, has been widely credited with putting the issue of corruption on the international policy agenda. The CPI each year ranks countries by their perceived levels of corruption, as assessed by experts and through opinion surveys. Corruption is defined as the misuse of public power for private benefit and the index combines data from 13 sources to judge this. As the methodology was updated in 2012, the following focuses on the changes since then[14].

In 2016, the CPI ranked 176 countries on a scale from 100 (very clean) to 0 (highly corrupt). The global average score is 43, indicating endemic corruption in many governments across the world. The average score of EU countries is 65, with 6 countries having a score below 50 and 7 in Northern and Western Europe having one above 80 (Figure 4.5).

While the general trend over the 5 years 2012–2016 is upwards, there were some significant downward movements (Figure 4.6). Between 2016 and 2015, the CPI score dropped by more than a point in 7 Member States: Cyprus (6 points), the Netherlands (4), Hungary (3) and Greece, Croatia, Lithuania and Ireland (2 in each). It remains to be seen whether this is a long-term reduction or the reaction to one-off events (like a corruption scandal in the Netherlands which happened shortly before the survey). At the same time, there was increase in the score in Italy (by 3 points) and Romania and Latvia (by 2 points in each).

The ranking of the best performers among EU Member States did not change much over the 5 years. In particular, Denmark was ranked first throughout the period with Finland and Sweden close behind. There are more changes in the middle-ranking countries with Estonia, Latvia, Lithuania, the Czech Republic and Poland having the biggest increases.

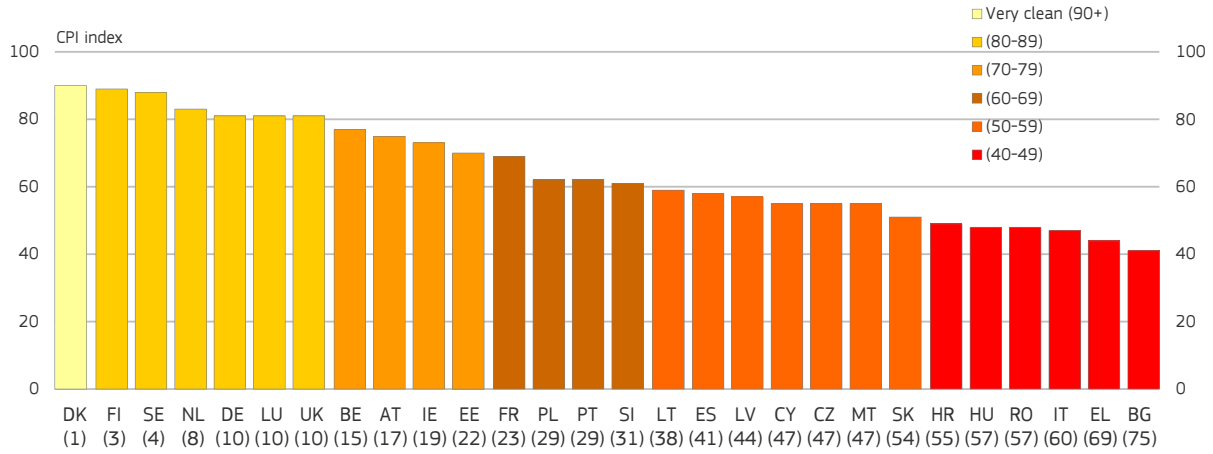
Over the 5 years, 3 countries stand out as not following the general trend towards improvement. In Cyprus, Spain and Hungary, there was a significant increase in perceived corruption.

2.3 Trust in local authorities in line with perceptions of corruption

Corruption erodes trust in public services. According to various surveys carried out for the

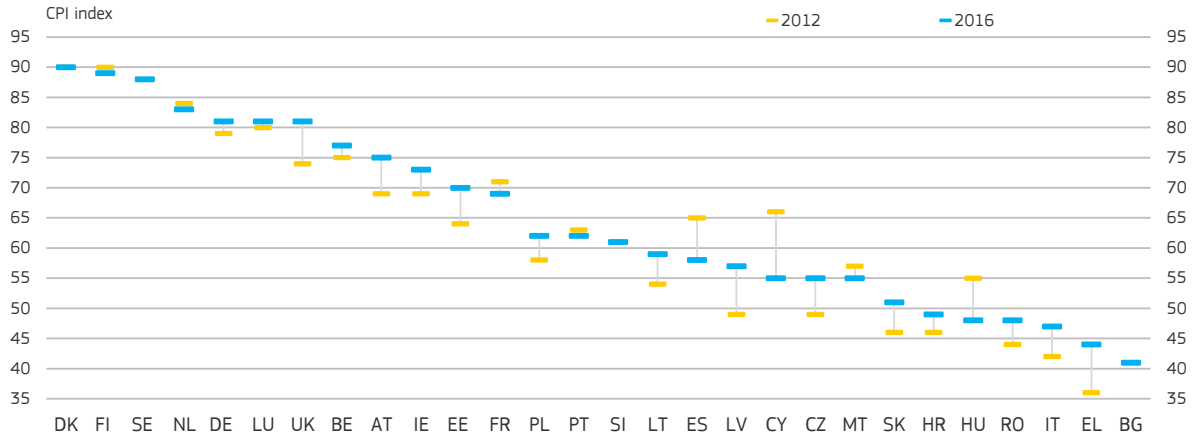
14 http://www.transparency.org/files/content/pressrelease/2012_CPIUpdatedMethodology_EMBARGO_EN.pdf

Figure 4.5 Corruption Perception Index, 2016



Numbers in brackets indicate the country world ranking
Source: Transparency International

Figure 4.6 Corruption Perception Index, 2012-2016



Score: 0 = very corrupt and 100= clean of corruption
Source: Transparency International

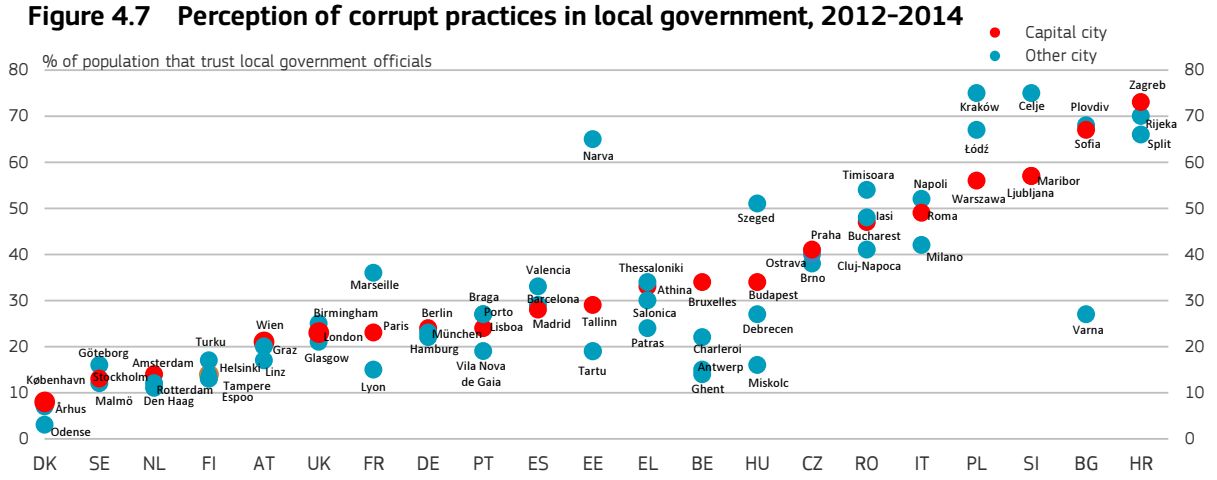
European Commission and information from the World Justice project[15], trust in local authorities and people's perception of corruption in them go hand in hand.

Countries and cities in which people trust their local government are also those in which people believe the authorities concerned are not corrupt (such as in the Nordic countries or Austria) while in a large parts of central, eastern and southern Europe, local authorities are perceived as being prone to corruption. Hungary, Romania and Belgium are somewhat different in that there is a relatively high level of trust in local authorities even though they are regarded as being relatively corrupt. The three countries with the lowest level of trust in local authorities (less than 35% of those surveyed reporting having trust) were Bulgaria, Poland and Italy, in all three of which perceptions of corruption among local officials were the most widespread (Figure 4.7).

National averages hide some marked differences in how people perceive the situation in different cities. For example, Marseille stands out from other French cities with only 30% expressing trust in the local government (as opposed to 55% in Lyon)

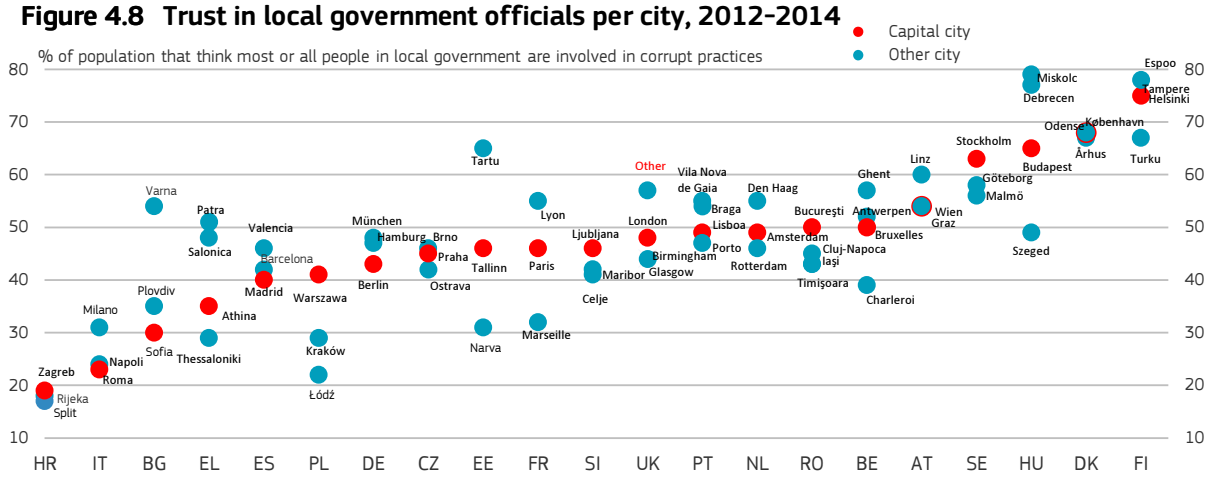
15 See European Commission (2016h) for details..

Figure 4.7 Perception of corrupt practices in local government, 2012-2014



Source: World Justice Project & JRC Calculations

Figure 4.8 Trust in local government officials per city, 2012-2014



Source: World Justice Project & JRC Calculations

and as many as 40% believing that local officials are involved in corrupt practices (as against just 15% in Lyon). Equally, in Hungary, a much larger proportion of people trust local officials in Miskolc (80%) in the north-east of the country than in Szeged (50%) in the south (Figure 4.8).

3. Institutional capacity affects policy performance and capacity to conduct reforms

Public administration reflects the institutional basis on which countries are run and its quality determines performance in all areas of public policy. Public administration is responsible for responding to the needs of society and as such it has significant effect on the pace of economic and social development and its sustainability[16].

3.1 Professional and impartial administrations provide better policy outcomes for people

In a context of a rapidly changing environment and challenges such as globalisation, social inequality and demographic change, any assessment of sustainable governance needs to focus on policy outcomes, the underlying democratic order and people's confidence in institutions as well as in the capacity of government to implement policies successfully[17].

The Sustainable Governance Indicators, developed by Bertelsmann Stiftung, are intended to indicate how well policies have performed in achieving long-term objectives by examining outcomes in 16 areas. The indicators are built on three indices — the Policy performance index, the Democracy index and the Governance index — which together determine the sustainability of governance (see Box). As the confidence in institutions was discussed above, the focus here is on policy performance and governance.

The Sustainable Governance Indicators (SGI) show major differences between EU Member States in terms of both the design of economic and social policies and the capacity of institutions to implement them and achieve desired outcomes. Sweden, Denmark and Finland score the highest on policy performance, while Cyprus and Greece score the lowest (Figures 4.9 and 4.11). Germany, Luxembourg and the UK are ranked only slightly below the three Nordic countries as well as Estonia and Lithuania, while Hungary Romania, Croatia and Bulgaria are ranked only a little above Greece and Cyprus.

France, Slovenia, the Czech Republic and Austria score better on the implementation of social policies than the EU average but worse as regards economic policies. On the other hand, Latvia and Malta score well above the EU average on economic policy but below average on social policy.

The Governance index of the SGI is intended to capture the extent to which, on the one hand, a country's institutional arrangements increase the government's capacity to act ('executive capacity') and, on the other, NGOs, other organisations and the public in general have the ability to hold government accountable for its actions ('executive accountability').

Again the Nordic countries, followed by Germany, Luxembourg and the UK, have the most capable and

Sustainable Governance Indicators explained

The Policy Performance Index aggregates data compiled on policy outcomes in 16 areas that cover the three dimensions of sustainability (economic development, environmental protection and social policies).

The Democracy Index is based on an analysis of each country's democratic order and people's confidence in institutions on which it is founded. It assesses the substantive and procedural features of a system that enable long-term oriented governance to be sustained.

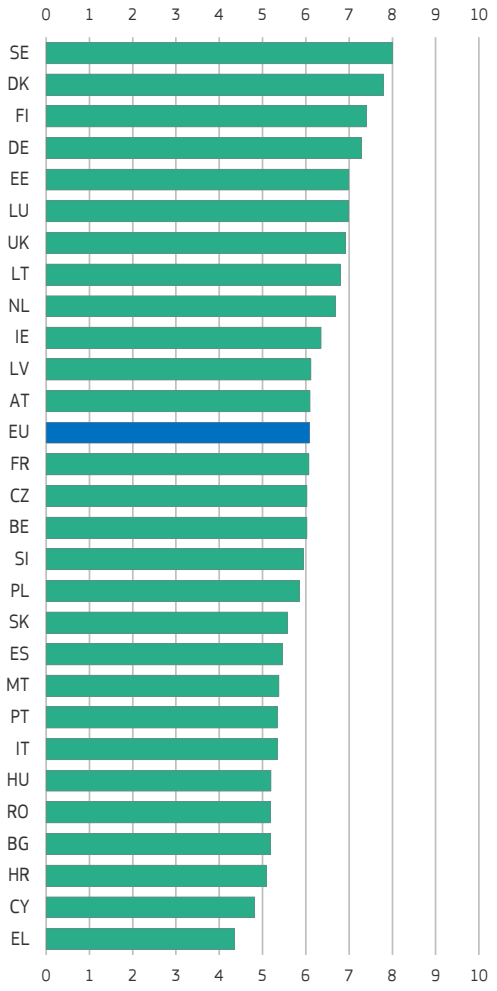
The Governance Index assesses a government's capacity to steer and implement policies, its capacity for institutional learning and reform and the extent of executive accountability.

Source: http://www.sgi-network.org

16 https://ec.europa.eu/info/sites/info/files/european-semester_thematic-factsheet_quality-public-administration_en.pdf

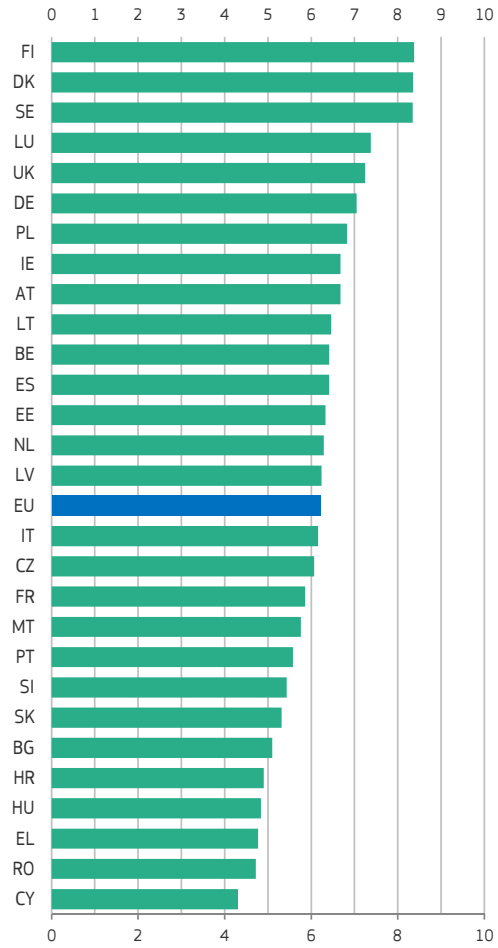
17 http://www.sgi-network.org/docs/2016/basics/SGI2016_Overview.pdf

Figure 4.9 Policy performance indicator, 2016



Scores: 0 = low performance; 10 = high performance
Source: DG REGIO calculations on the basis of Sustainable governance indicators http://www.sgi-network.org

Figure 4.10 Governance performance indicator, 2016



Scores: 0 = low performance; 10 = high performance
Source: DG REGIO calculations on the basis of Sustainable governance indicators http://www.sgi-network.org

accountable governments in the EU (Figures 4.10 and 4.12), while Greece, Cyprus, Croatia, Hungary, Romania and Bulgaria have the least capable and accountability. In Belgium and the Czech Republic, stakeholders are relatively closely involved in policy making, but governments are less capable than the EU average. In Lithuania and Latvia, on the other hand, the authorities are relatively capable, but there is less involvement of stakeholders than average.

3.2 Potential benefits of conducting structural reforms is huge

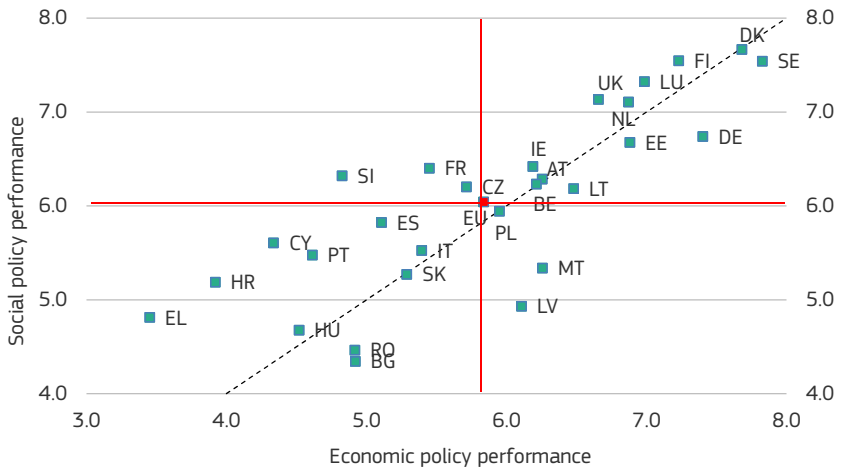
Putting in place conditions conducive for investment, growth and jobs is an important pre-condition for sustainable economic development. According to European Commission analysis, large potential benefits in terms of GDP, productivity and employment growth can be obtained through structural reforms relating to market competition and regulation, taxation, the labour market, unemployment benefits and investment in human capital and R&D[18].

18 For more details see Varga J. and J. in't Veld (2014).

Simulations, using the Quest model of structural reforms that would halve the gap with the best performers, show that they could boost GDP by 3% after 5 years over what it otherwise would be, almost 6% after 10 years and 10% after 20 years (assuming all Member States were to implement reforms, Figure 4.13). The estimated effect on employment is similarly high (Figure 4.14).

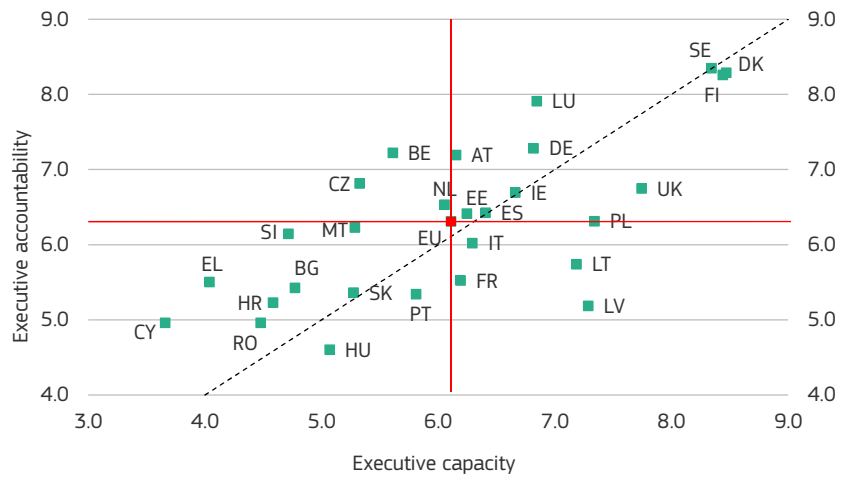
According to the model, the reforms with the largest impact relate to increasing the participation rates of women and of people of 50 and over in the labour force and increasing the proportion of workers in employment who have tertiary-level education, and correspondingly reducing the proportion with only basic schooling. Improving the business environment also has a significant effect.

Figure 4.11 Economic and social policy performance indicators, 2016



Scores: 0 = low performance; 10 = high performance
Source: DG REGIO calculations on the basis of Sustainable governance indicators
http://www.sgi-network.org

Figure 4.12 Executive capacity and accountability indicators, 2016



Scores: 0 = low performance; 10 = high performance
Source: DG REGIO calculations on the basis of Sustainable governance indicators
http://www.sgi-network.org

Structural reforms can potentially have a big impact on lagging regions, accelerating the process of catching up[19].

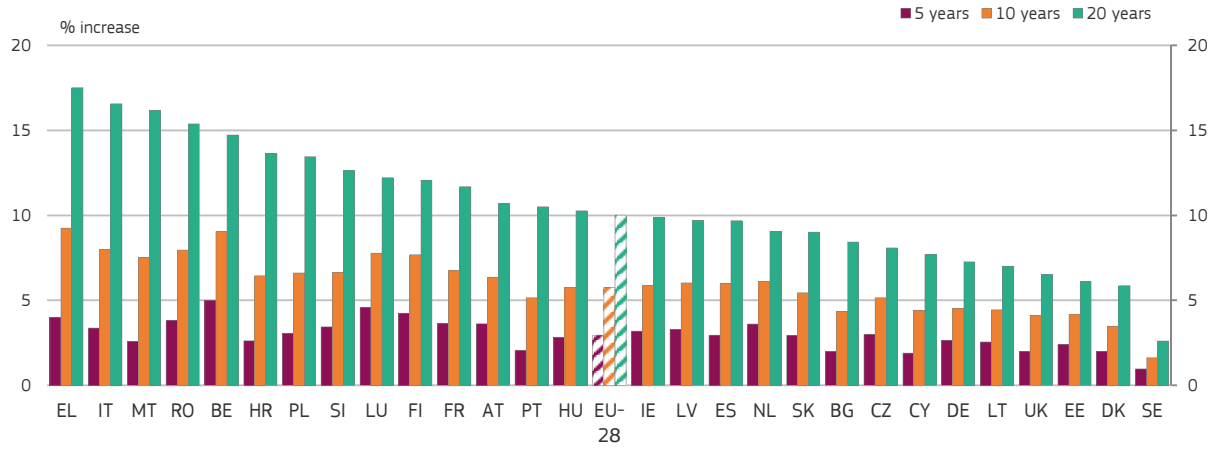
3.3 Meritocracy of the public sector varies greatly between and within EU countries

The Quality of Government Expert Survey[20], which is intended to assess the organisation of public bureaucracies and their behaviour in different countries worldwide, is based on the views of over 1 000 experts. It covers such issues as recruitment procedures, internal promotion, career stability

19 European Commission (2017a).

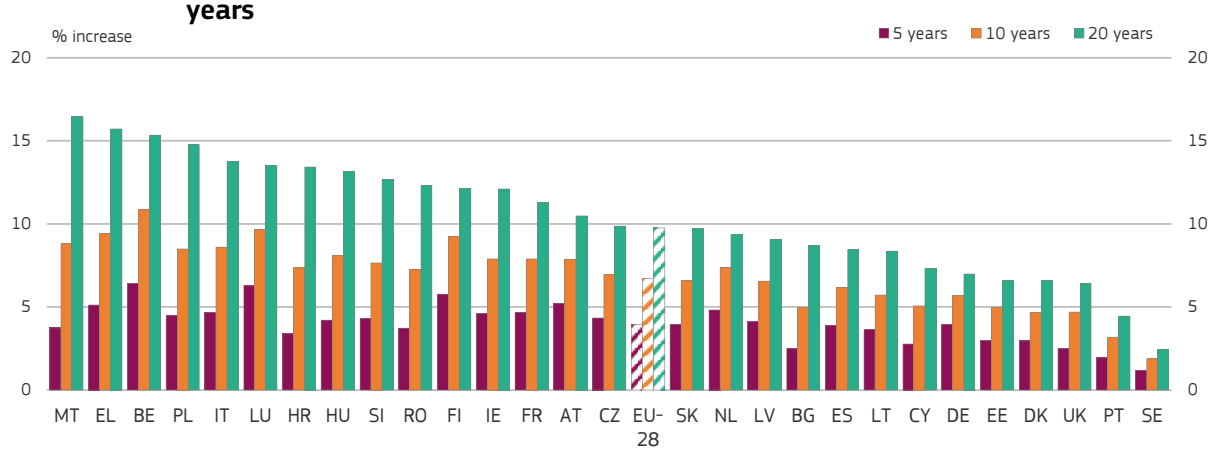
20 Dahlström et al. (2015).

Figure 4.13 Estimated effect of structural reforms on GDP after 5, 10 and 20 years



The % difference in GDP between a 'reform' scenario and a 'no-reform' scenario according to simulations using the Quest model
Source: Varga J. and J. in 't Veld (2014)

Figure 4.14 Estimated effect of structural reforms on employment after 5, 10 and 20 years



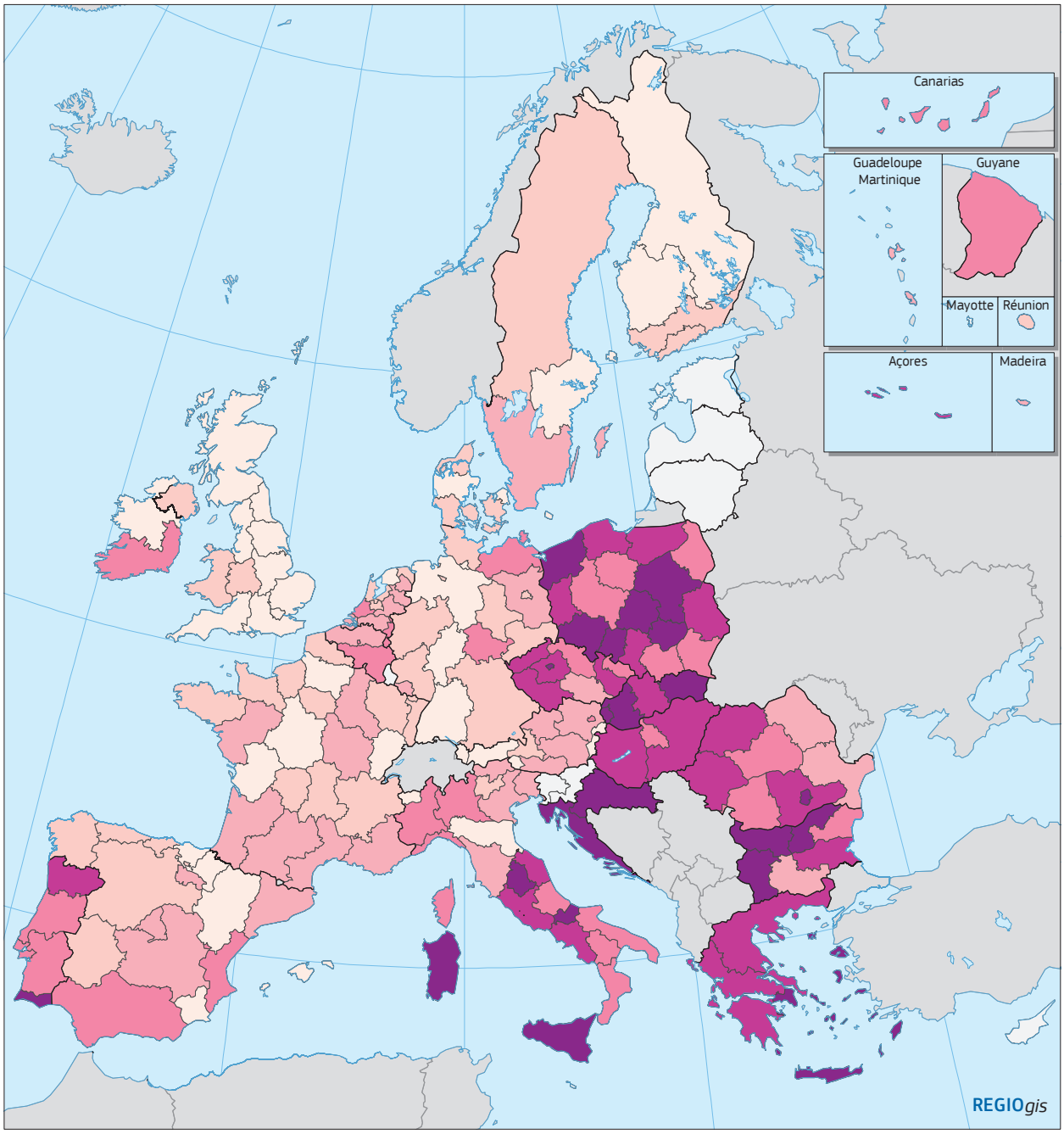
The % difference in employment between a 'reform' scenario and a 'no-reform' scenario according to simulations using Quest model
Source: Varga J. and J. in 't Veld (2014)

and salaries. The results are presented in terms of three indices relating to professionalism, 'closedness' and impartiality[21].

They show that Western and Nordic EU counties tend to have more professional and impartial public administrations than the southern and eastern Member States, Poland, Lithuania and Estonia are the only ones of the EU-13 that are assessed as above the EU average in terms of both professionalism and impartiality.

Whether the model is more 'public-like' (or 'closed) or 'private-like' (or 'open') is not the decisive factor in determining professionalism or impartiality. Sweden, Finland, Denmark, Estonia and Netherlands have 'private-like' rules of hiring and career building and are assessed as being relatively impartial and professional (Figures 4.15 and 4.16). On the other hand, France and Germany have a more closed and formalised system but have officials who are also assessed as being professional and impartial.

21 The index of impartiality measures the extent to which public sector officials implement policies impartially. The index of professionalism measures the extent to which public officials are professionals rather than politicised. The index of 'closedness' measures the extent to which public administration is more public-like than private-like. Dahlström et al. (2015).



Map 4.2 Public sector meritocracy, 2013

Score (1 perfect meritocracy to 10 no role for merit)

- < 5.3
- 5.3 – 5.6
- 5.6 – 6.0
- 6.0 – 6.4
- 6.4 – 6.8
- > 6.8
- no data

Note:
Average score of a) public workers and b) citizens who do not work in the public sector to the following question: Which statement comes closer to your own views ?
Pick 1 if you agree completely with 'In the public sector most people can succeed if they are willing to work hard'
Pick 10 if you agree completely with 'Hard work is no garantee of success in the public sector for most people — it's more a matter of luck and connections'.
If your views fall somewhere in between, you can choose any number between 1 and 10.

Source: Charron, N., Dahlström, C. & Lapuente, V. Eur J Crim Policy Res (2016)

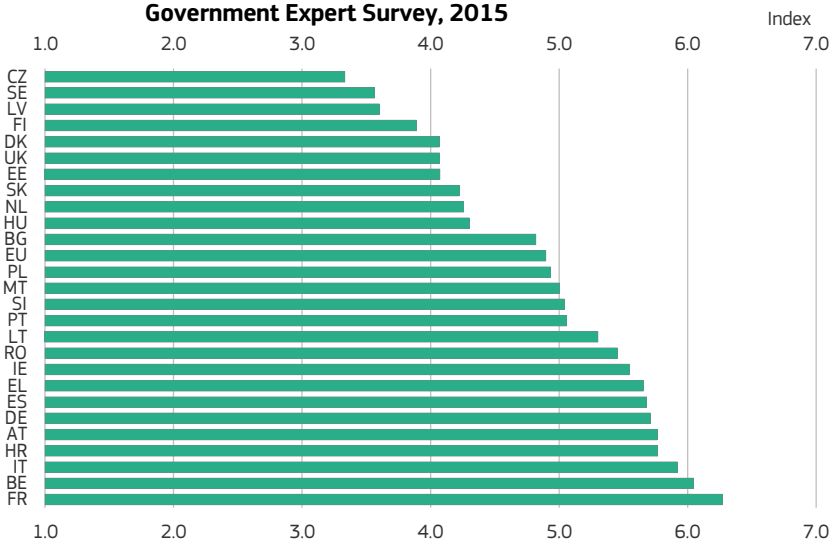
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According to a recent study carried out by Charon, Dahlström and Lapuente (2016), based on the results of the European Quality of Government Survey, regional and local governments across the EU vary markedly in terms of the perceived level of meritocracy, as opposed to nepotism, in appointments of public officials and their promotion (Map 4.2). Whereas meritocratic principles tend to predominate in large parts of the UK, Germany and Finland (which have scores of less than 5 — low scores signifying an absence of nepotism), 'luck and connections' are considered the main determinants in most parts of the EU-13, Italy and Greece.

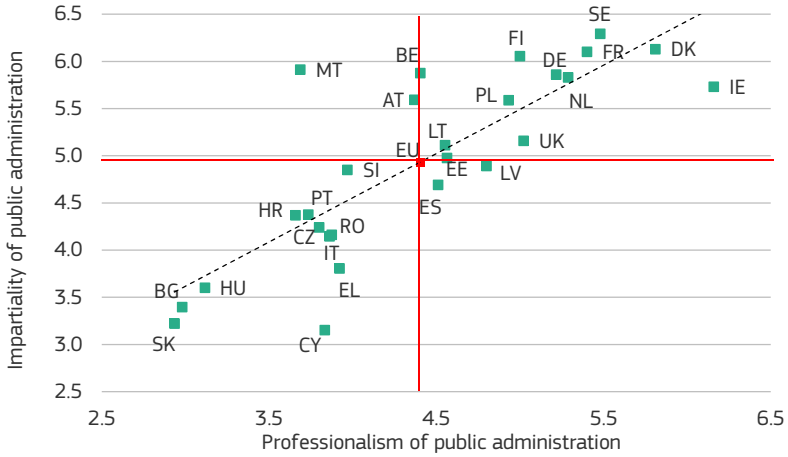
The degree of local autonomy also varies across the EU (see Box), which may influence trust in local government.

Figure 4.15 Closedness of the public sector according to the Quality of Government Expert Survey, 2015



Closedness index: 1 = a non-closed, i.e. open public administration; 7 =a very closed public administration
Source: DG REGIO calculations on the basis of The QoG Expert Survey Dataset II.

Figure 4.16 Professionalism and impartiality of the public sector according to the Quality of Government Expert Survey, 2015

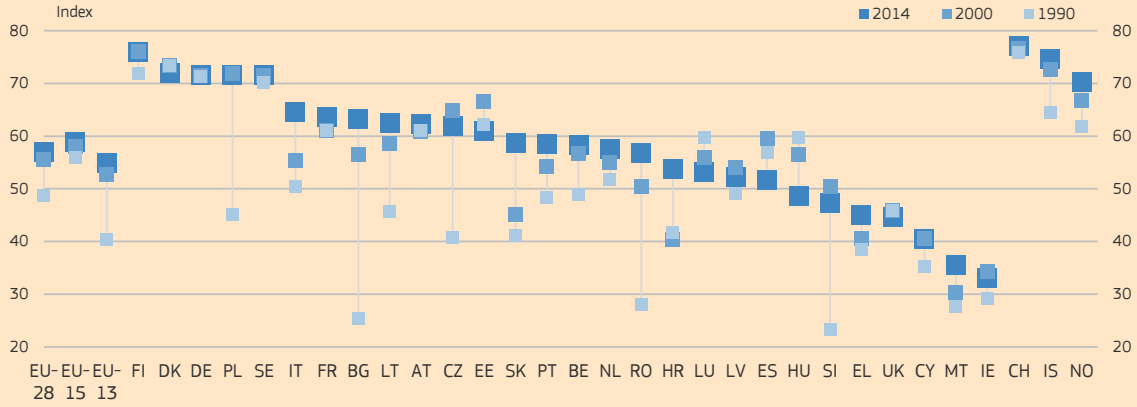


Professionality and impartiality indices: 1 = low impartiality and professionalism; 7 = high impartiality and professionalism
Source: DG REGIO calculations on the basis of The QoG Expert Survey Dataset II.

Local autonomy and self-rule

The extent of autonomy of local governments in European countries has increased since 1990 according to the Local Autonomy Index. There are, however, significant differences in autonomy across Europe.

Figure 4.17 Local Autonomy Index, 1990, 2000 and 2014



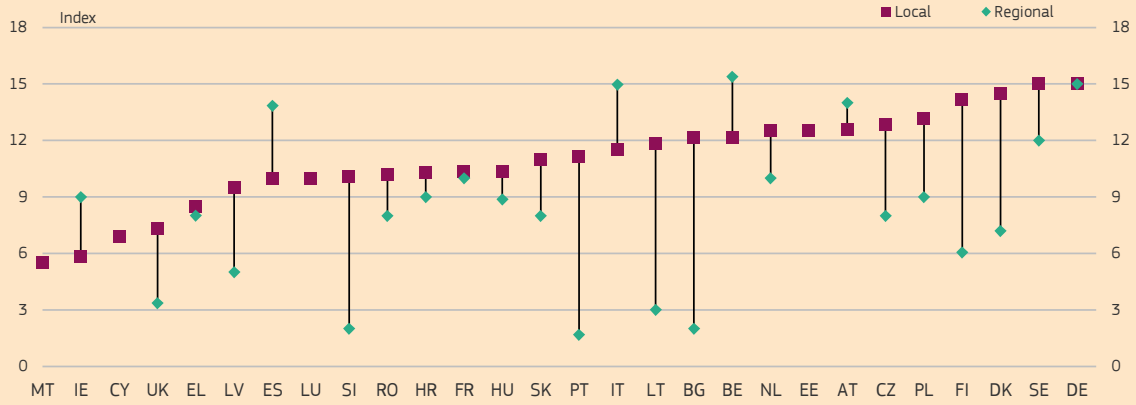
Local autonomy index: 0 = low autonomy; 100 = high autonomy

Source: DG REGIO, Ladner, A., Keuffer, N. and Baldersheim, H. (2015).

Local authorities in the Nordic countries have a high degree of autonomy as do those in Germany, Switzerland and Poland, while those in Cyprus, Malta and Ireland have the lowest levels in the EU (Figure 4.18). There were increases in local autonomy in the EU-13 countries between 1990 and 2014, especially in the early years of the transition, but it still remains less than in the EU-15 where there was only a small increase over the period.

In most countries, local authorities have more autonomy than regional authorities (Figure 4.19). Only in Belgium, Italy, Austria, Spain, Germany — countries with a strong regional or federal structure of government — is the degree of regional self-rule greater than at local level, though even in these countries, local authorities have significant discretion over policy.

Figure 4.18 Local and regional self-rule, 2014



Self-rule index: 0 = no self-rule; 18 = complete self-rule

Source: DG REGIO, Hooghe, Liesbet, Gary Marks, Arjan H. Schakel, (2010) and Ladner, A., Keuffer, N. and Baldersheim, H. (2015).

e-Government Benchmark project

The e-Government Benchmark assesses the priority areas of the e-Government Action Plan 2011–2015. Progress in each area is measured by one or more indicators:

- User-centric government assesses the availability and usability of public e-Services and the ease and speed of using them.
- Transparent government assesses the transparency of government operations, service provision procedures and the level of control users have over their personal data.
- Cross-border mobility measures the availability and usability of services for people and businesses abroad.
- Key enablers assess the availability of 5 functions, such as e-ID cards.

The assessment in each area is based on survey responses to a number of questions regarding the quality or quantity of e-Government services on a specific aspect.

Source: European Commission (2016c).

3.4 Governments have advanced in making public services available online, but have focused less on the user's perspective

The use of ICT in the public sector, if implemented correctly, is beneficial for both people and governments. It can reduce administrative costs and the burden of bureaucracy, lead to institutions being re-organised in more citizen-friendly ways and increase transparency. Accordingly, it can increase the general efficiency of government and result in the interaction of people and businesses with public authorities being easier and less time-consuming. The extent of e-Government, its quality and the take-up of public e-services varies markedly across the EU.

Table 4.2 shows how EU Member States performed in 2016 compared to the average of 34 European countries[22]. The Nordic countries, the Baltic States, the Benelux countries, Germany, France and Austria performed best and show the most growth in e-Government.

In 2016, almost one in two people in the EU (48%) used e-Government, and around four in every five or more in Denmark (88%), Finland (82%) and Sweden (78%)[23]. The share increased over the preceding 5 years in all Members States, except Slovakia, the Czech Republic and Bulgaria (Figure 4.19), the biggest increases being in Latvia (28 percentage points) and Estonia (24 percentage points). In the four countries with the smallest usage, Poland, Italy, Romania and Bulgaria, there was little change over the period in the first three and a reduction in the last.

E-Government services potentially provide flexible and personalised ways of interacting and performing transactions with public authorities. However, the 'use of e-Government' indicator reveals nothing about the frequency of use or the completeness of online services and their quality. Nor does it indicate their transparency, which can help to build trust between the government and the general public, as well as making policy-makers more accountable.

According to the e-Government benchmark project, governments have advanced in making public services digital but have tended to focus less on quality. While the online availability of services and their usability have increased, quality and functionality, which are important for fast and easy take-up, have barely increased at all which is equally true of the transparency of procedures in large parts of the EU.

Most countries score more highly on online availability and usability than on indicators relating to the ease and speed of online services (Figure 4.20, which shows all EU countries as being below the

22 EU Member States, Norway, Iceland, Switzerland, Serbia, Montenegro and Turkey.

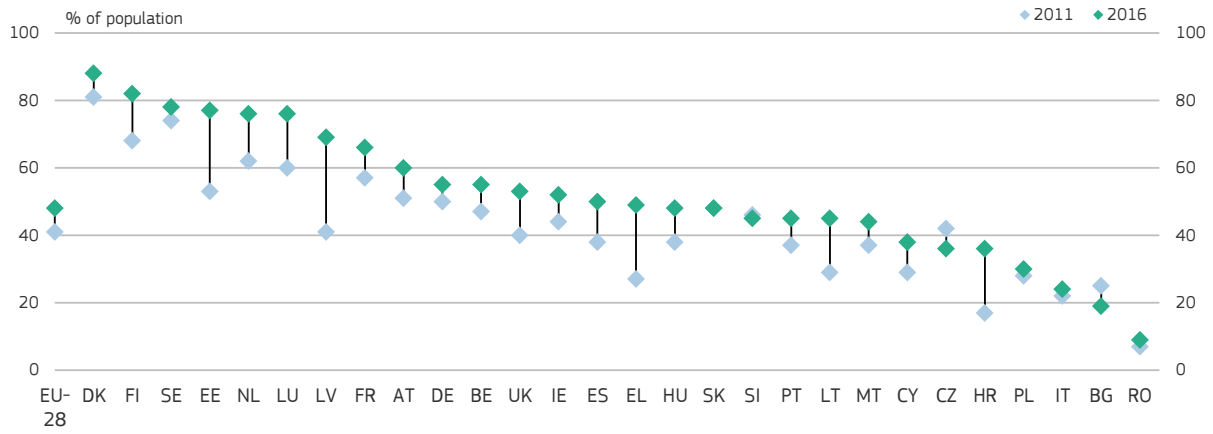
23 People sending filled forms to public authorities over the internet in the last 12 months (Eurostat).

Table 4.2 e-Government benchmark: performance and progress

Moderate performers (both growth and absolute score below European average)	Steady performers (absolute score above and growth below European average)	Accelerators (both growth and absolute score above European average)
UK, Ireland, Poland, Czech Republic, Slovakia, Hungary, Italy, Slovenia, Croatia, Romania, Bulgaria, Greece, Cyprus,	Finland, Spain, Portugal, Malta	Sweden, Denmark, Estonia, Latvia, Lithuania, Germany, Austria, Netherlands, Belgium, Luxembourg, France

European average means average for: EU Member States, Norway, Iceland, Switzerland, Serbia, Montenegro and Turkey. Average score: 61%. Average growth: 8%.
Source: DG REGIO calculations based on the EU e-government benchmark project.

Figure 4.19 E-Government use by citizens, 2011 and 2016



Source: Eurostat.

diagonal). Accordingly, simply providing information and services online is not sufficient to ensure that people will take them up, which requires them also to be easy and fast to use.

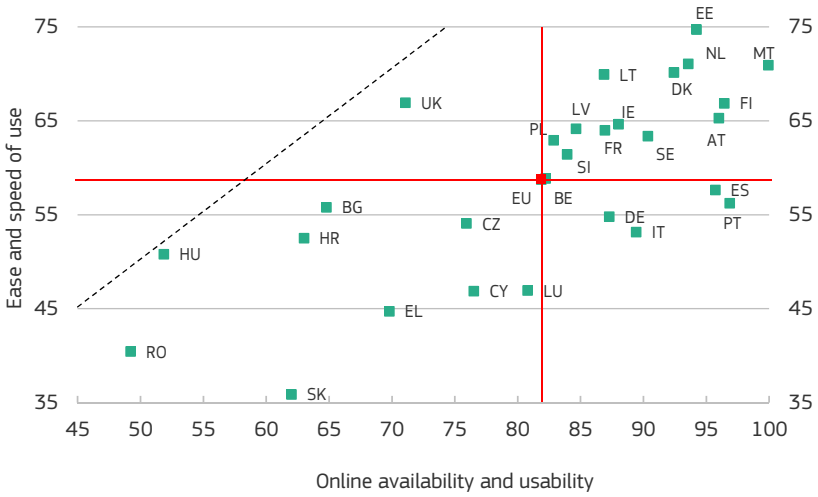
There are marked differences between countries in terms of transparency as well as variations between the three indicators used to measure this[24], which might indicate a lack of coordination between different parts of government (Figure 4.21).

Malta, Estonia and Latvia score highest in terms of the publication of information on public organisations and delivery of services, while Bulgaria, Hungary and Romania score lowest on the publication of information on public organisations, and Greece and Slovakia on the delivery of services. Malta also scores highest on transparency in relation to personal data followed by France while Slovakia, Hungary, Romania and the Czech Republic score lowest.

Online public services are becoming increasingly accessible across the EU but growth is uneven and many Member States are lagging behind. For successful implementation of e-Government, there is a need for demand-side measures as well as supply-side ones, which means online services being designed with the user in mind.

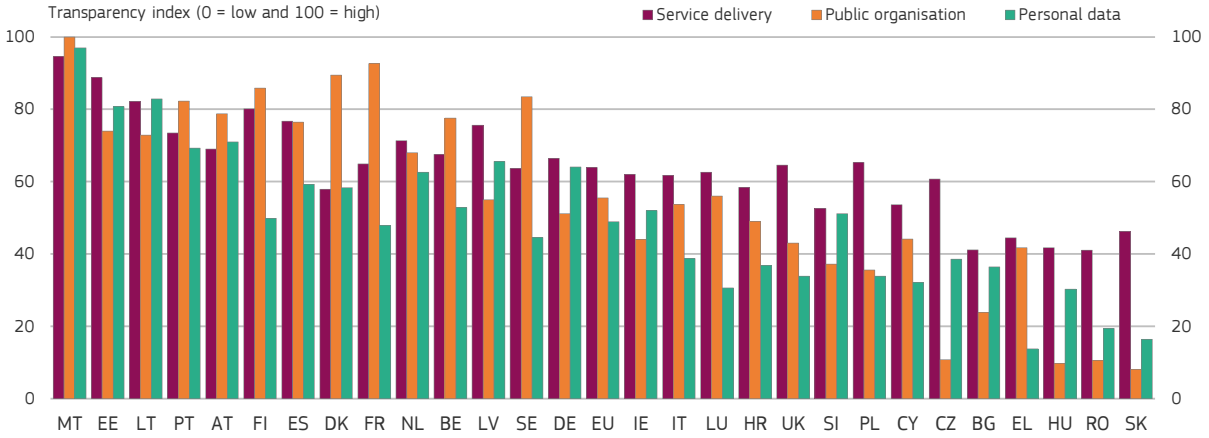
24 Transparency is measured by three indicators: service delivery, the publication of information and personal data. The first relates to the extent to which public authorities inform users about administrative procedures, the second the extent to which governments publish information about themselves and about their activities; the third, the extent to which governments proactively inform users about their personal data and how, when, and by whom it is being processed.

Figure 4.20 Availability, usability, ease and speed of use of public online services



Values relate to the % of those surveyed that assessed online services or information as being i) available and usable; ii) easy and fast to use
Source: DG REGIO calculations on the basis of the EU e-Government Benchmark project data set

Figure 4.21 Transparency of e-Government, average 2014-2015



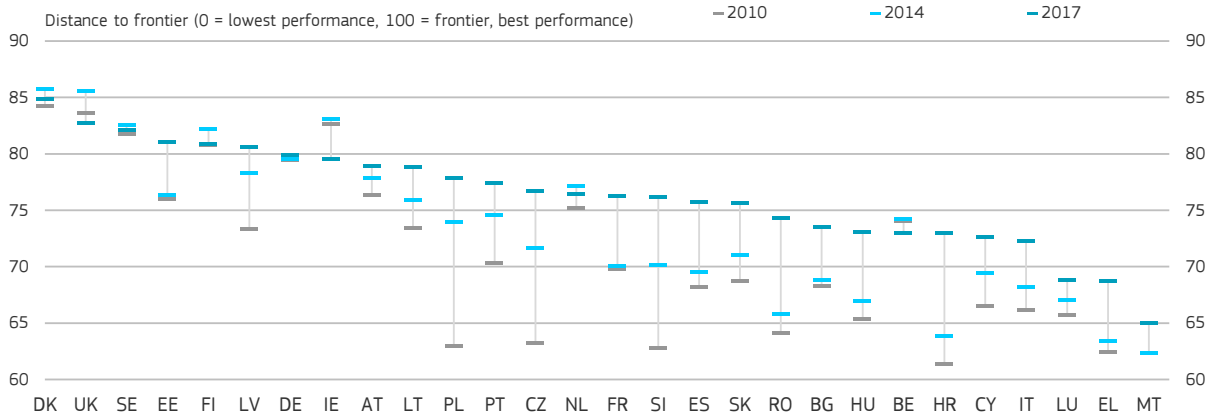
Source: EU e-Government Benchmark project dataset

3.5 Doing business is easier in the North of Europe, but central European countries are trying to catch up

Effective government policies are crucial to prevent market failure and distribute income and wealth more equitably. Simplicity, clarity and coherence of business regulations can provide stable and predictable rules for enterprises to function effectively, so encouraging long-term growth and sustainable economic development.

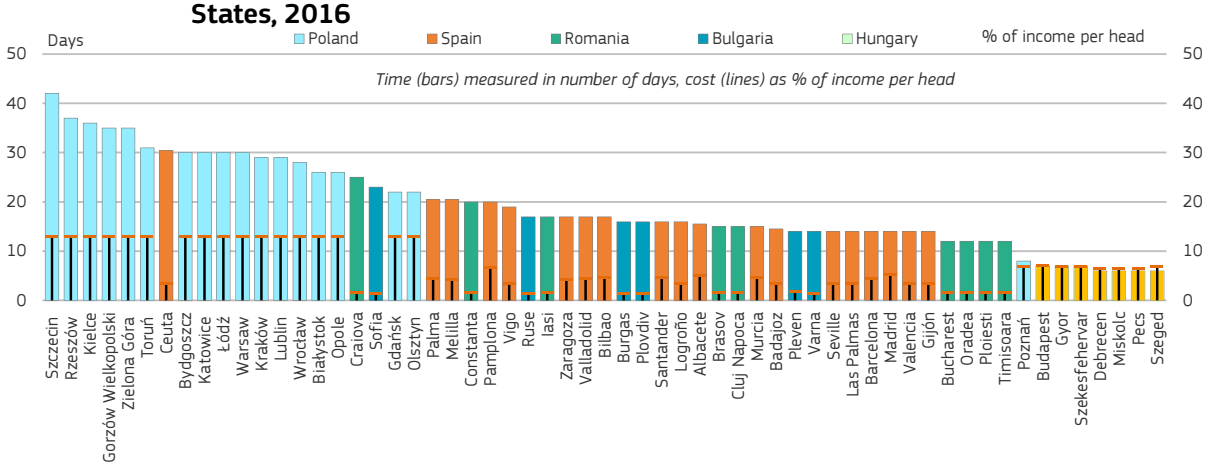
The World Bank 'Doing Business' indicators assess 10 regulatory areas which affect economic activity: starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts and resolving insolvency. The 2017 edition compares the efficiency and quality of business regulations for SMEs in 190 economies across the world, the overall ranking being constructed on the basis of how far they are from the best performing economy ('distance from frontier').

Figure 4.22 Ease of doing business, 2010-2017



Source: DG REGIO calculations on the basis of World Bank Doing Business.

Figure 4.23 Time and cost of starting a company in different cities in selected Members States, 2016



ES and PL: 2015
Source: World Bank (2015a, 2015b and 2017b).

The Nordic countries (Denmark is ranked third in the world) and Baltic States together with the UK, Germany and Ireland are assessed as having the most friendly business environments in the EU, while Cyprus, Italy, Luxembourg and Malta (which is ranked 76th in the world) have the least friendly.

Many policy reforms have been introduced over the past decade to make business environments more 'enterprise-friendly' and conducive to firm creation and growth. Between 2010 and 2017, the distance to the highest ranking economy shortened for all EU countries, except the UK, Belgium and Ireland (see Figure 4.22). The biggest improvements were in Poland, the Czech Republic and Slovenia, each of which jumped from the bottom of the EU ranking to the middle. There were significant improvements too in Croatia and Romania, but they remain among the Members States furthest from the frontier.

The sub-national doing business indicators[25], however, reveal substantial regional differences despite operating within the same legal and regula-

25 The subnational indicators cover a more limited number of dimensions than the national ones, focusing on those most likely to be affected at regional or local level: i.e. starting a business, dealing with construction permits, getting electricity, registering property, enforcing contracts.

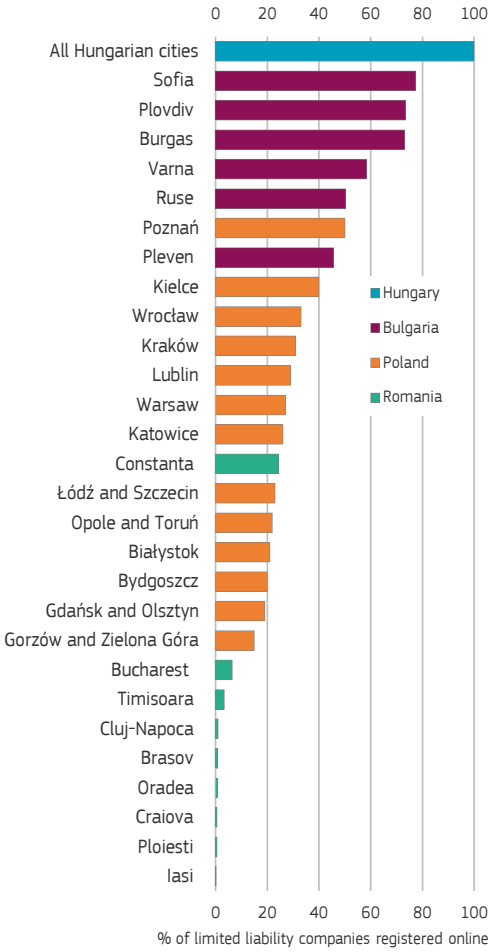
tory framework. So far, the indicators exist for only 6 EU countries: Italy (2012), Spain (2015), and Poland (2015) and Bulgaria, Hungary and Romania (2017). (Indicators for Portugal, the Czech Republic, Slovakia and Croatia will be produced for 2018–2019.) The indicators for 5 of these countries, all apart from Italy, are considered below[26].

Starting a company is easiest and quickest in Hungary, while it takes longest to do so in Polish cities (except in Poznan) — up to 42 days in Szczecin as compared with only 6 days in Szeged in Hungary (Figure 4.23). The cost of registration is also higher in Polish cities than in Hungarian ones, due to the use of online registration (which is why it is lower in Poznan). However, online registration in itself does not necessarily speed up the process — as, for example, in Kielce (also in Poland), where 40% of registrations were made online but it still took as long (Figure 4.24). To make online platforms work, they need to be accompanied by both measures stimulating business take-up and the possibility of completing the entire process online (i.e. without the need for paper copies). In some of the regions in Poland, the introduction of online registrations did not remove the need for paper copies of documents since communication with the local court remained paper-based[27].

In all countries, except Hungary, there is a large variation between different cities: in Romania, registration takes 12 days in Timisoara but 25 days in Craiova; in Spain, it takes 14 days in Gijon but 31 days in Ceuta.

Similar differences between cities relate to the time needed to deal with construction permits. This is especially so in Spain, where in Logrono (in La Rioja), the process takes 100 days but in Vigo (in Galicia) almost 300 days (Figure 4.25). In general, it is relatively easy to deal with construction permits in Bulgaria — all 6 cities are in the upper half of the ranking — and relatively difficult in Romania (all cities being in the bottom half of the ranking).

Figure 4.24 Registration of companies online in different cities in selected Member States, 2016



PL: 2015
Source: World Bank (2015a, 2015b and 2017b).

Enforcing a contract shows the most variation in all four countries for which data are available[28], ranging in Bulgaria from 289 days in Pleven to 564 in Sofia, while in Poland, it takes more than a year longer in Gdansk than in Olsztyn (Figure 4.26).

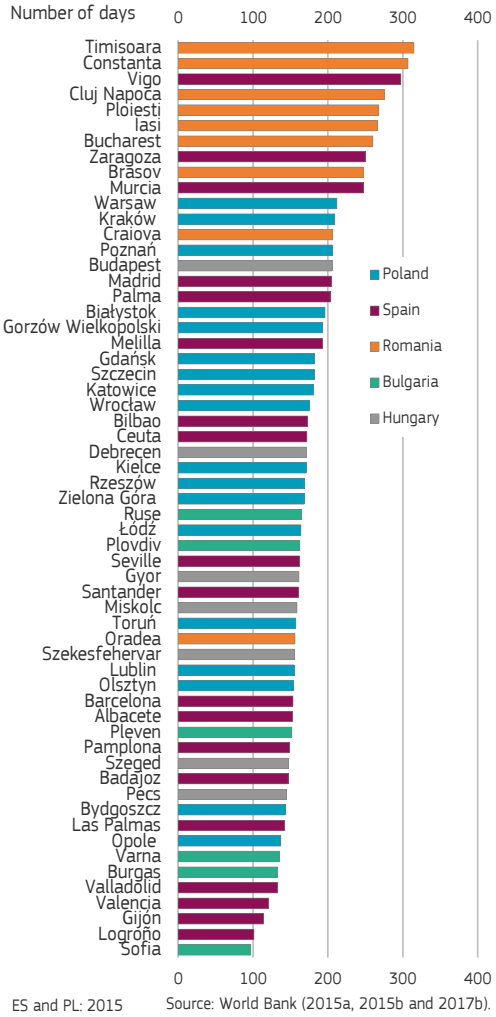
The wide differences in time, procedures and costs between different places within countries imply that improving local and regional administrative capacity can produce significant gains in the ease of doing business.

26 Italian sub-national doing business indicators were examined in European Commission (2014).

27 World Bank (2015a).

28 No data for this dimension for Spain. Note that there are differences in methodology of data gathering between Subnational doing business and EU Justice Scoreboard.

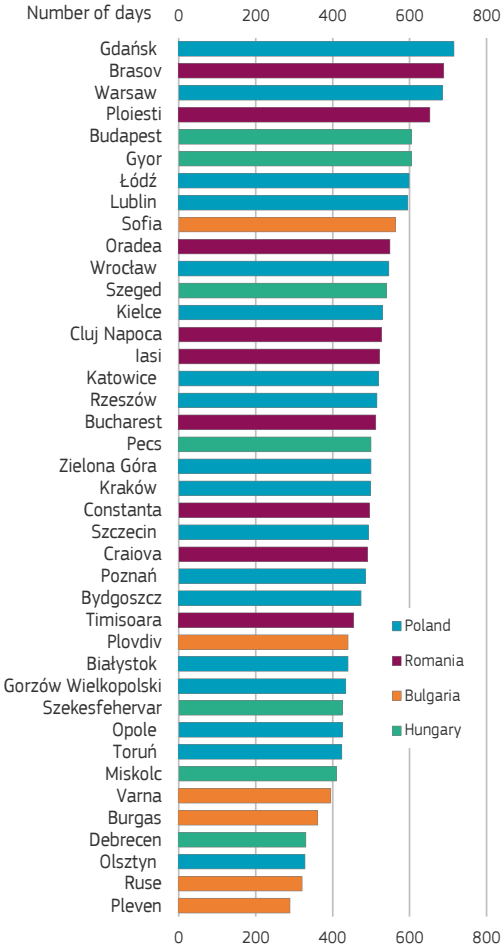
Figure 4.25 Time needed to deal with construction permits in different cities in selected Member States, 2016



ES and PL: 2015

Source: World Bank (2015a, 2015b and 2017b).

Figure 4.26 Time needed to enforce a contract in different cities in selected Member States, 2016



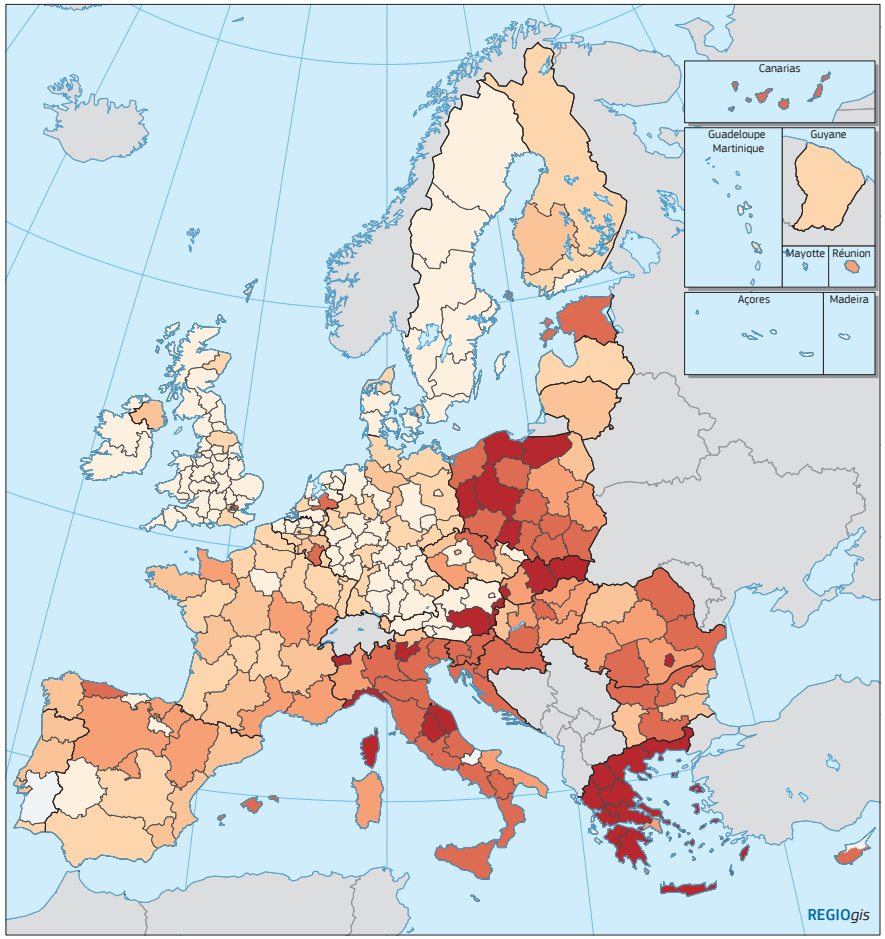
ES and PL: 2015

Source: World Bank (2015a, 2015b and 2017b).

3.6 Public procurement is open to the risk of corruption and lack of competition in many EU regions

Public procurement, the process of purchasing of goods and services by the public sector, plays a crucial role in economic and social development across the EU. It covers, on average, 29% of government spending, equivalent to some 13% of EU GDP (European Commission, 2016g; OECD, 2015a). It is a principal means by which governments can influence the quality of investment and public services and so affect economic growth. In addition, the ESI Funds are largely spent through public procurement. It is a genuinely cross-cutting government function which concerns virtually every public body from federal ministries to local state-owned utilities, making it representative of the quality of government in general.

Recent research has attempted to assess different aspects of the quality of governance on the basis of public procurement data (Fazekas, 2017, upcoming; Fazekas and Kocsis, 2017). Indicators relating to use of open procurement procedures, the ratio of single bidders may provide an insight into transparency, competition and corruption (see Box.).



Map 4.3 Public procurement with a single bidder, average 2013-2015

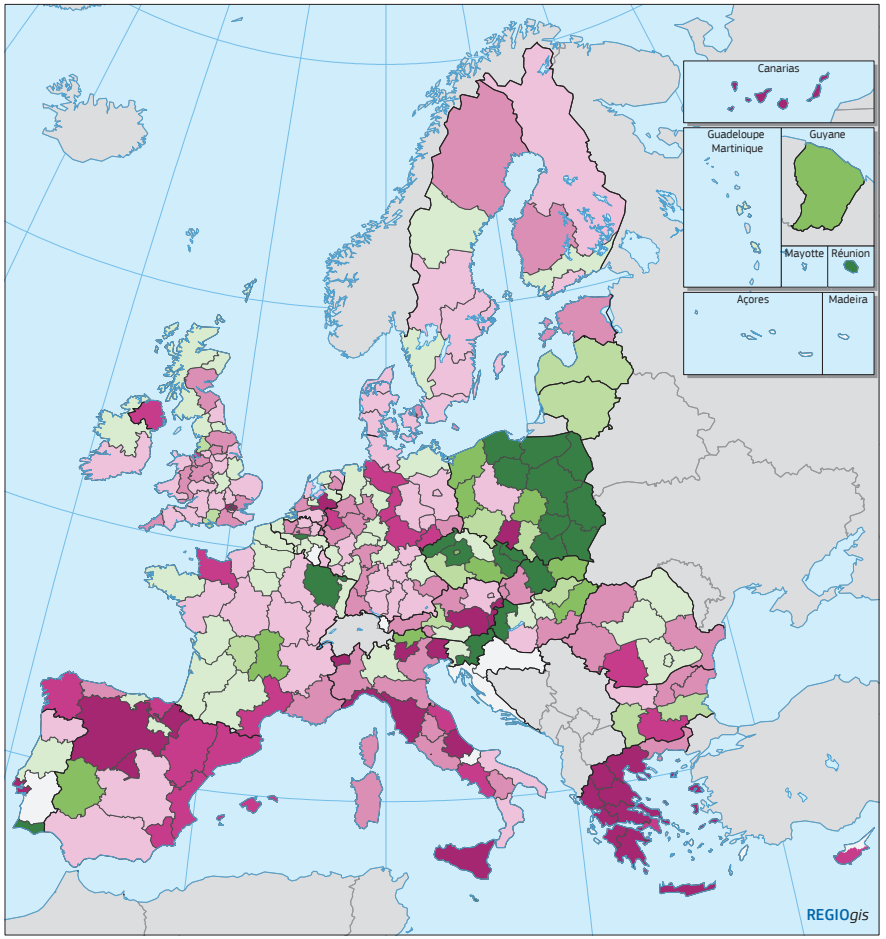
% of contracts awarded by sub-national authorities

- < 10
- 10 – 15
- 15 – 20
- 20 – 25
- 25 – 40
- > 40
- no data

Excludes regions with less than 50 contracts awarded. Includes only contracts above the threshold of the public procurement directive.
In CY, EE, LT, LU, LV, and MT, contracts awarded by national authorities in sectors used by regional and local authorities were included.
Source: EU Tenders Electronic Daily and DIGIWHIST

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Map 4.4 Change in share of single bidders, between 2007–2009 and 2013–2015

Percentage points change

- < -12
- -12 – -8
- -8 – -4
- -4 – 0
- 0 – 4
- 4 – 8
- 8 – 12
- > 12
- no data

Change in share of contracts awarded by sub-national authorities. Excludes regions with less than 50 contracts awarded. Includes only contracts above the threshold of the public procurement directive.
In CY, EE, LT, LU, LV, and MT, contracts awarded by national authorities in sectors used by regional and local authorities were included.
Source: EU Tenders Electronic Daily and DIGIWHIST

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Principles and indicators used for measuring the performance in public procurement

The principle of transparency implies that information on public procurement should be readily available in a precise, reliable, and structured form (Kovacic, Marshall, Marx, & Raiff, 2006). In a narrower sense, it can be defined as compliance with the information disclosure requirements in EU Public Procurement Directives.

The principle of competition implies that the beneficial effects of multiple bidders competing against each other and having equal opportunity to participate take the form of low prices, high quality and on-time delivery of the goods, facilities or services procured (Arrowsmith, 2009).

Corruption in public procurement is defined as `the allocation and performance of government contracts by bending rules and principles of open and fair public procurement in order to benefit a closed network while denying access to all others´ (Fazekas, Tóth and King, 2016).

Definitions of public procurement governance indicators:

- use of open procedures: contracts awarded in an open or restricted procedure as a % of all contracts awarded;
- single bidding: contract awarded when only one bid was submitted as a % of all contracts awarded.

The indicators are based on information published in the Tenders Electronic Daily (TED) database.

Source: Fazekas (2017).

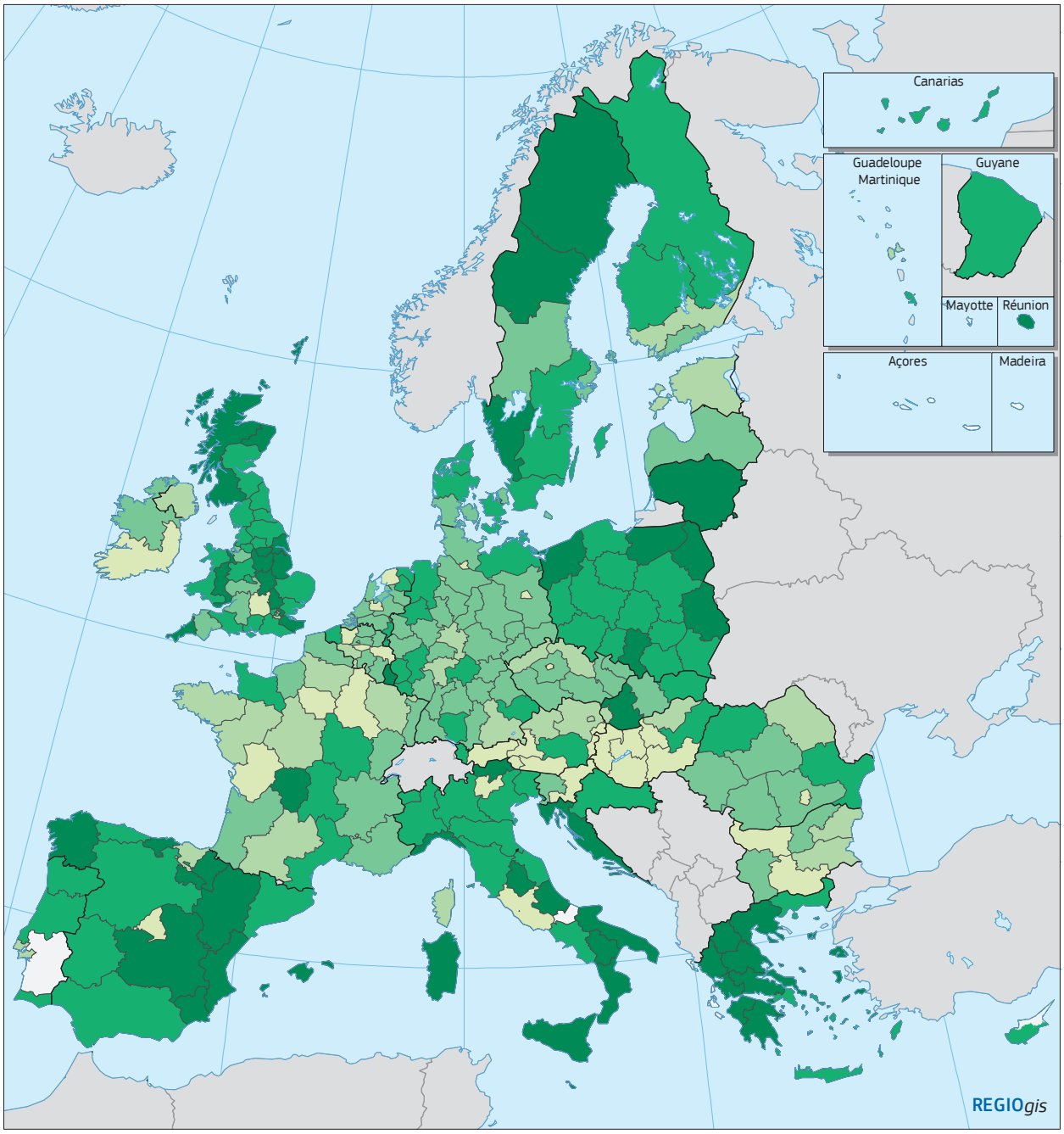
The number of instances where there was only a single bidder as a share of all contracts awarded through public procurement might indicate potential corruption or a lack of competition, including collusion between companies in a given sector of the economy. The single bidder-ratio varies significantly across regions (Map 4.3). The cases where there was only one bid exceeds 40% in many regions in Greece, Poland, Slovakia and Italy. In regions in Sweden, Ireland, UK and Denmark, the ratio rarely exceeds 10%, pointing towards more competitive markets and less risk of corruption[29]. The single bidder ratio shows wide regional differences in Romania, Bulgaria, Poland, Hungary, the Czech Republic and Spain, whereas in Sweden and Greece, there is almost no variation. Between 2007 and 2015, the ratio declined markedly in Lithuania, Latvia and in many regions in Poland, the Czech Republic and Slovakia (Map 4.4). By contrast, in Greece, Italy and Estonia — countries with high levels of single bidding — the proportion of contracts issued where there was only one bid increased.

It is worth noting that, while in general public procurement governance scores correlate with the European quality of government index, regions in Spain score considerably better than on the EQI. On the other hand, Finland and Estonia scores are lower (Fazekas 2017, upcoming), perhaps because of a lack of transparency suggesting weaknesses in national regulatory and information systems or less competition from international suppliers[30].

The use of open procedures is one of the indicators to measure transparency of procurement. The results (Map 4.5) do not show the usual north-west versus east-south divide like many indicators of governance. Counter-intuitively, countries with a high level of single bidding (Poland, Greece) are among those with the most use of open procedures, which may indicate a prevalence of informal connections over formal requirements. Use of open procedures is relatively infrequent in a number of regions in Hungary, Austria, Estonia, France and Bulgaria. There is a need for caution, however, when interpreting the results, since while not using open procedures hampers competition, their over-

29 In the overall public procurement competition index (Fazekas 2017) Sweden, UK, Ireland, Finland and Spain score highest. The overall corruption risk index shows that north-west countries plus Latvia and Spain score best. The data and interactive maps are available at: https://public.tableau.com/profile/mihaly.fazekas#!/vizhome/regiopp/nuts2

30 Transparency is the only dimension of the procurement good governance score in which central and eastern Europe scores better than north-west Europe. Apart from use of open procedures analysed in this report, it takes into account contract notice publication, reporting completeness and voluntary reporting (see Fazekas, 2017).



Map 4.5 Public procurement using an open call for tender, average 2013–2015

% of contracts awarded by sub-national authorities

- < 65
- 65 – 75
- 75 – 85
- 85 – 95
- > 95
- no data

Excludes regions with less than 50 contracts awarded. Includes only contracts above the threshold of the public procurement directive. In CY, EE, LT, LU, LV, and MT, contracts awarded by national authorities in sectors used by regional and local authorities were included.
Source: Fazekas (2017)

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use might indicate a lack of administrative capacity to run more complicated procedures (such as negotiated ones).

4. Suitable institutions increase the effects of EU support on entrepreneurship

As evidenced by the 6th Cohesion Report, a lower standard of governance can affect the impact of cohesion policy and lead to funding losses. The report also noted that quality of government may reduce the returns from public investment, including that financed under cohesion policy (Rodriguez-Pose, Garcilazo, 2014).

According to a recent study[31] on the relationship between the growth of businesses, institutions and support of entrepreneurship by the ESI Funds, the 'right' set of institutions tends to increase the effects of cohesion policy[32].

The amount of EU funding received in the 2007–2013 period was found to significantly affect business growth. Regions with GDP per head just below 75% of the EU average, which accordingly received relatively large amounts of funding, recorded considerably more enterprise births as well as deaths than regions that had GDP per head just above the 75% threshold and so received much less funding. Overall, there was no relationship between the amount of funding and the total number of enterprises[33]. At the same time, the 'right' set of institutions seems to affect the relationship, in that the rate of business creation was significantly higher in regions where corruption is perceived as being relatively limited than in those where it is considered to be relatively widespread. This was particularly the case for 'employer' firms (i.e. those with employees).

5. Conclusions

The way that national regulations are implemented varies across regions, reflecting differences in the efficiency of regional and local authorities, which are important to take account of when assessing the quality of government in relation to economic and social development.

The quality of government matters for regional development across the EU. The institutional dimension, therefore, needs to become an integral element in development strategies. Along with strengthening infrastructure endowment and human capital, it is important that there are improvements in administrative capacity and the effectiveness of government as well as reductions in the incidence of corruption, which erodes trust in governments and their policies.

While governments have advanced in making public services digital and providing access to them online, there has been insufficient focus on the quality of online services from a user's perspective and their ease of use..

Institutional capacity affects the ability of government to attain long-term policy objectives and to make structural reforms which have significant potential to boost growth and employment.

Independent and impartial administrations, in which officials are appointed and promoted on merit according to their ability, are of major importance in combating corruption and in implementing effective policies which benefit people.

Companies in different parts of the same Member State can face substantial differences in the time, number of procedures and costs needed to comply with regulations and to do business. Improving local and regional administrative capacity and making appropriate changes in the way public authori-

31 Diaz Ramirez, Kleine-Rueschkamp and Veneri (2017).

32 The support considered included a wide range of measures, including: support for R&D, and innovation support to SMEs for investment in environmentally-friendly production processes; and support self-employment and business start-ups. The analysis was based on comparing the growth of businesses between regions that had similar levels of GDP per head but differed significantly in the scale of funding received.

33 A 1% increase in the amount of funding received was associated with an increase in the birth and death rate of firms by 0.06%. The relationship between the amount of funding and the number of enterprise births less the number of deaths was not significant.

ties are organised and managed can, therefore, give rise to significant gains in business efficiency.

The evidence suggests that the 'right' set of institutions can increase the rate of new business creation as well as the effect of cohesion policy support for enterprises.

chapter 5

National policies, investment and growth

- Government balances have improved over recent years, as a result of fiscal consolidation and, since 2014, of economic growth. Public investment, which is important to underpin growth, in many cases bore the brunt of expenditure cut-backs to reduce budget deficits and remains low in Member States hit hardest by the crisis.
- Other 'growth-friendly' public expenditure, such as on R&D and education, also remains low in these countries, as the composition of spending has shifted towards social benefits, so damaging their future growth prospects.
- There remain significant differences in the extent of decentralisation of both public expenditure and, more especially, public investment across the EU and in the share of investment managed at regional and local level. The overall tendency over the past 15 years has been for the latter share, to decline and for public investment spending to become increasingly centralised, whereas there has been little change in the sub-national share of total government expenditure.
- The tendency for the share of public investment managed at sub-national level to decline over recent years has occurred in parallel with a tendency for the budget balance of the authorities concerned to shift, on average, from being in deficit to a surplus in 2016.
- The programmes financed by the ESI funds are in general very much aligned with the country-specific recommendations made as part of the European Semester process. The provisions linking these funds to sound economic governance and to Member States responding to the recommendations have given an incentive for national governments to comply with the budget targets. In consequence, the Commission review of Article 23 suggests that there is no need for any further legislation at this stage.

Chapter 5

National policies and cohesion

1. Public investment is still at very low levels despite the recent pick-up of the EU economy

1.1 Government balances have improved considerably over the recent past

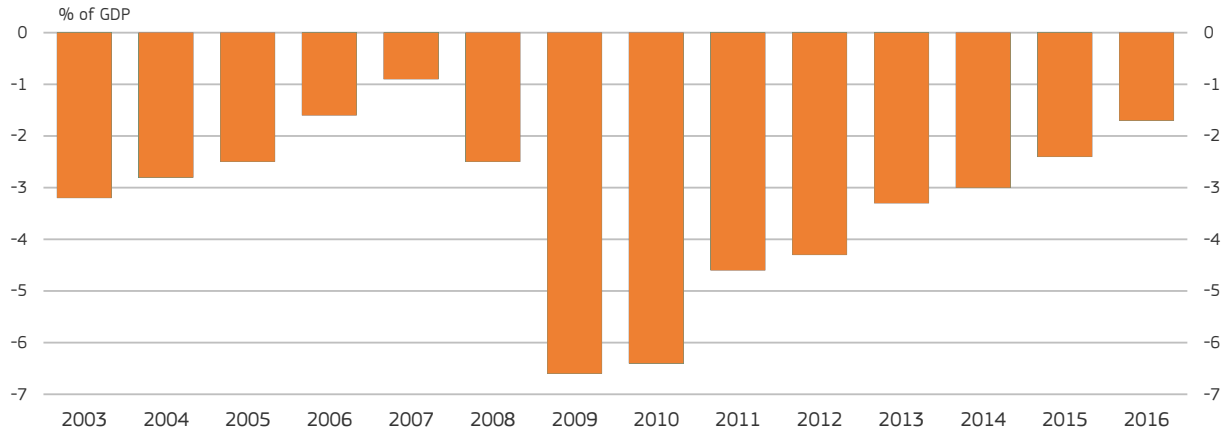
The Sixth Cohesion Report reported a significant worsening of public finances as a result of the sharp economic downturn which started in 2008. This is reflected in a substantial general government deficit of over 6% of GDP in both 2009 and 2010 on average across the EU as compared with one of less than 1% of GDP two years earlier in 2007 (Figure 5.1).

From 2011 onwards, the deficit was reduced as a result of increased fiscal consolidation and gradual economic recovery from 2014 on. In 2014, the deficit averaged 3% of GDP, the maximum allowed under the Stability and Growth Pact, and it then declined to 2.4% of GDP in 2015 and 1.7% in 2016. Of the 20 Member States or more which were subject to Excessive Deficit Procedures in 2011, only 5 were are still subject in 2016 (Spain, France, Greece, Croatia and the UK).

A similar pattern to the average is evident in almost all Member States, though to differing extents. In those hit hardest by the economic downturn, the reduction in the fiscal deficit started from levels as high as 13% of GDP in Ireland and 15% in Greece, though in a number of other Member States, the deficit never went above the 3% allowed under the Stability and Growth Pact (Figure 5.2). The fiscal consolidation effort has been impressive in Greece and Ireland, in particular, with the government balance being improved by more than 15 percentage points of GDP between 2009 and 2016. It has enabled public finances to return to a sustainable path, which is a pre-condition for sustained and sustainable economic recovery.

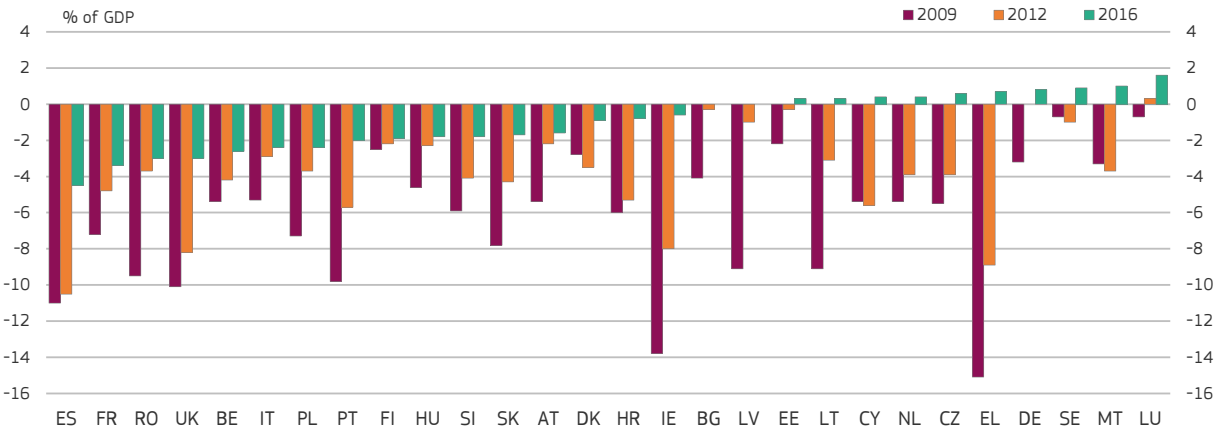
The widening of the deficit in 2009 and 2010 was due mostly to stagnating revenues and a sharp increase in government expenditure (Figure 5.3), the combined result of automatic stabilisers and one-off measures adopted as part of Economic Recovery Packages. Most of the latter did not remain in place beyond 2010 and, as a result, there

Figure 5.1 General government balance, EU-28 average, 2000-2016



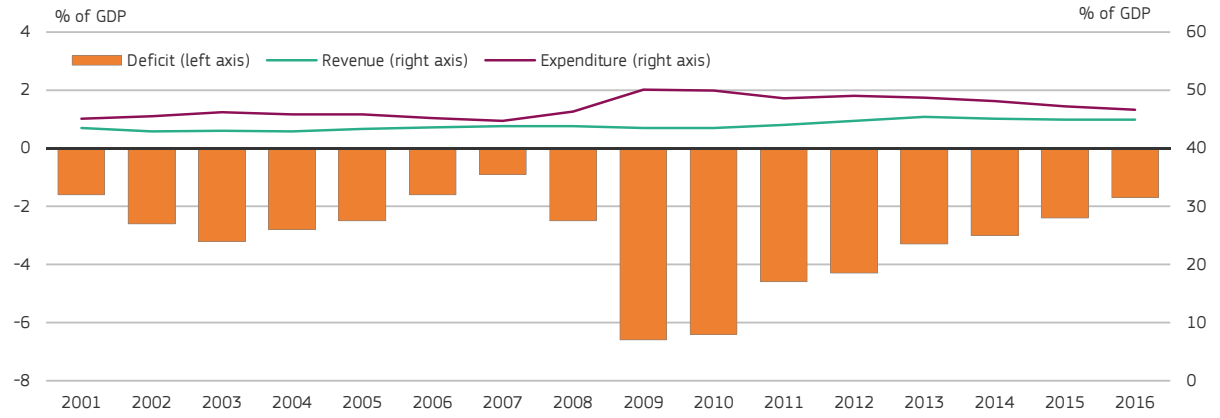
Source: Eurostat

Figure 5.2 General government balance, 2009, 2013 and 2016



Source: Eurostat

Figure 5.3 General government expenditure and revenue and general government balance, EU-28, 2001-2016



Source: Eurostat

was a gradual decline in government expenditure relative to GDP, which was then further reduced by the automatic stabilising effect of the gradual economic recovery[1] (lower expenditure and increased revenue). Again, the same pattern is evident in most Member States but with significant differences in scale because of variations in the depth of the economic downturn.

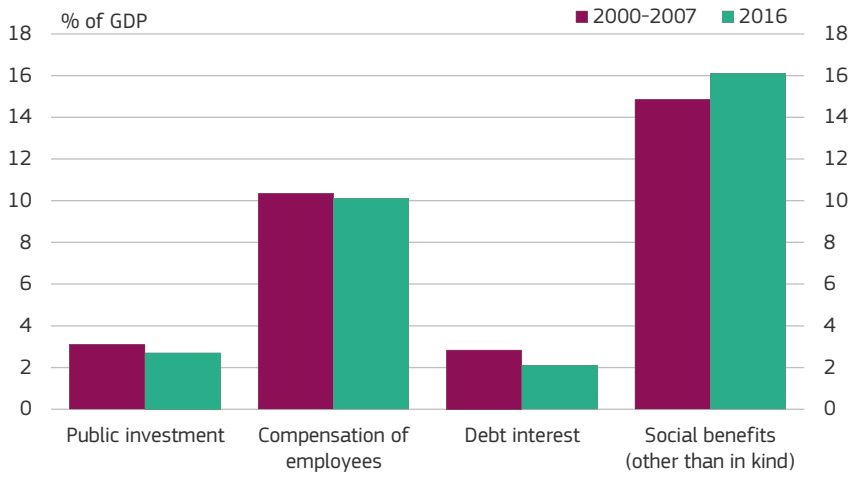
1.2 The composition of public expenditure remains problematic, with government investment spending still low

After rising to an average of over 50% of GDP in the EU in 2009, government expenditure by 2016 had returned almost to the average level of 2000–2007 before the crisis (to 46.6% of GDP as against 45.5%).

However, the composition of public expenditure was different in 2016 to what it had been. Public investment (i.e. gross fixed capital formation)

1 Automatic stabilisers are usually defined as those elements of fiscal policy which reduce tax burdens and increase public spending without discretionary government action (i.e. without changes in tax rates or allowances, benefit rates or expenditure programmes).

Figure 5.4 Selected categories of general government expenditure, average 2000-2007 and 2016



Source: Eurostat

Persistent low levels of public investment are, therefore, a cause for concern, not least because of their possible effect on socio-economic disparities between Member States and regions in the EU. The Member States with the lowest levels of public investment are those hit hardest by the crisis and, accordingly, where disparities with the rest of the EU widened most (Figure 5.5).

amounted to 2.7% of GDP as compared with 3.2% in the earlier pre-crisis period, half a percentage point less despite total public expenditure being higher (Figure 5.4). This contrasts with social expenditure which was over 1% of GDP higher.

The reduction in public investment is more striking in Member States hit hardest by the economic downturn. In a number of Member States subject to external financial assistance, public investment was below 2% of GDP in 2016 (in Ireland, Portugal and Spain) and though it was above 3% of GDP in Greece, GDP was much lower in 2016 than before the crisis. These low levels of public investment are to some extent a reflection of high levels of social expenditure, which were well above the EU average in Greece (20% of GDP) and Portugal (17%). The burden of servicing the debt is relevant too. Despite historically low levels of interest rates and the Quantitative Easing facilities provided by the European Central Bank, debt interest payments were still above 4% of GDP in Portugal and over 3% in Greece, which is an indicator of their vulnerability to changes in international financing conditions.

According to the economic literature, government investment has a positive effect on growth[2].

The recent Commission reflection paper on the completion of the Economic and Monetary Union[3] emphasises that '*Progress on economic convergence is of particular relevance for the functioning of the euro area but is equally important for the EU as a whole*' and that '*Moving towards high living standards and similar income levels is key to achieving the Union's objectives, which include economic and social cohesion alongside balanced growth*'.

The low levels of public investment are also evident in the recent Commission Communication on the principle of additionality 2007–2013[4]. Seven Member States reported a level of expenditure relevant for additionality lower than forecast at the beginning of the programming period 2007–2013 before the economic downturn. Actual structural spending for 2007–2013 was 35% lower than the forecast in Greece, over 25% lower in Italy and between 10% and 20% lower in Hungary, Lithuania and Portugal[5].

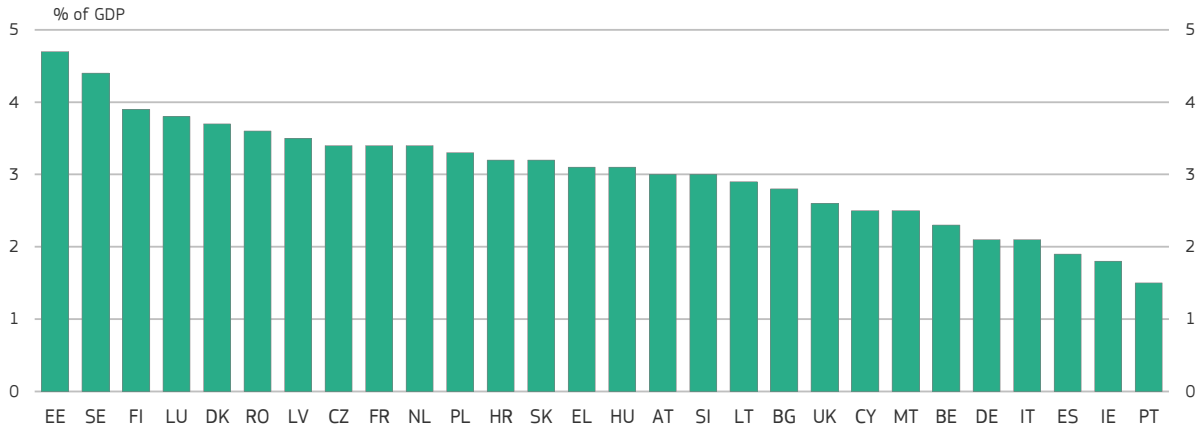
2 See European Commission (2014).

3 European Commission, 'Reflection paper on the deepening of the economic and monetary union'. COM (2017)291 of 31 May 2017.

4 European Commission, 'Ex post verification of additionality 2007–2013'. COM (2017)138 of 23 March 2017.

5 It should be noted that since additionality was verified only in Convergence Objective regions, these figures do not necessarily depict the situation in the whole country except for Lithuania.

Figure 5.5 Total public investment, 2016



Source: Eurostat

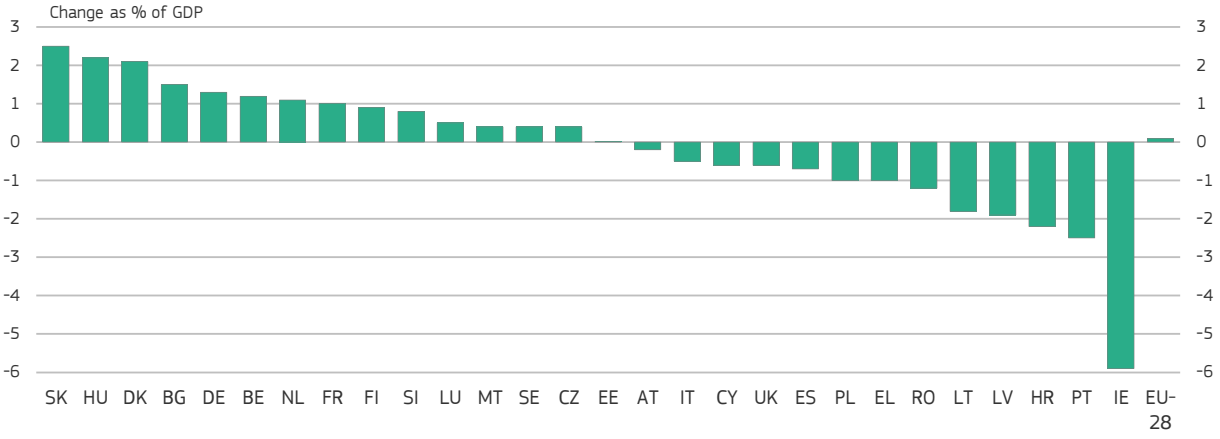
1.3 And growth-friendly expenditure has declined considerably in some Member States

In addition to gross fixed capital formation, which is the internationally recognised measure of public investment, other categories of public expenditure are also growth-friendly in that they help to create the conditions for higher future economic growth. These include, in particular, total expenditure on transport, communication, energy, research and innovation, environmental protection, education and health.

While growth-friendly government spending in the EU in 2015 was on average much the same as in 2008 relative to GDP, in a number of Member States it diminished considerably (Figure 5.6). Most of these have a level of GDP per head below the EU average, which raises questions over the likelihood of the latter converging towards the EU average.

The reduction is particularly large in Ireland (a decline of close to 6% of GDP, spread across all categories), but also in Croatia (a decline of 2% of GDP, concentrated in transport) and Portugal (one

Figure 5.6 Change in growth-friendly categories of general government expenditure, 2008-2015



Source: Eurostat

of 2.5%, spread across all categories) which have experienced a protracted economic downturn.

Over the EU as a whole, there was some shift over the period in the composition of growth-friendly government expenditure. A decline of 0.3% of GDP on expenditure on transport was accompanied by an increase of 0.5% of GDP on health, with all other categories of growth-friendly expenditure remaining much the same. The biggest decline in spending on transport was in Croatia (by 2.6% of GDP)[6], followed by Ireland (1.8%) and the Czech Republic (1.0%). In Latvia, Lithuania, Bulgaria, the Czech Republic and Netherlands, there was an increase in health expenditure (of around 1% of GDP), whereas in Greece and Ireland, it declined (by 2% of GDP). There were significant cuts in spending on education in Ireland and Romania (of over 1% of GDP) and in the former, a reduction of over two-thirds in expenditure on environmental protection.

2. Sub-national governments play a key role in public expenditure and investment

2.1 Differences in the extent of decentralisation of public expenditure have widened in the EU...

Expenditure carried out by sub-national levels of government accounts on average for around a third of total public spending in the EU, and the share has not changed much over the past two decades despite the ups and downs in the total. The average, however, conceals significant differences across countries. In particular, the gap between more centralised and more decentralised Member States in the share of expenditure undertaken at the sub-national level widened markedly over the 15 years 2001–2016[7].

The Nordic countries, where powers are very much devolved to municipalities, and the Member States with federal or regional structures of government, which have the largest shares of public expenditure carried out at sub-national levels, all experienced further decentralisation of expenditure over this period (Figure 5.7). In Denmark, the most decentralised country in these terms, around two-thirds of public expenditure was managed at sub-national level in 2016 and in Sweden, Belgium, Spain and Germany, around half.

At the same time, there is a tendency towards even further centralisation of expenditure in Member States where responsibility for public sending has traditionally been centralised. This is particularly the case in the Baltic States and, most especially, in Hungary, where the share of expenditure managed at the local level was reduced by half between 2001 and 2016. A similar tendency, though less marked, is also evident in Portugal, Greece and Italy. On the other hand, in Bulgaria, Romania and Slovakia, unlike in other EU-13 countries, the opposite tendency is evident.

Accordingly, in sum, differences in the extent of decentralisation of public expenditure have tended to widen across the EU in recent years, with spending becoming more decentralised in the Nordic countries, the federal States and a few EU-13 Member States and more centralised in most EU-13 countries and, to a lesser extent, in southern Member States, apart from Spain.

2.2 ...while public investment is now slightly more centralised

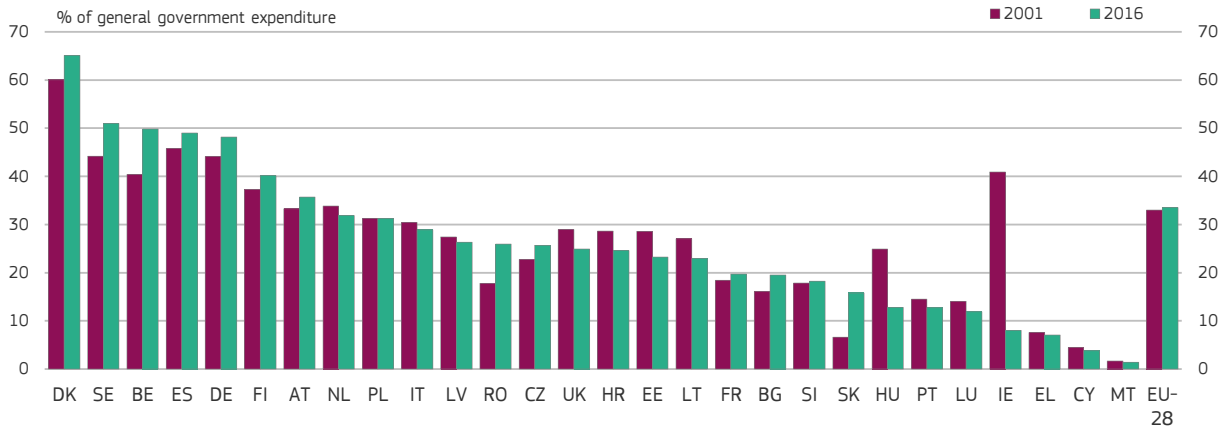
Unlike total public expenditure, the management of public investment is becoming increasingly more centralised in the EU, the share managed by sub-national governments declining from over 60% of the total in the mid-1990s to 56% in 2001 and 52% in 2016.

The difference in tendency compared to total public expenditure is mostly a result of trends in Member States with a federal or regional structure of gov-

6 The Croatian authorities cut on public investment to restrain the expenditure side. In the period before the crisis, this investment largely consisted of road (motorway) construction.

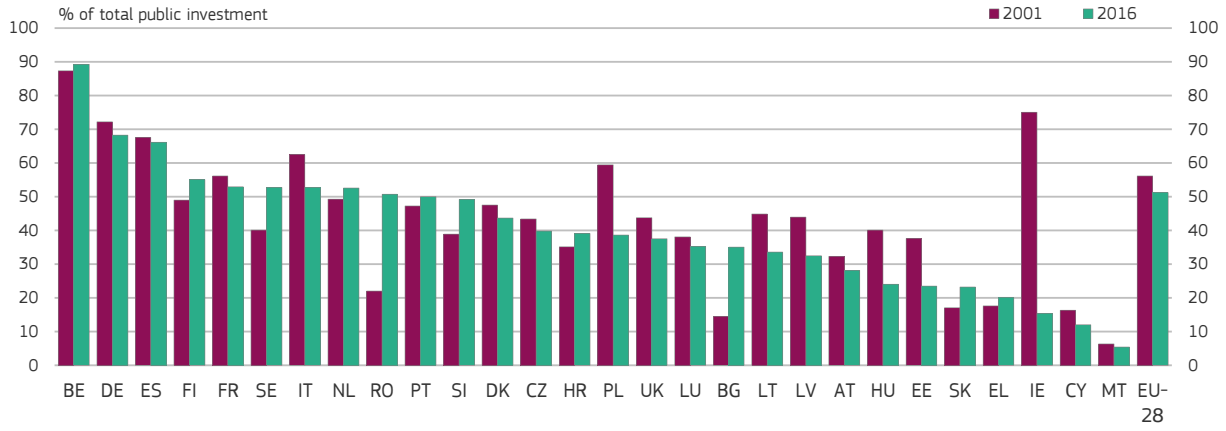
7 Note that the fact that public expenditure is implemented at the regional or local level does not necessarily mean that decisions to spend are taken at the same level.

Figure 5.7 Sub-national government expenditure, 2001 and 2016



Source: Eurostat

Figure 5.8 Sub-national government investment, 2001 and 2016



Source: Eurostat

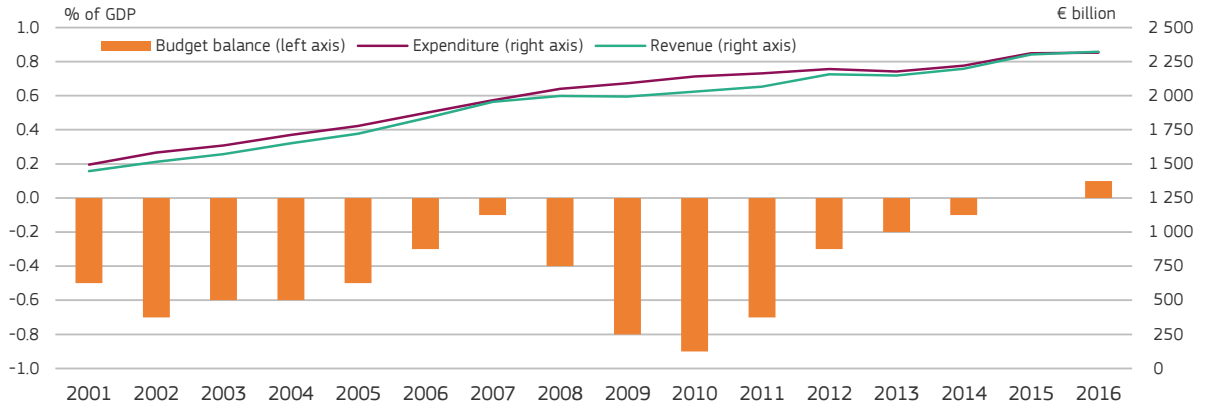
ernment, except Belgium (i.e. Germany, Austria and Spain), in all of which the share of public investment managed by sub-national governments declined between 2001 and 2016 whereas their share of total spending increased (Figure 5.8).

In the rest of the EU, changes in the share of public investment managed at sub-national level are very much in line with those for total public expenditure. In the Baltic States and Hungary, therefore, there was a significant decline in the share, as there was in Poland. By contrast, the share of sub-national governments more than doubled in Bulgaria and Romania between 2001 and 2016.

2.3 The budget balance of sub-national governments is now in surplus

Unlike in each of the previous 15 years, the budget balance of sub-national governments in the EU was, on average, in surplus in 2016, the culmination of a steady reduction in deficits, which reached a maximum of 0.9% of GDP in 2010 (Figure 5.9). The gradual improvement in their budget balance occurred in parallel with that of public finances as a whole. In 2002, sub-national governments were responsible for around a quarter of the general government deficit and their share declined to 15% in 2011, before the balance went into small

Figure 5.9 Sub-national government expenditure, revenue and budget balance, EU-28, 2001-2016



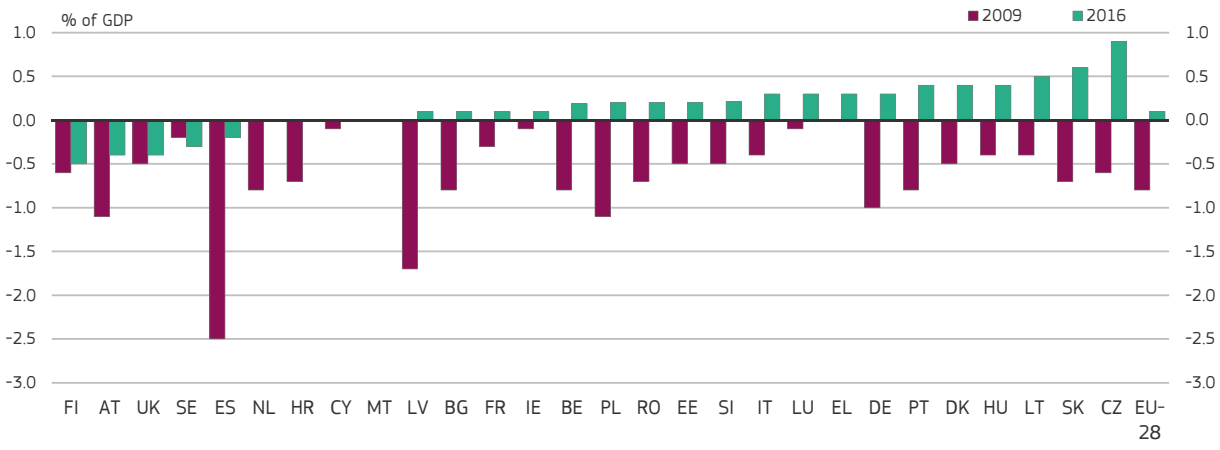
Source: Eurostat

surplus in 2016 (of 0.1% of GDP). The reduction in the deficit of sub-national governments occurred at the same time as their share of total public expenditure remained unchanged at around a third.

Again, the average tendency conceals differences between Member States, though there was a common improvement in public finances at sub-national level in all of them except Sweden (Figure 5.10). The budget was in surplus in 19 Member States in 2016, in balance in four and in deficit, though by a modest amount, in only 5.

The gradual reduction in sub-national deficits results to some extent from more of a tendency towards centralisation in the case of public expenditure than in the case of revenue. In other words, there was more of a shift of expenditure to central government than revenue to finance it.

Figure 5.10 Sub-national government budget balance, 2009 and 2016



Source: Eurostat

3. Reviewing how the ESI Funds are linked to new country-specific recommendations and to sound economic governance

3.1 Introduction

Article 23(16) of Regulation (EU) N° 1303/2013 (the "Common Provisions Regulation" or "CPR") requires the Commission to carry out a review of the application of Article 23 in 2017. This review is to be in the form of a report to the European Parliament and the Council, accompanied where necessary by a legislative proposal modifying the Article. The present report fulfils this requirement.

The legal framework of the European Structural and Investment Funds (ESI) for 2014–2020 introduced a number of new provisions which strengthened the linkages between these Funds and sound economic governance, with the aim of improving the overall performance of ESI programmes.

Under paragraphs (1) to (8) of Article 23, the Commission may request a Member State to review its Partnership Agreement and relevant programmes to (i) support the implementation of relevant country-specific recommendations (CSRs) adopted in the context of the general economic policy or employment guidelines (Articles 121 (2) and 148 (4) of the Treaty on the Functioning of the European Union (TFEU)), (ii) other Council recommendations adopted in the context of Regulation (EU) N° 1176/2011 on the prevention and correction of macroeconomic imbalances or (iii) to maximise the growth and competitiveness of Member States under Union financial assistance. In the event of non-effective action by the Member State, the Commission may propose to the Council to suspend all or part of the ESI payments to the Member State concerned, after having set out the grounds for concluding that the Member State has failed to take effective action.

Under paragraphs (9) to (12) of Article 23, the Commission will propose to the Council the suspension of all or part of the commitments or payments, if the Council decides that a Member State has not taken effective action to correct its excessive deficit in accordance with paragraphs 8 and 11 of Article 126 TFEU or in two successive cases of not addressing excessive macroeconomic imbalances in the same imbalance procedure in accordance with Regulation (EU) N° 1176/2011. The Commission will also propose such a suspension in cases where a Member State has not taken measures to implement an economic adjustment programme.

3.2 New country-specific recommendations linked to the ESI Funds

Regarding the provisions under paragraphs (1) to (8) relating to the power of the Commission to request the Member State to review its Partnership Agreement and relevant programmes, it is important to recall that Article 15 of the CPR requires Partnership Agreements to take account of the relevant CSRs adopted in accordance with Articles 121 (2) and 148 (4) TFEU. That is, all relevant CSRs adopted by the Council before the adoption of the Partnership Agreements and programmes had to be properly and sufficiently addressed by the Partnership Agreements and programmes adopted in all Member States.

Indeed, more than two-thirds of the CSRs adopted in 2014 were considered relevant for the ESI Funds and have been taken into account in Member States' Partnership Agreements and programmes[8]. They cover reforms in seven main areas: research and innovation, energy and transport, health care, labour market participation, education, social inclusion and reform of the public administration[9].

The relatively late adoption of the 2014–2020 programmes, combined with the ensuing delays in starting their implementation and the recent

8 European Commission, 'Investing in jobs and growth — maximising the contribution of European Structural and Investment Funds'. COM (2015)639 of 14 December 2015.

9 European Commission, 'European Structural and Investment Funds 2014–2020, 2016 Summary Report of the programme annual implementation reports covering implementation in 2014–2015'. COM (2016)812 of 20 December 2016.

streamlining of the CSRs has, to some extent, curbed the possible launch of any reprogramming request by the Commission. It is important to recall that indent (a) of paragraph (1) of Article 23 refers to 'relevant' Council recommendations, whose definition is provided in paragraph (35) of Article 2. This legal provision provides that, for the purposes of a possible reprogramming request by the Commission, 'relevant Council recommendation' means a *'recommendation relating to structural challenges which it is appropriate to address through multiannual investments that fall directly within the scope of the ESI Funds as set out in the Fund-specific Regulations*'. That is, the link refers only to CSRs relating to investment, so excluding those whose implementation depends on legislative and/or administrative legal changes or reforms. Therefore, the link between any reprogramming request and a relevant CSR must be indisputable, which is less likely with the new streamlined approach with fewer and more general CSRs. In addition, the nature and content of the CSRs since 2014 has been relatively stable, meaning that Partnership Agreements and programmes are still to a large extent aligned with the relevant CSRs that were adopted as of 2015.

In this context, the Commission has not found any reason to launch a request for a review of Partnership Agreements or programmes in any Member State. In its Communication of 2014 providing guidelines on the application of the measures of paragraphs (1) to (6)[10], the Commission stated that '*the reprogramming powers granted to the Commission would be used carefully [and that] stability [would] be preferred over too frequent reprogramming*'. This Communication also emphasised that '*the priority in the Partnership Agreements and programmes [would] be to adequately address the challenges identified in the CSRs and relevant Council recommendations*' and that it would '*limit possible reprogramming under Article 23 in the short term*'. This has been the case.

10 European Commission 'Guidelines on the application of the measures linking effectiveness of the European Structural and Investment Funds to sound economic governance according to Article 23 of Regulation (EU) 1303/2013'. COM (2014)0494 of 30 July 2014.

That Communication was following up on the commitment given by the Commission. In particular, it clarified the notion of 'review' and the types of 'amendments' to Partnership Agreements and programmes and an indication of the circumstances which may give rise to a suspension of payments.

3.3 Sound economic governance and the ESI Funds

As regards the provisions of paragraphs (9) to (12), the Commission will propose to the Council the suspension of funding in case of non-effective action by the Member States under one of the economic governance surveillance procedures or under an economic adjustment programme. The only scenarios in which the conditions for the application of these provisions could have been fulfilled were the Council Decisions of July 2016 referring to non-effective action by Spain and Portugal to address their respective excessive deficits.

More specifically, on 12 July 2016, the Council concluded that the response by Spain and Portugal to the recommendations adopted according to Article 126(7) TFEU had been insufficient. The Council therefore established that there had been no effective action in response to its recommendations within the period laid down according to Article 126(8) TFEU.

As required by paragraph 9, the Commission immediately informed the Parliament by letter of 14 July 2016 from Vice-President Katainen, to the President of the European Parliament. In the letter, the Commission explained that the conditions to make a proposal to suspend funding were fulfilled and that the Commission remained at the disposal of the European Parliament to participate in a structured dialogue. This structured dialogue is envisaged by paragraph 15 of Article 23, which provides that '*The European Parliament may invite the Commission for a structured dialogue on the application of this Article*'.

On 25 July, the President of the European Parliament replied through a letter addressed to

President Juncker, which expressed his intention to invite the Commission to a structured dialogue '*at the earliest opportunity after the summer recess*'. Paragraph 9 provides that, when making its proposal, the Commission '*shall give due consideration to any elements arising from and opinions expressed through the structured dialogue under paragraph 15'*. That is, the Commission had to take account of the results of the structured dialogue with the Parliament.

On 26 September, the President of the Parliament confirmed the invitation to a structured dialogue in another letter addressed to the President of the Commission. The structured dialogue started on 3 October 2016 in Strasbourg in a session involving Vice-President Katainen and Commissioner Crețu, with members of the committees of Regional Development and of Monetary and Economic Affairs of the Parliament.

After that session, the Parliament expressed some days later its will to continue the structured dialogue and to hear the views of the representatives of the governments of the two Member States concerned.

On the basis of the reports on action taken to address their excessive deficits submitted by Spain and Portugal, the Commission decided on 16 November 2016 that their respective Excessive Deficit Procedures should be held in abeyance. Paragraph 12 establishes that '*the Commission shall lift the suspension of commitments, without delay, where the excessive deficit procedure is held in abeyance in accordance with Article 9 of Council Regulation (EC) No 1467/97*'. That is, the conditions to lift the suspension of funding were met before the structured dialogue with the Parliament was finalised.

3.4 At this stage legislative changes are not required

Article 23 introduced a number of strengthened linkages between the ESI Funds and sound economic governance. This Article ensures consistency between the implementation of the ESI Funds and the economic policy agenda of the EU across the whole programming period. The Commission considers there has been no need to trigger the application of this Article during the first half of the current programming period.

The Partnership Agreements and programmes financed by the ESI Funds are still aligned with the latest relevant CSRs adopted by the Council. There was no fundamental change since the adoption of the Partnership Agreements and programmes to justify any request for review. The Commission expressed already in 2014, at the beginning of the programming period, that such a request would be launched only in cases where it could have a better impact to address structural challenges and that stability would be preferred over frequent reprogramming. While the consistency between programmes and economic policy recommendations is essential, the Commission also attaches major importance to the stability and predictability of the programmes financed by the ESI Funds.

As regards the provisions linking the ESI Funds with the economic governance surveillance procedures, the Commission considers they have helped to provide important incentives to the Member States concerned to take effective action in a reasonable time to correct and put an end to their excessive deficits. This legal framework has also enabled constructive and loyal cooperation between the institutions of the EU in ensuring an efficient and balanced implementation of these provisions. While there is no specific deadline for the completion of the structured dialogue, it is important that it is concluded in a reasonable timeframe during which the necessary incentives to take effective action are provided to the Member State concerned.

While bearing in mind that stability and predictability are important conditions for an effective implementation of the ESI Funds, the Commission will not hesitate to apply and implement the provisions of this Article when deemed necessary or when one of the milestones envisaged as triggering points is reached.

On this basis, the Commission considers there is no need to make any proposal to the Council and the Parliament to modify this Article at this stage.

4. Conclusions

Public investment remains at historically low levels (as a share of the GDP) in the EU. This is a result of a decline in public expenditure since 2010 coupled with the share of public investment in the total being reduced, to some extent because of higher levels of social spending and debt interest.

This is a cause for some concern because of the importance of investment in fueling and underpinning growth. Private investment is beginning to recover after a number of years of substantial decline and public investment has a major role to play in helping to restore the conditions which encourage enterprises to invest.

One of the consequences of public investment declining is that the share co-financed by EU cohesion policy increased considerably during the crisis period, accounting for half or more of the total in many EU-13 countries. In these countries and others, EU funding, accordingly, played a major counter-cyclical role in preventing an even larger reduction in public investment (see Chapter 6).

The management of public investment across the EU has become more centralised over recent years. The share managed by sub-national governments is now close to 50% whereas it was over 60% two decades ago. Since the composition of investment did not change significantly, this seems to be a result of political decisions to shift responsibility for investment more to central government.

The budget balance of sub-national governments has been transformed from a deficit of close to 1% of GDP in 2010 to a surplus, so that the overall general government deficit in 2016, which averaged just under 2% of GDP, was solely accounted for by central government and the Social Security funds.

chapter 6

The impact of cohesion policy

- Cohesion policy is the EU's main investment policy, providing funding equivalent to 8½% of government capital investment in the EU and 41% in the EU-13.
- The impact of cohesion policy on the EU economies is significant. By the end of their implementation, investment for the 2007–2013 period is estimated to have increased GDP in the EU-12 by nearly 3%, and by a similar amount for the (now EU-13) in the 2014–2020 period.
- Several measures to improve the effectiveness of programmes were introduced for the 2014–2020 period:
  - ex ante conditions, to stimulate structural reforms and to increase administrative capacity;
  - smart specialisation strategies to identify local potential and prioritise investment in key sectors;
  - a focus on results by programmes setting specific objectives and clear indicators of achievement.
- Projects selected as at July 2017 (halfway through the 2014–2020 period) will invest just 39% of the total funding available for the period, similar to 2007–2013 when spending was concentrated in the last 2–3 years. This suggests that there is a continuing need for simplification and capacity building.
- Targets for the 2014–2020 period include:
  - 14.5 million additional households with broadband access;
  - 17 million additional people connected to wastewater facilities;
  - 4 600 km of renovated TEN-T railway line;
  - 6.8 million children with access to new or modernised schools;
  - 7.4 million unemployed helped into work.
- Cohesion policy is also investing in the economy of the future, through supporting over 1 million SMEs, establishing around 30 000 new research positions and helping substantial numbers of firms to bring new products to the market.

Chapter 6
The impact of cohesion policy

1. The policy

Cohesion policy is the EU's main investment policy. Over the course of the 2014–2020 programming period, €349 billion is being invested in a broad range of areas, from enterprise support to infrastructure, from urban regeneration to culture and social infrastructure (Figure 6.1).

Cohesion policy is the EU's principal means of support for SMEs, the low carbon economy, transport infrastructure, the integration of people into the labour market and the social inclusion of the disadvantaged. It is also plays a major role in supporting innovation.

Cohesion policy consists of three main funds: the Cohesion Fund, the European Regional Development Fund (ERDF) and the European Social Fund (ESF, which is coupled with the Youth Employment Initiative, YEI). These in total provide financing for nearly three-quarters of the €480 billion of investment carried out under the policy, the rest coming from national co-funding (Table 6.1).

Table 6.1 EU and national contributions to cohesion policy, 2014–2020

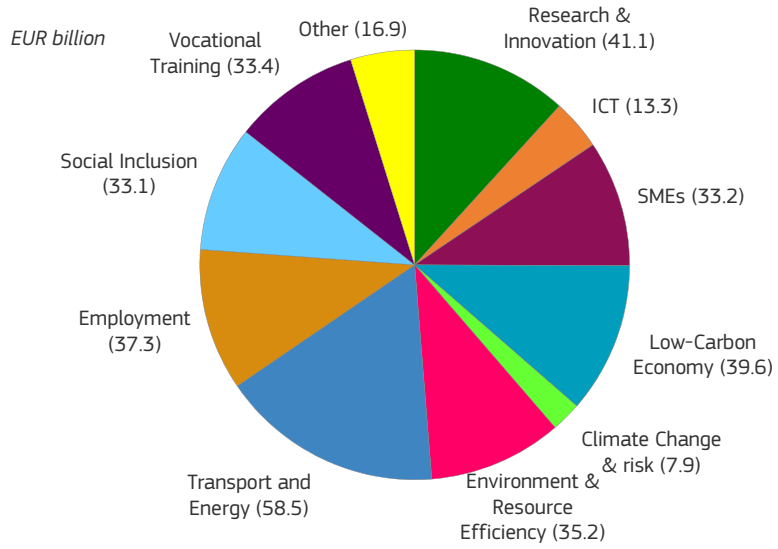
€ billions	EU contribution	National contribution	Total investment
CF	63.4	12.2	75.6
ERDF	196.4	80.5	276.8
ESF	83.1	37.3	120.5
YEI	6.5	1.2	7.7
Total	**349.4**	**131.2**	**480.5**

Source: ESIF Open Data Platform — https://cohesiondata.ec.europa.eu/ (September 2017)

In the wake of the crisis, the EU funds played a stabilising role in ensuring a higher level of public investment than there otherwise would have been. In many countries, the funds became the major source of finance for investment. In addition, the reduction in national Government funding as a result of the crisis led the EU to increase co-financing rates — and so reduce the amount of national co-financing required for cohesion policy programmes in Member States where problems were most severe. The increase helped the countries concerned to maintain programmes as far as possible, even if overall expenditure was reduced, but also to mitigate the effects of the crisis. For example, additional resources from the ESF were allocated to short-term work arrangements (e.g. in Italy and the Czech Republic) and instituting general placement services (as in Finland).

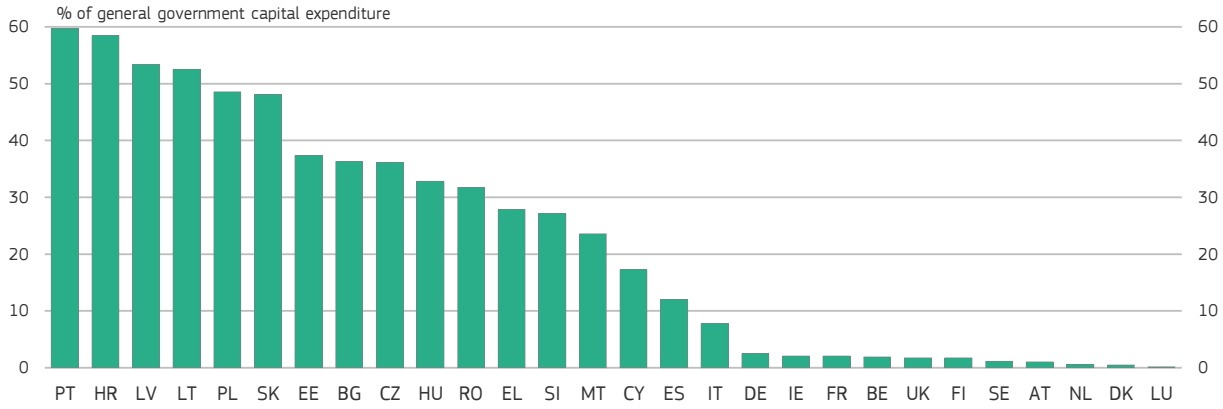
Support to investment continues into the current period and is especially important for Convergence regions. For the EU-13, EU funding under cohesion policy, or more specifically

Figure 6.1 Planned investment by key priority, 2014-2020



Source: ESIF Open Data Platform - https://cohesiondata.ec.europa.eu/ (September 2017)

Figure 6.2 ERDF and Cohesion Fund allocations, 2015-2017



Government capital expenditure is the sum of General Government gross fixed capital formation plus capital transfers, the latter being adjusted approximately for abnormal transfers to banks and other companies during the crisis.
Source: Open data platform, Eurostat - Government statistics

from the ERDF and Cohesion Fund, was equivalent to 41% of total government spending on investment over the three years 2015–2017 (and for 8.5% for the EU as a whole) and for Croatia, Latvia and Lithuania, as well as Portugal, for over half (Figure 6.2).

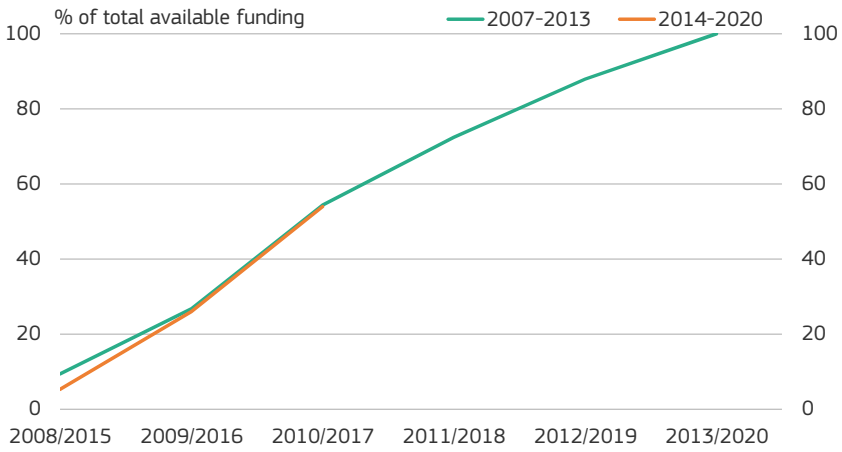
However, progress in implementation has been slow, with only some 7% of expenditure disbursed by July 2017, half way through the programming period. To some extent this represents underreporting (due to delays in the designation of managing authorities and implementing bodies as well as the setting up of control systems), but it is also due to programmes being slow to get off the ground.

The amount of funding committed to projects selected to be undertaken gives a guide to likely progress in the near future, and this is more positive, representing at end-June 2017 some 39% of total planned investment in the EU-28 (Table 6.2). However, for some countries, even this is worryingly small (notably Cyprus, Romania and Spain).

The rate of project selection in the current programming period, while starting more slowly than in the 2007–2013 period, has now caught up (Figure 6.3), and it can reasonably be expected that implementation rates from now on will be broadly similar to those in the previous period.

Moreover, programme periods cannot be seen in isolation. Periods overlap, with the closure and finalising of one period stretching into the next,

Figure 6.3 Funding committed to projects selected, 2007-2013 and 2014-2020



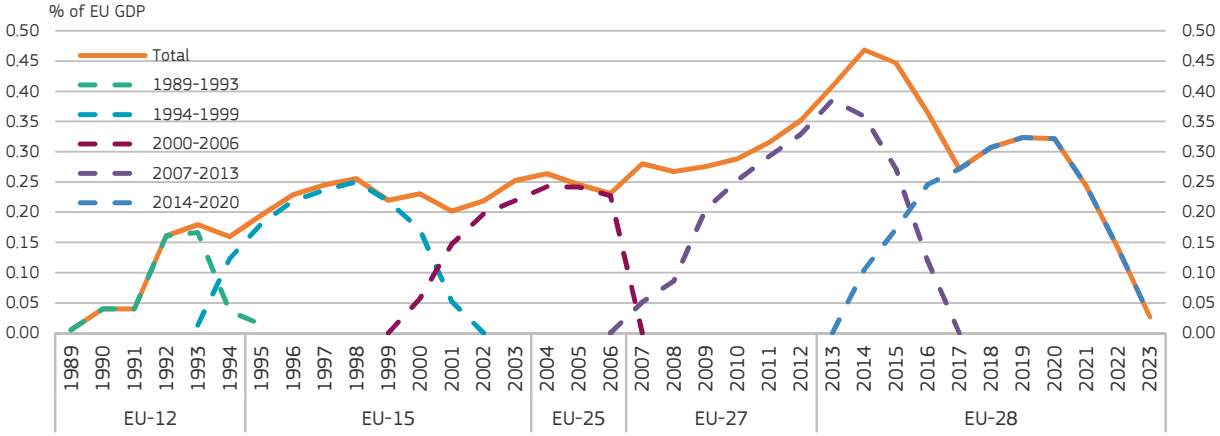
2017 figure is a projection based on observations to July 2017.
Source: DG REGIO, based on monitoring data provided by Member States.

Table 6.2 Projects selected and expenditure by managing authorities as at end-June 2017 compared to total planned investment for the 2014–2020 period

€ million	Total planned investment	Projects selected	Expenditure by managing authorities	Selection as % of planned investment
Austria	2 941.3	829.3	32.0	28.2%
Belgium	4 646.2	3 288.1	214.1	70.8%
Bulgaria	8 702.6	4 010.2	874.5	46.1%
Croatia	9 945.1	2 363.1	326.3	23.8%
Cyprus	824.1	150.6	41.1	18.3%
Czech Republic	28 703.0	8 760.2	1 376.6	30.5%
Denmark	798.5	352.7	56.0	44.2%
Estonia	4 891.7	2 385.5	500.1	48.8%
Finland	2 608.9	1 260.4	450.6	48.3%
France	28 915.9	11 827.5	2 877.0	40.9%
Germany	30 326.7	13 594.9	3 572.7	44.8%
Greece	19 123.4	7 738.3	2 064.8	40.5%
Hungary	25 420.9	18 220.1	2 141.3	71.7%
Ireland	1 971.4	1 687.2	13.8	85.6%
Italy	51 771.6	18 865.2	1 724.6	36.4%
Latvia	5 192.8	2 310.8	401.7	44.5%
Lithuania	7 887.8	2 823.8	906.5	35.8%
Luxembourg	88.3	57.2	8.2	64.8%
Malta	865.2	416.4	39.9	48.1%
Netherlands	2 389.0	1 096.1	299.8	45.9%
Poland	90 576.3	33 951.2	6 810.0	37.5%
Portugal	27 462.5	15 002.8	3 545.4	54.6%
Romania	27 664.8	2 838.4	396.3	10.3%
Slovakia	17 958.2	4 925.3	1 059.4	27.4%
Slovenia	3 756.2	1 032.5	134.1	27.5%
Spain	39 339.3	7 352.6	131.9	18.7%
Sweden	3 509.7	2 067.8	428.5	58.9%
UK	19 655.9	10 621.1	913.0	54.0%
Interreg	12 464.6	5 888.8	247.1	47.2%
Total	480 402.2	185 718.0	31 587.0	38.7%

Source: ESIF Open Data Platform — https://cohesiondata.ec.europa.eu/

Figure 6.4 Cohesion policy funding, 1986-2023



The time profile of 2014-2023 expenditure has been established on the basis of the 2007-2013 outcome and an assumption of 100% absorption over the period
Source: DG REGIO, historical data.

exerting a smoothing effect on expenditure flows (Figure 6.4). The delay in starting spending under the new programme period does not mean an interruption in cohesion policy — actual investment on the ground continues in a relatively seamless way.

2. Improving the effectiveness of the policy

A number of measures have been taken to improve the delivery of results in the 2014–2020 period.

2.1 Ex ante conditionalities

The effectiveness of public investments and the durability of results depend on suitable conditions being in place. Unsound policy frameworks and regulatory, administrative and institutional weaknesses are major systemic obstacles hindering effective and efficient public spending. It is therefore of the utmost importance that such weaknesses are identified and addressed at the beginning of the programming period[1].

This is why a key reform of the ESI Funds for the 2014–2020 programming period was the introduction of ex ante conditionalities (ExAC). These are sector-specific or general preconditions that needed to be met at an early stage of programme implementation and by the end of 2016 at the latest. They fall into five broad categories (see Table 6.3)[2].

Around 75% of all applicable ex ante conditionalities were fulfilled at the time of adoption of ESI Fund programmes. For the non-fulfilled ones, over 800 distinct action plans were included in the programmes[3]. Had it not been for ex ante conditionalities, reforms might not have happened or they might have happened at a much slower pace.

2.2 Closer link to EU economic governance

A close relationship between the Cohesion policy Funds and sound economic governance has been incorporated in the legislation and in setting the objectives of the programmes for 2014–2020. Cohesion policy has in-built mechanisms to improve fiscal and macroeconomic governance and provides concrete support for fund-relevant structural reforms through its link to Country-Specific Recommendations (CSRs) under the European Semester. Moreover, empirical evidence suggests that the ex ante conditionalities introduced in the current programming period have so far played a significant role in improving the application of EU legislation in Member States, as well as in fostering structural reforms. Accordingly, they have improved the overall investment climate in Member States not only for investment funded under cohesion policy but more generally.

2.3 A stronger 'result orientation'

Experience of programme implementation and evaluation evidence collected for the 2000–2006 programming period, which was confirmed by the evaluation of the 2007–2013 period, made it clear that cohesion policy needed a tighter focus on results.

The 2014–2020 regulations, therefore, require the following:

- Programmes which set specific objectives at the regional or national level, translated into clear indicators of results with targets and benchmarks to make it clear whether or not the programmes are achieving their goals.

- Project selection criteria which take account of the objectives set at programme level to ensure that projects are properly focused.

1 See for example OECD Recommendation on Effective Public Investment Across Levels of Government adopted on March 12, 2014.

2 European Commission (2017f).

3 The final deadline for reporting by Member States was end-June 2017 in respect of the Annual Implementation Report for 2016 and end-August 2017 in respect of the Progress Report. The Commission assesses completion of the ExAC action plans on the basis of reporting by Member States.

Table 6.3 The ex ante conditionalities for the 2014–2020 programming period

Category	Examples
1. Improving the investment environment in the EU Many ExACs address horizontal and sector-specific barriers that hinder investment in the EU. Through their contribution to the creation of an investment-friendly environment, they help to strengthen the Single Market and to deliver the Investment Plan for Europe, so fostering growth and jobs.	Malta, Portugal and Slovenia introduced the SME Test, to ensure assessment and monitoring of the impact of national legislation on SMEs. In Slovenia, the Transport Development Strategy, set out in the framework of the Transport ExAC, is the first comprehensive national transport strategy covering all modes of transport. It identifies the main bottlenecks and sets out investment priorities for transport at the national, regional and EU level.
2. Supporting structural changes and implementation of country-specific recommendations Depending on the Member State context, many ExACs can be catalysts for structural change and policy reform. Preliminary results of the study on Country-Specific Recommendations (CSRs) found that in several Member States, ExACs speeded up execution of reforms and provided the foundation for additional reforms and new policy design.	The 2014 & 2016 CSRs for Latvia recommended making the research system more integrated, strengthening links with the private sector and promoting internationally competitive research institutions. As required by the ExAC, a smart specialisation strategy was formulated, which contributed to structural change in the R&D sector through a reform of research institutions. It helped to focus ESI Fund's support on priority areas and to incentivise private investment in innovation. In Romania, the ExAC Access to employment and labour market institutions supported structural reforms identified in the 2014–2016 CSRs. The National Employment Agency's (NEA) services are being strengthened by tailoring services to jobseeker profiles and better linking them with social assistance. 90% of NEA beneficiaries have already been profiled and a catalogue of services adopted. Case management is being introduced to improve cooperation between employment and social services.
3. Accelerating the transposition and implementation of the EU acquis Several ExAC are linked to the transposition and implementation of EU legislation and regulations. Such ExAC also benefit projects that are not financially supported by the ESI Funds. ExACs for public procurement, State aid, environmental legislation relating to Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA), non-discrimination, gender and disability led several Member States to improve the implementation of EU regulations in a systemic way .	In Italy, shortcomings in the transposition of the public procurement acquis led in the past to several suspensions of payments from the EU Funds. The public procurement ExAC sped up the process of correcting the relevant national legislation and of preparing regional and national authorities to implement revised public procurement rules. In several Member States, including the Czech Republic, Poland, Portugal, Slovenia, Spain and Italy, the need to satisfy the energy efficiency ExAC gave a significant push to the swift transposition of the Energy Performance of Buildings Directives.
4. Better targeting of support from ESI funds and other public funds Many ExACs required that support from the ESI Funds should form part of policy or strategic frameworks which meet certain quality criteria. A number of ExACs	In Portugal, the adoption of a smart specialisation strategy under the research and innovation ExAC helped to focus public funding in R&D on a limited number of smart specialisation areas. In Spain, as a result of the same ExAC, regions previously lacking experience in this

required a needs analysis. Some required strategic policy documents to ensure that funding is targeted to the icy documents to ensure that funding is targeted to the people most in need of support and to tackle identified challenges, such as in the labour market. As a result, the selection criteria and calls for projects to be co-financed by ESI Funds are better tailored to the socio-economic context. This should lead to increased effectiveness and efficiency — not just of EU support, but also of national funding

area developed expertise and produced smart specialisation strategies of high quality.

In Poland, adoption of national and regional transport plans to meet the requirements of the Transport ExAC contributed both to the identification of a mature project pipeline and to better prioritisation of investments, from which the CEF has also benefited.

As a result of the early school-leaving ExAC, Hungary and Latvia implemented systemic improvements in the national early school-leaving data collection and analysis system.

5. Improving administrative capacity and coordination

Insufficient capacity and efficiency of public administration in some Member States and regions have an adverse effect on the implementation of the ESI Funds as well as on their competitiveness.

The institutional capacity and efficient public administration ExAC requires the development and implementation of a strategy to reinforce and reform administering authorities. Several other ExACs establish requirements which reinforce administrative capacity to implement EU regulations on public procurement, state aid, environmental legislation relating to EIA and SEA, or EU legislation and policy on anti-discrimination, gender equality and disability.

Estonia: Under the ExAC on Institutional capacity and efficient public administration, the OECD Public governance review action plan was revised and a quality management system introduced to increase the administrative capacity of staff and organisations (management systems, processes and structures). The OECD action plan serves as a basis for the ongoing State Reform.

Bulgaria: The action plan for the implementation, maintenance and development of modern Quality Management Systems (QMS), developed under the ExAC on Institutional capacity and efficient public administration, accelerated the establishment of a Common Assessment Framework (CAF) in 48 authorities by the end of 2018. CAF is envisaged to be implemented in at least 80 authorities by the end of 2020, while QMS will be implemented in 350 authorities by the end of 2020. The ExAC also gave a boost to the preparation of an analysis of the existing needs of civil servants for training and of a methodology for analysis of training needs in the public administration.

- Regular reporting of results and outputs and a performance framework linked to the release of a performance reserve.
- An impact evaluation for each of the specific objectives, to understand the contribution of the programme to developments at the national or regional level and to learn lessons for the future[4].

2.4 Smart specialisation

Smart specialisation aims to boost national and regional innovation by enabling Member States and regions to focus on their strengths. It represents the most comprehensive industrial policy experiment being implemented in Europe today.

The approach brings together the key players — the research community, business, universities, public authorities and civil society — to identify strengths in their region and to direct support to where local potential and market opportunities can best be realised. This enables critical mass to be achieved and accelerates the uptake of new ideas.

Since smart specialisation became one of the ex ante conditionalities for the ESI Funds, over 120 smart specialisation strategies have been formulated through partnership, multi-level governance and a bottom-up approach. €65.8 billion are available to support these strategies from the ERDF and EAFRD, in addition to national and regional funding.

4 For further details and explanation, see the European Commission Guidance document on the monitoring and evaluation of the Cohesion Fund and ERDF, http://ec.europa.eu/regional_policy/sources/docoffic/2014/working/wd_2014_en.pdf

Since 2011, the European Commission has provided advice to regional and national authorities on how to develop, implement and review their smart specialisation strategies; via a mechanism called "S3Platform"[5]. The objective has been to provide information, methodologies, expertise and advice as well as to promote mutual learning and transnational cooperation. It has around 200 members in total, including 18 EU Member States and two non-EU countries, as well as 170 EU and 9 non-EU regions.

In addition, in 2015–2016 the European Commission responded to the increasing interest by establishing three Thematic Smart Specialisation Platforms (TSSP)[6] on energy, agri-food and industrial modernisation. These platforms were created under the S3 Platform in order to facilitate interregional cooperation and boost private-public investment pipelines. More than 80 EU regions are currently involved in 18 different partnerships covering different areas such as advanced manufacturing for energy application, efficient and sustainable manufacturing, the bio-economy, high performance production through 3D printing, medical technology, innovative textiles, production monitoring systems, industry 4.0, new nano-enabled products, bio-energy, marine renewable energy, smart grids, solar energy, sustainable buildings, high-tech farming, traceability and big data and smart electronic systems[7].

Placing investment in human capital and skills at the heart of smart specialisation strategies is key, as skilled human capital is a pre-condition for the success of any innovation policy. This is why the ESF will contribute €1.8 billion over the present programming period to strengthening human capital in research, technological development and innovation.

2.5 Financial instruments

The use of financial instruments (FIs) in cohesion policy has increased significantly in recent years. In 2007–2013 around €12 billion of the Structural Funds was invested in this way, while plans for 2014–2020 suggest a figure of the order of €21 billion[8].

The FI landscape at EU level is complicated, with various players, instruments and areas of intervention. ESI Funds play a major role at the EU level (Table 6.4). SMEs account for just over half of planned spending from the ESI Funds supported by FIs and, together with innovation and the low carbon economy, they represent the bulk of planned investment so supported. ESI Funds in the form of FIs are the largest EU source of financing for SMEs and the low carbon economy without considering the substantial amount of ERDF support provided to these areas through grants.

There are various changes in the extent of the use of FIs and the arrangements for implementing and reporting on them in the 2014–2020 period as compared with the preceding one (Table 6.5).

3. Macroeconomic impact of the policy

Macroeconomic models suggest that cohesion policy investment is likely to have a positive and significant impact on the EU economy (see Figure 6.6). The impact builds up over time and continues long after the programmes have come to an end. In the short run, a substantial part of the impact stems from the increase in demand generated by the additional expenditure, which is partly crowded-out through increases in wages and prices. In the medium and long run, productivity-enhancing effects of cohesion policy investment — the so-called supply-side effects — materialise and increase potential output, reducing inflationary pressure at the same time. By 2023, EU GDP is expected to be more than 1% higher as a result of cohesion

5 http://s3platform.jrc.ec.europa.eu/

6 http://s3platform.jrc.ec.europa.eu/s3-thematic-platforms

7 For further information see the European Commission's smart specialisation platform: http://s3platform.jrc.ec.europa.eu/

8 Figure approximate: the means of financing used for each priority axis is not fully pre-determined and may change.

Table 6.4 Division of EU sources of funding for the 2014–2020 period

	EFSI	ESIF	EU level instruments		Total (€ billion)
Infrastructure				Connecting Europe Facility	22.4
SME				COSME (81%), EASI (11%) and Creative Europe (7%)	21.3
R&D&I				Horizon 2020	11.7
Environment and resource efficiency				NCFF (56%), PF4EE (44%)	6.1
ICT					3.3
Social cohesion				Erasmus+	2.7
Total (€ billion)	26.0	21.6	19.9		67.5

Notes: ESI funds ("ESI") are the "European Structural and Investment Funds", i.e. cohesion policy funds plus EAFRD and EMFF
EFSI ("European Fund for Strategic Investments") is an initiative launched jointly by the EIB Group and the European Commission to help overcome the current investment gap in the EU by mobilising private financing for strategic investments.
The boxes representing budget commitments are broadly to scale. In the case of EFSI, the breakdown of commitments as at November 2016 has been used as a proxy to disaggregate the commitment by objective.
Source: European Policies Research Centre (2017).

Table 6.5 Changes in Financial Instruments supported by cohesion policy between the 2007–2013 and 2014–2020 periods

	2007–2013	2014–2020
Scope	Support for enterprises, urban development, energy efficiency and renewable energies in building sector	Support for all thematic objectives covered under a programme
Set-up	Voluntary gap analysis for enterprises and at the level of Holding fund	Compulsory ex ante assessment
Implementation options	Financial instruments at national or regional level — tailor made only	Financial instruments at national, regional level, transnational or cross-border level: Tailor-made, off-the-shelf or MA loans/guarantees Contribution to EU level instruments
Payments	Possibility to declare to the Commission 100% of the amount paid to fund — not linked to disbursements to final recipients	Phased payments linked to disbursements to final recipients. National co-financing which is expected to be paid can be included in the request for the interim payment
Management costs and fees, interest, resources returned, legacy	Legal basis set out in successive amendments of the regulations and recommendations/interpretations set out in three follow up notes.	Full provisions set out from outset in basic, delegated and implementing acts
Reporting	Compulsory reporting only from 2011 onwards, on a limited range of indicators	Compulsory reporting from the outset, on a range of indicators linked to the financial regulation.

The EIB Group: a key partner in promoting cohesion

Through a mix of services, the EIB plays a major role in helping to reduce regional economic disparities and to raise living standards across the EU.

EIB Cohesion Priority Regions cover all less developed and transition regions eligible for support under cohesion policy for 2014–2020. Over the 10 years 2007–2016, over €200 billion was lent to these regions (Table 6.6 and Figure 6.5), loans going to areas such as major infrastructure, including trans-European networks and renewable energy, water supply, waste management, forestry and food security; SMEs; education and training; ICT and to municipalities for improving urban living environments.

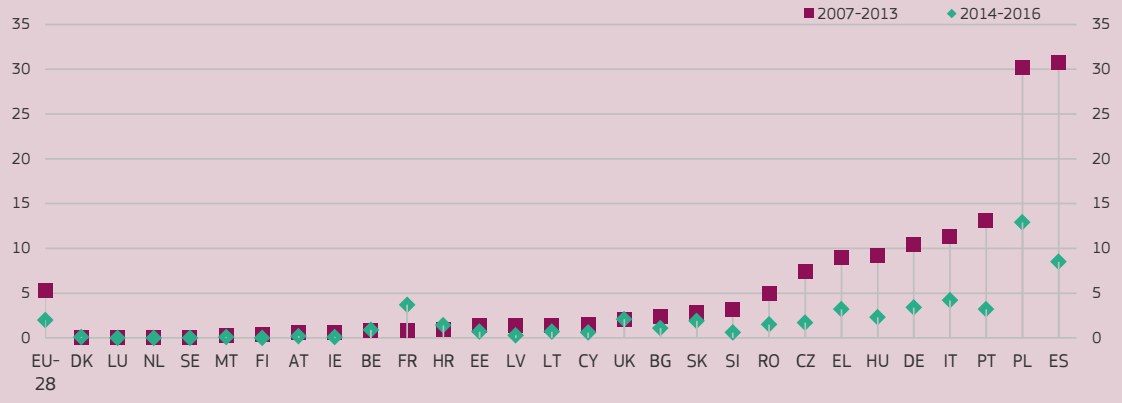
Table 6.6 EIB lending to Cohesion Priority Regions (€ billion)

	2007–2013	2014–2016
Cohesion lending	€147 bn	€55 bn
of which Structural Programme Loans	€20 bn	€14 bn

In the 2007–2013 programming period, the EIB lent nearly €20 billion through Structural Programme loans, primarily to Member States in the east and south of the EU. This helped to co-finance programmes amounting to over €200 billion. Such loans have become increasingly important since the beginning of the economic and financial crisis. Fiscal consolidation has hampered the ability to find counterpart financing as regards EU grants and these loans help in doing so.

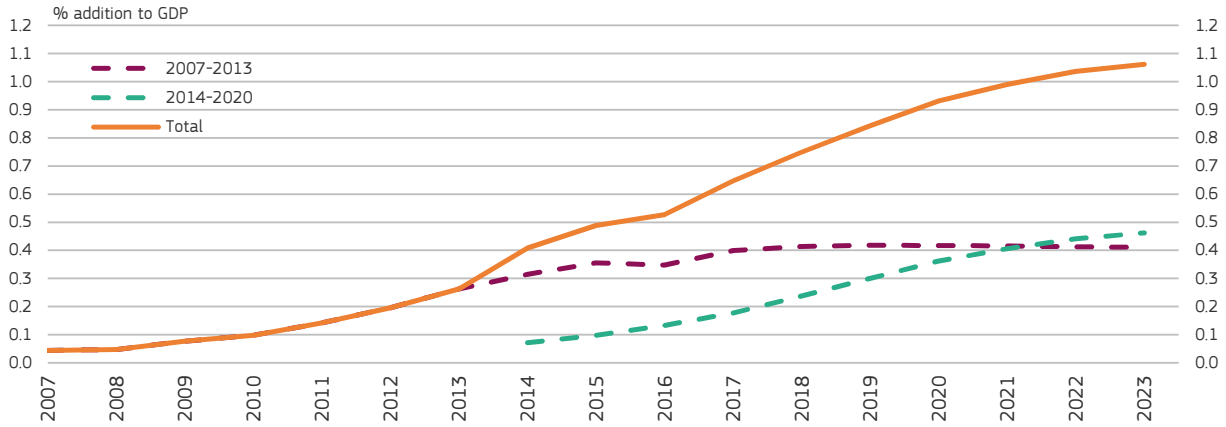
In 2014, the EIB and DG REGIO set up 'fi-compass' to provide advice on financial instruments to complement the advisory services of JASPERS (created in 2005 and managed by the EIB in partnership with the European Commission and the European Bank for Reconstruction and Development (EBRD), which helps cities and regions to prepare major projects, as well as some smaller projects in smaller countries and strategic areas, such as innovation and energy efficiency.

Figure 6.5 EIB lending under the Cohesion Objective by country and programming period (€ billion)



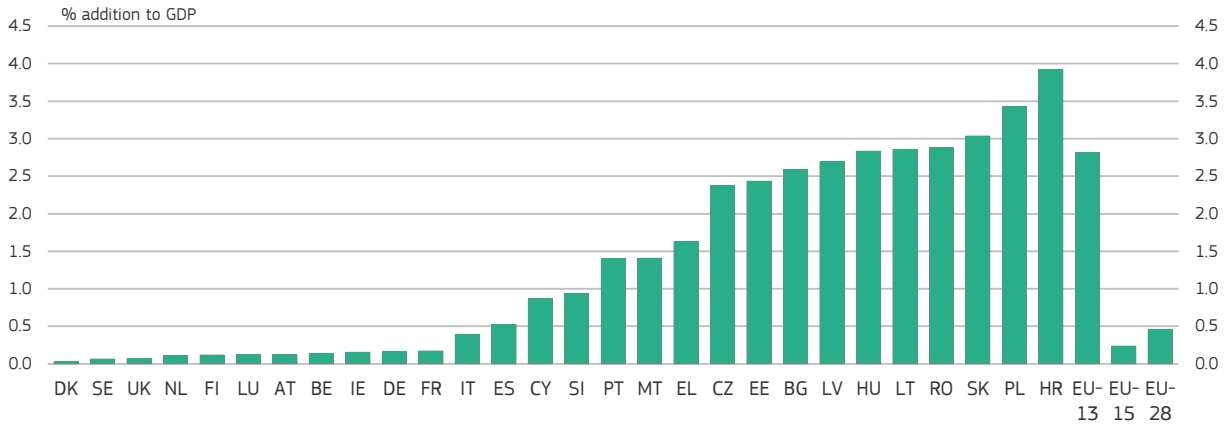
Source: EIB, 2017

Figure 6.6 Impact of cohesion policy on EU GDP, 2007-2023



Source: QUEST macroeconomic model

Figure 6.7 Impact of 2014-2020 programmes on Member States' GDP, 2023



Source: QUEST macroeconomic model

policy investments (after taking account of their financing).

Unsurprisingly, the impact is greatest in the main beneficiary countries. For example, at the end of the implementation period of the 2007–2013 programmes (i.e. in 2015), GDP in Latvia is estimated to have been 3.9% higher thanks to the investments supported by cohesion policy while in Hungary, it was around 3.6% higher. On average, GDP in the EU-12 in 2015 is an estimated 2.8% higher than it would have been without cohesion policy investments.

In the EU-15, the effects of the policy are smaller during the implementation period but they strengthen over time. The overall impact was positive, though marginal in some cases, even in Member States which are net contributors to the policy. This is because the effect of higher taxes to finance the investment concerned is more than compensated by the boost to income and expenditure in net recipient countries from the investment, which leads to increased imports from net contributor countries, so boosting the GDP of the latter (see Box on Spatial spill-overs).

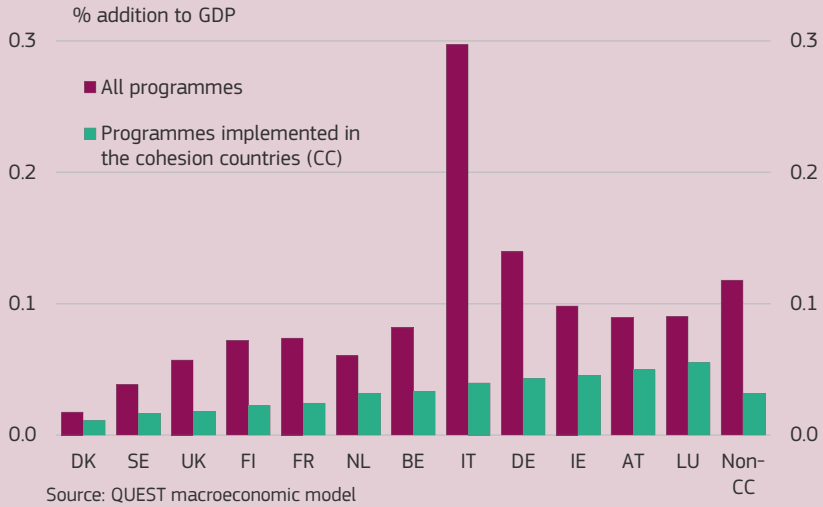
Spatial spill-overs

Cohesion policy interventions not only positively affect the performance of the Member States and regions in which they are implemented, but they also generate spill-overs elsewhere in the EU. These effects can be modelled. Figure 6.8 shows the impact of all cohesion policy programmes in 2007–2013 on the non-cohesion countries. This is the sum of their contribution to the EU budget (negative), the impact of the programmes implemented in the non-cohesion countries (positive) and the spill-over benefits from increased exports to the cohesion countries (positive). It also shows the impact on this group of countries of only the programmes implemented in the cohesion countries only.

Focusing on the latter, the negative effect of raising taxes dominates during the implementation of the programmes, but once they are terminated, GDP in the non-cohesion countries is higher than what it would have been without these programmes, due to the positive spill-over they generate on the economies of the non-cohesion countries.

In the long-run, these spill-over benefits represent a substantial share of the total impact of the policy on the non-cohesion country economies. By 2023, the impact of the 2007–2013 programmes is estimated to be around 0.12% of GDP in non-cohesion countries, of which around a quarter is due to spill-overs from spending in cohesion countries. This effect is particularly pronounced for Member States with strong trade links with cohesion countries (Austria and Germany) or strong openness to trade in general (Ireland and Luxembourg). In Austria and Luxembourg, more than half of the impact of the policy is due to investment in the cohesion countries.

Figure 6.8 Impact of cohesion policy on non-cohesion countries' GDP, all programmes and programmes implemented in the cohesion countries, 2023



Source: QUEST macroeconomic model

Similar results are expected for the 2014–2020 period (Figure 6.7). The largest impact is estimated to be in Croatia where GDP is forecast to increase by around 4% by the end of the implementation period (2023) over and above what it would have been in the absence of cohesion policy investment. The impact is also large in Poland (+3.4%), Slovakia (+3%) and Romania (+2.9%). In the long run (in 2030), the increase in GDP is largest in Croatia and Poland (more than 4% in each case).

As for 2007–2013, the expected impact in the EU-15 is smaller. However, in the long run the net impact of the policy per euro spent is only slightly

lower in the EU-15. Indeed, as compared to the EU-13, investments in the EU-15 tend to be relatively more concentrated in R&D and human capital which produce most of their effects long after the spending involved has come to an end. Ten years after the end of the programming period, in 2030, the impact is estimated to be around 2.7 times the money spent in the EU-13 and 2.4 times in the EU-15. Over the 17-year period 2014–2030, these figures correspond to an annual average return of around 6% in the EU-13 and 5% in the EU-15, good value for money from a policy which generates social returns, in the form of non-quantified environmental and other benefits which improve the quality of life and the sustainability of development, as well as purely financial ones.

3.1 Impact at regional level

The analysis conducted at the national level can be complemented by simulations at the regional level. This is important as the intensity of aid and the policy mix, i.e. the investment priorities supported, vary markedly from one region to another, even within the same Member State. The impact of the policy also depends on the economic and social environment in which it is applied. The same policy mix can potentially have quite different consequences if implemented in a mostly rural region where agriculture accounts for a substantial share of GDP or in an urban region specialised in services. In addition, some mechanisms which need to be taken into account when assessing the impact of cohesion policy are more likely to operate at a regional than a national level. This is the case, for example, with spatial spill-overs through which the programmes implemented in one region also have an impact in others, especially those that are geographical neighbours.

The impact at NUTS 2 regional level shows wide variations across the EU-27 and even within the same country (Map 6.1).

By the end of the programming period, GDP in Észak-Magyarország and Észak-Alföld in Hungary is estimated to be more than 8% higher than it would be without Cohesion policy, while in the capital city region of Közép-Magyarország, it is only 1.4% higher.

In regions in more developed Member States, the impact is smaller but remains positive in spite of the fact that these regions are net contributors to the policy. This is particularly true in the long-run because of the focus of investment as indicated above. In 2030, the smallest impact is estimated to be in Nordjylland in Denmark, though it is still positive at 0.1% of GDP.

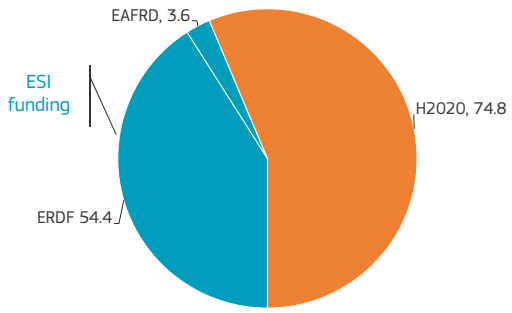
In most Member States, it is in the least developed regions where investment relative to GDP is largest and where the impact is greatest. This is in line with the mandate for cohesion policy enshrined in the Treaty which is to reduce disparities in regional GDP per head across the EU.

4. Innovation and competitiveness

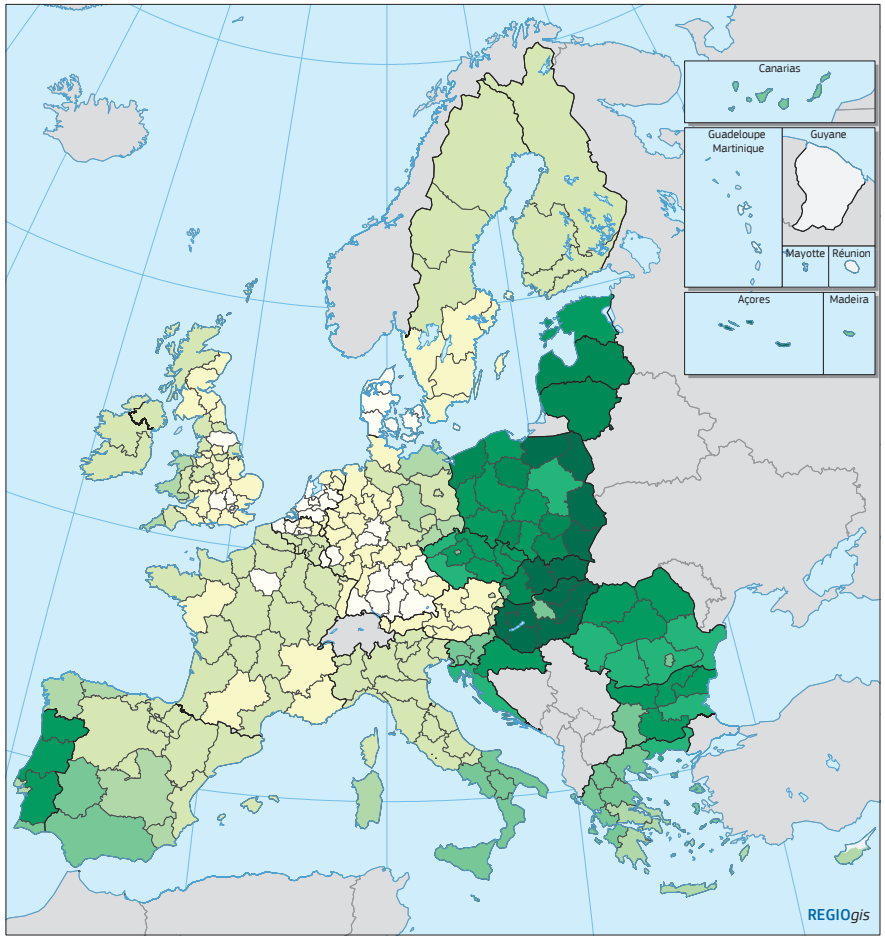
The ERDF is the largest single EU source of financing for innovation and competitiveness (Figure 6.9). For innovation (on which Horizon 2020 is concentrated), the ERDF is the second largest source, though, as noted above, it is the predominant source of support for SMEs.

In line with the emphasis on smart specialisation, cohesion policy is increasingly concentrated on higher value-added support, with greater focus on productivity and less on employment, the tar-

Figure 6.9 Main EU sources of funding for research, innovation and ICT, 2014-2020 (€ bn)



Source: ESIF Open Data Platform and KPMG (2017)



Map 6.1 Impact of the 2014–2020 cohesion policy programmes on GDP, 2023

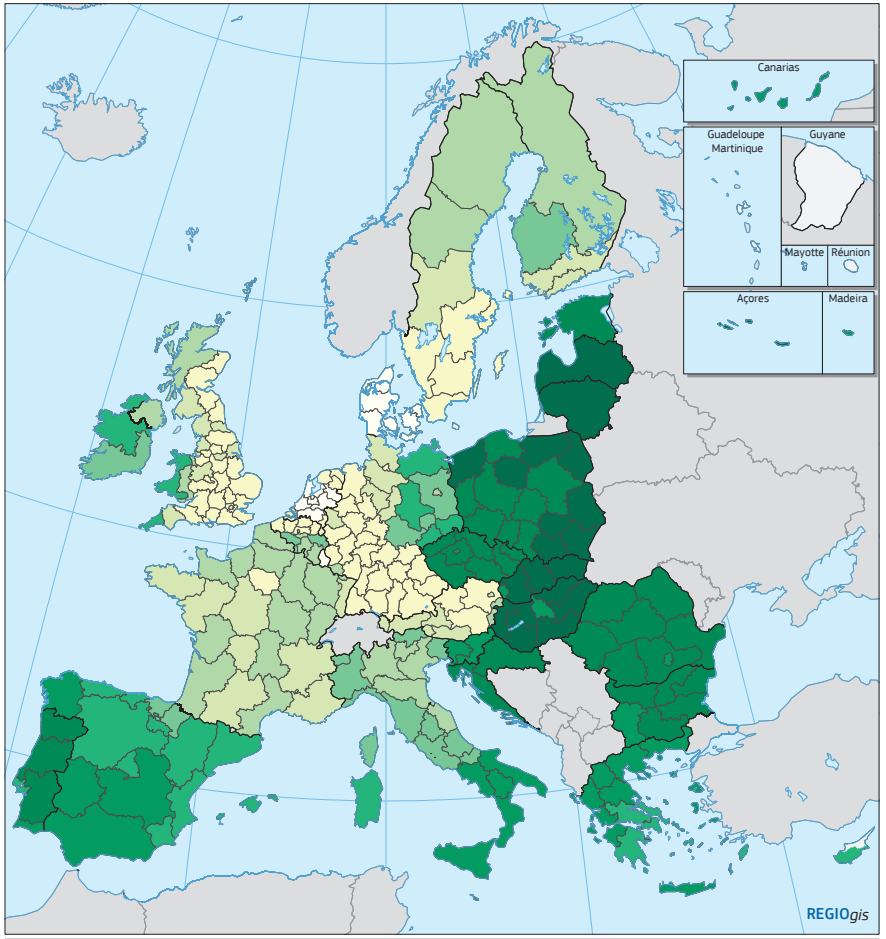
% above baseline

< 0.05	2 – 3
0.05 – 0.1	3 – 4
0.1 – 0.5	4 – 5
0.5 – 1	> 5
1 – 2	

Source: RHOMOLO

0 500 km

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Map 6.2 Impact of the 2014–2020 cohesion policy programmes on GDP, 2030

% above baseline

< 0.10	0.50 – 1
0.10 – 0.15	1– 2
0.15 – 0.20	2 – 4
0.20 – 0.30	> 4
0.30 – 0.50	

Source: RHOMOLO

0 500 km

© EuroGeographics Association for the administrative boundaries

Table 6.7 Common indicators and targets for 2014–2020 in the fields of innovation and competitiveness

Research, Innovation: number of enterprises cooperating with research institutions	Enterprises	73 000
Research, Innovation: number of new researchers in supported entities	Full time equivalents	29 500
Research, Innovation: number of enterprises supported to introduce new-to-the-firm products	Enterprises	63 000
Research, Innovation: number of enterprises supported to introduce new-to-the-market products	Enterprises	28 000
Research, Innovation: private investment matching public support in innovation or R&D projects	€	10.4 billion
Research, Innovation: number of researchers working in improved research infrastructure facilities	Full time equivalents	72 000
Firms receiving non-financial support (advice)	Enterprises	450 000
All firms receiving support	Enterprises	1 100 000
Firms receiving grants	Enterprises	370 000
Direct employment increase in supported enterprises	Full time equivalents	420 000
Firms receiving financial instrument support (non-grants)	Enterprises	200 000
Private investment matching public support to enterprises (grants)	€	23.7 billion
Private investment matching public support to enterprises (non-grants)	€	8.6 billion
Startups supported	Enterprises	155 000

Source: ESIF Open Data Platform — https://cohesiondata.ec.europa.eu/

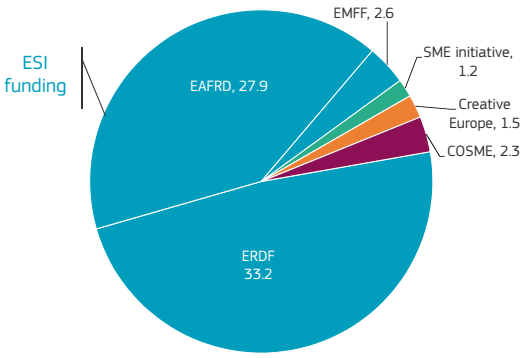
get for gross jobs directly created being reduced from 1.2 million in the previous period to 420 000 (Table 6.7). In addition, support to large enterprises is now restricted to innovation.

4.1 Support to SMEs

Support to SMEs over the 2007–2013 period was already focused on RTD and innovation. Some 400 000 SMEs across the EU received direct support and 121 400 new businesses were helped to start up. The firms directly supported represented just under 2% of the 23 million or so SMEs in the EU. This, however, greatly understates the potential importance of the support since in many cases it was targeted at the more strategic firms in a region, such as those engaged in manufacturing or tradable services and, accordingly, the main sources of potential growth, rather than those in sectors such as retailing or other basic services in which most SMEs operate. Around 7% of manufacturing SMEs in the EU were supported, including an estimated 15% of small firms (those with 10–49 persons employed) and over a third of medium-sized enterprises.

The average amount of funding going to each SME is estimated at around €115 000, though there were wide variations between different measures of support, from several million euro (up to €5 million in Poland for co-financing the purchase of modern machinery, for example) to a few thousand euro (such as in respect of short-term credit for micro enterprises).

Figure 6.10 Main EU sources of funding for SMEs, 2014-2020 (€ bn)



Source: ESIF Open Data Platform and KPMG (2017)

The contribution of financial instruments (FIs)

Since FIs were particularly concentrated on supporting SMEs in the 2007–2013 period, the ex post evaluation was specifically focused on this. It found that FIs played a crucial role in providing funding to SMEs during the credit crunch in the crisis and helped many firms to stay in business. Indeed, the regulations were changed in response to the crisis, allowing FIs to be used to finance working capital as well as fixed capital, so giving them a distinct advantage over grants. In Lithuania, in particular, around 60% of loans went to support of working capital, so keeping many businesses afloat. FIs, however, also helped to maintain investment in new technology and in improving production processes more generally.

It is equally evident that FIs have assisted in the development of financial markets in a number of regions. In North-East England, they led to the creation of a revolving fund and helped to develop a private investment sector in the region as well as supporting investment in new technology and innovation. In Bayern in Germany, they helped to develop a business market and in Hungary and Malopolskie in Poland, regional financial intermediaries.

In addition, and perhaps unexpectedly, the evidence from case studies suggests that SMEs often prefer FIs to grants, since a loan covering 80% of an investment would mean them having to find less additional financing than a grant covering 20%[1]. This may prove to be a key source of the added-value of FIs in the longer term[2].

1 An 80% loan and a 20% grant are not atypical figures in an ERDF context.

2 For further information: Ex post evaluation of cohesion policy 2007–2013

Support to the social economy

Social enterprises create new jobs, facilitate labour market integration and are a source of social innovation. Moreover, the development of social enterprises and related social finance markets can mobilise significant private investment to address social issues, contributing to the sustainability of welfare systems.

The ESF is actively supporting the establishment of social enterprises as a source of jobs, in particular for groups of people who find it difficult to get work: young long-term unemployed, disabled people and people in rural communities. Overall, Member States have earmarked more than €1 billion to this priority in 2014–2020 and several Member States are using the ESF to boost the social investment market, such as in Portugal through the Social Innovation Fund and in Poland through the National Fund for Social Entrepreneurship.

The evaluation found that a major result of support was the help given to SMEs to withstand the effects of the crisis by providing credit when other sources of finance had dried up (see Box). There was also support for innovation and the adoption of more technologically advanced methods of production as well as for the development of new products. The evidence from the surveys and case studies carried out as part of the evaluation shows that support led to investment being maintained, increased and/or accelerated, resulting in increased turnover, profitability and exports.

It also led, in a number of cases, to observable behavioural changes, such as SME owners and managers being more willing to take risks and to innovate. This was evident, for example, for R&D grants in Castilla y León (Spain), which resulted in SMEs being more capable of undertaking complex projects, often in collaboration with other firms or research centres. Overall, the ERDF provided support for 35 500 projects for cooperation between SMEs and research centres.

Table 6.8 Incidence and volume of support to large enterprises, 2007–2013

	Direct enterprise support* (€ million)	Large enterprise support (€ million)	Large enterprise / total support	Number of projects	Number of firms supported
Poland	6 591	1 153	17%	539	408
Portugal	4 145	1 134	27%	407	319
Germany	3 200	704	22%	763	632
Czech Republic	1 491	467	31%	520	339
Hungary	2 581	453	18%	409	273
Spain	2 543	311	12%	1 269	398
Italy	2 034	243	12%	416	270
Austria	283	133	47%	194	148
Total (EU-28)	**31 233**	***6 100 (est.)***	***20% (est.)***	***6 000 (est.)***	***3 700 (est.)***

The countries listed are the 7 investing most in large enterprise, plus Austria, in which the proportion of funding for enterprise support going to large enterprises was the largest in the EU.
Source: Ex post evaluation of cohesion policy 2007–2013.

In some programmes, the ERDF was used to support experimental and innovative policy measures instead of replicating traditional national schemes. This was the case, for example, in Denmark, Sweden and Finland, where there was a focus on research and innovation, in Puglia in Italy with the 'Living Labs' experiment and In Lithuania with the Inno-voucher scheme.

4.2 Support to large enterprises[9]

Although SMEs are the main focus of enterprise support under cohesion policy, large enterprises are often key to regional development. An estimated €6.1 billion from the ERDF was allocated to large enterprise support in the 2007–2013 period — roughly 20% of total direct support to enterprises (Table 6.8).

This took the form of some 6 000 projects, with an average project size of €1 million. In total, roughly 3 700 large firms were supported, with an average of 1.6 projects in each of them (although some firms received support for 4–5 projects). Poland, Portugal and Germany accounted for half of total ERDF support to large enterprises in 2007–2013.

Over 70% of the large enterprises concerned were in manufacturing, in the automotive and aerospace industries but also in packaging. For the most part, large firms were supported through non-refundable grants, but in Italy, Spain, Portugal and Austria, support was also provided in the form of loans (usually combined with grants).

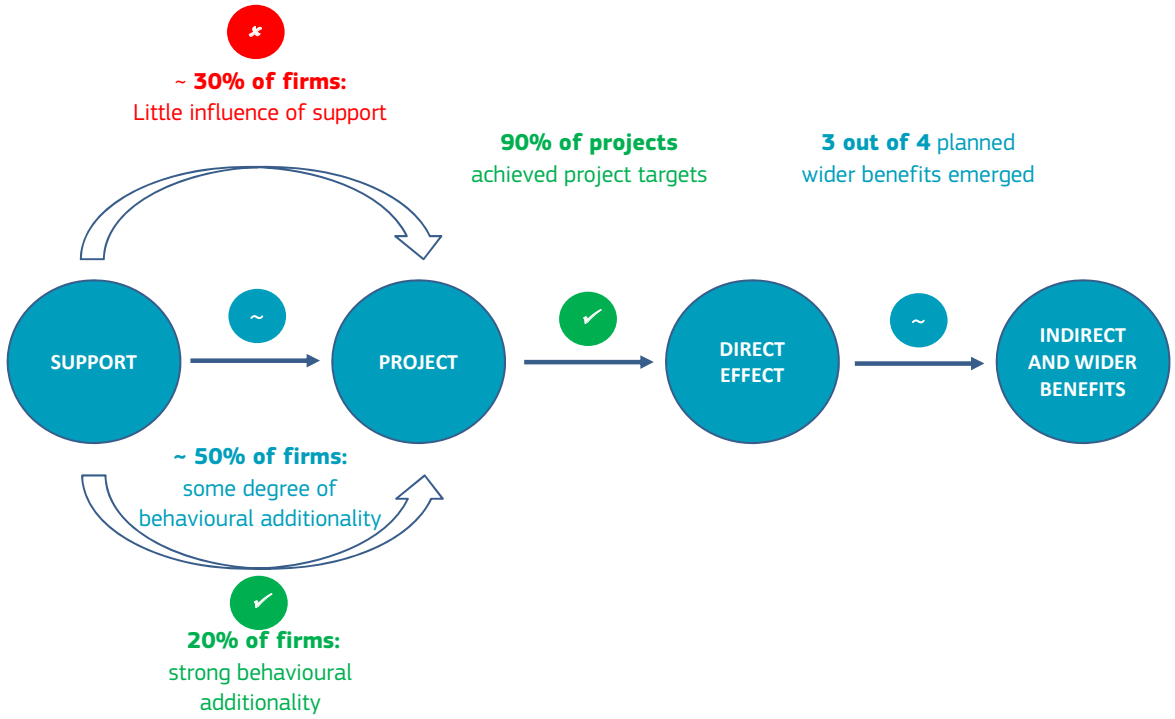
Support had a strong economic impact, with 90% of projects achieving or more than achieving the goals set (Figure 6.11). Both the production capacity and the productivity of the enterprises concerned was increased, often due to the adoption of cutting-edge technologies that went beyond simple replacement investment. Moreover, the projects directly created at least 60 000 new jobs in the 8 regions selected for in-depth case studies.

According to the case studies, 3 out of 4 of the 'wider benefits' targeted were achieved, the most common being knowledge spill-overs and the building of local supply chains. Typically, however, while ERDF support influenced the decision to invest, it was only one factor among many. Since large enterprises tend to have long-term strategies, multiple grant options and easier access to finance than SMEs, they are less influenced by grant money.

Wherever it was possible to judge, it was found that the presence of large enterprises in the region concerned was more than temporary and, in the case of the projects supported, the investment concerned would be maintained for the mandatory five-year period. Whether or not the enterprises

9 Large enterprises: 250 employees or more.

Figure 6.11 Large Enterprise support 2007–2013 — Case study result



http://ec.europa.eu/regional_policy/en/policy/evaluations/ec/2007–2013 .
Source: Ex post evaluation of cohesion policy 2007–2013

would sustain production in the region over the longer term depended, in particular, on the lifecycle of the plant or process in which investment had been made and the technology involved as well as corporate strategy.

5. Employment, social inclusion and education

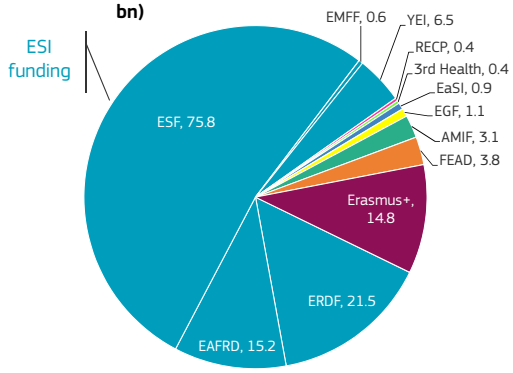
In the 2014–2020 period, the European Social Fund (ESF) is providing support to four thematic objectives: Employment, Social inclusion, Education and skills, and Administrative capacity building. Of the total ESF budget of €86 billion, over €75 billion is going to support sustainable and quality employment, social inclusion and investment in education and training. The majority of funding is allocated to employment and education objectives, with 25% going to social inclusion. The funding is expected to:

- help more than 7.4 million of the unemployed into work, together with another 2.2 million people six months after they have completed an ESF project;
- help over 8.9 million people gain new qualifications.

The ESF is also expected to help at least:

- 9.9 million people with low education;
- 7.5 million people who are disadvantaged;
- 6.2 million young people;
- 7.2 million people in employment, including the self-employed and those working in public employment services and related organisations.

Figure 6.12 Main EU sources of funding for employment, training and social inclusion, 2014-2020 (€ bn)



Source: ESIF Open Data Platform and KPMG (2017)

5.1 Employment

Promoting high levels of employment and job quality is the cornerstone of the ESF. It helps both the unemployed and inactive to find a job through training, counselling, job placement and other means. It also helps those in employment to upgrade their skills to remain competitive on the labour market and adapt to change. The ex post evaluation of the 2007–2013 ESF programmes showed that, by the end of 2014, at least 9.4 million people who found a job received support from the ESF[10].

As part of its employment objective, the ESF is helping tackle the major problem of youth unemployment. Indeed, young people are among the most important target groups for the ESF, representing around 30% of all participations in ESF programmes. Over the 2014–2020 period, the ESF will directly invest at least €6.3 billion to support the integration of young people into employment across the EU. In addition, the Youth Employment Initiative (YEI) was launched in 2013, with a budget of €4.2 billion[11], matched by an equal amount from the ESF, i.e. €8.4 billion in total, for Member States to invest directly in improving the employability of young people.

The YEI helped to kick-start the implementation of the Youth Guarantee — a guarantee that each young person will be offered a job, further training or education within 4 months of becoming unemployed. By the end of 2016, over 1.6 million young people had already been directly supported by the Initiative. Alongside supporting investment, the ESF is also being used to change the policy approach to youth unemployment in Member States by encouraging a more individual focus.

The preliminary assessment of the implementation of the ESF and YEI up to 2016 shows positive achievements, with over 6.8 million participations in measures supported, 3.4 million of which involved those unemployed, 1.8 million those inactive, 2.6 million those below 25 and 2.6 million those with only basic schooling (ISCED level 0-2)[12], confirming that the ESF is reaching its target groups. Results are still limited and will take time to materialise, since so far only 0.7 million participants are reported to have gained a qualification and only 0.6 million participants have found employment, including self-employment, on leaving programmes.

5.2 Social inclusion

One of the central purposes of the ESF is to support people who are disadvantaged and at risk of poverty, to help them into employment and to find their place in society. For the 2007–2013 period, 10% of total ESF co-financed investment was allocated to social inclusion measures, which, according to evaluations, helped Member States to better support those most severely hit by the crisis. In the 2014–2020 period, at least 20% of the ESF will go to such measures which should increase the effects.

In addition, the ESF provides support to measures to help groups who face discrimination and prejudice on the labour market. These include, in particular, migrants, ethnic minorities, such as Roma, and those with a different lifestyle, such as itin-

10 Ex post evaluation of the 2007–2013 ESF programmes: Commission Staff Working Document (SWD) 2016 452.

11 The decision to increase the initial budget of €3.2 billion for the Youth Employment Initiative by €1.2 billion was agreed upon by the co-legislator in 2017.

12 The figures sum to more than the total because the groups are not mutually exclusive.

erant travellers. As well as co-financing education and training for them, ESF-supported measures are aimed at combating all forms of discrimination and at breaking down the various barriers the people concerned face in finding employment and becoming integrated into society.

5.3 Education

The ESF is the main EU source of finance for investment in human capital and the development of skills which are crucial to achieving and maintaining high levels of employment, As such, the Fund helps Member States to improve the basic skills of the low-qualified, as well as assisting workers to increase their skill levels and the unemployed to get back into work.

As highlighted by the New Skills Agenda for Europe[13], it is of paramount importance for people to have the right skills, both for their self-fulfilment and for the competitiveness of the EU economy. To this end, the ESF provides support across the entire education cycle from early childhood schooling to vocational training and life-long learning.

5.4 Urban and social infrastructure

The ex post evaluation of the 2007–2013 period found that activities related to urban development ranged from 'investments in deprived areas' and 'support for economic growth' to support of the 'cultural heritage' and 'strategy development'. The following kinds of project were undertaken with the support provided:

- the construction, repair and renovation of schools, housing, social and cultural centres and other buildings;
- the creation of business space;
- the renewal and revitalisation of town centres and historic areas and the construction of flood defences;
- the construction of cycle paths;
- the construction of public spaces and facilities;
- the rehabilitation of wasteland and brownfield sites;
- the installation of clean drinking water supply and wastewater treatment facilities;
- improvements in the energy efficiency of buildings.

Social innovation

The ESF has played an important role in changing attitudes and systems of care and support for people with disabilities in encouraging a shift from care in institutions to care in the community, following a human rights approach. In the 2014–2020 period, there is a more focused use of the ESF on supporting a transition to such a shift, with Member States being obliged to address this transition in a more systemic way and to make structural reforms rather than intervening on an ad-hoc basis. Such reforms were encouraged by allocating resources to their implementation during the negotiation of programmes.

Bulgaria is an example of what has been achieved so far. Through an ambitious programme of reform, the Bulgarian Government, with support from the EU and civil society, has made significant progress in deinstitutionalising the care of children with disabilities in a short space of time the number in institutions being reduced by 82% and all specialised institutions for such children being closed down.

As part of ESF transnational cooperation, social innovation is encouraged in most areas of support, the objective being to stimulate new approaches and the exchange of good examples of innovative measures between Member States.

13 Communication from the Commission, The new skills agenda for Europe — Working together to strengthen human capital, employability and competitiveness, COM(2016) 381.

Table 6.9 Common indicators and targets for 2014–2020 in the fields of urban and social infrastructure

Childcare and education: Capacity of supported childcare or education infrastructure	Persons	6.8 million
Urban: Population living in areas with integrated urban development strategies	Persons	41.2 million
Urban: Public or commercial buildings built or renovated in urban areas	Square metres	2.2 million
Urban: Rehabilitated housing in urban areas	Housing units	17 000
Urban: Open space created or rehabilitated in urban areas	Square metres	29.2 million

Source: ESIF Open Data Platform — https://cohesiondata.ec.europa.eu/

Achievements in the EU-12 ranged from improvements in infrastructure (water supply, sewerage systems, schools, housing and cultural centres) and the renovation of buildings to the execution of urban integrated development plans and strategies. In the Czech Republic, for example, Integrated Plans for Urban Development for cities with more than 50 000 inhabitants were formulated as the basis for the construction of sports facilities, public places and cultural and leisure facilities.

In the EU-15, the focus in the UK was on the creation of business centres and support of SMEs at local level, while in other countries, the ERDF was used to stimulate private investment in towns and cities, such as in Rotterdam.

In the case of social infrastructure, the main achievements included:

- improvements in healthcare and social infrastructure facilities through modernisation of equipment and the increased efficiency of ambulance, care and other services (e.g. in Hungary and the Czech Republic), which helped to close the gap between more and less developed regions in the EU;
- improvements of the education system in a number of Member States (notably in Portugal where a significant budget was spent on schools, colleges and equipment);
- improvements in training and employment services (in, for example, Spain, Poland, the Czech Republic and Lithuania) to better adapt the work force to labour market needs;
- improvements in the security of urban areas and investment in the cultural heritage;
- investment in cultural, sports and training facilities, as part of urban development measures, together with the establishment of support centres for various disadvantaged groups.

Monitoring data show that three quarters of the (small scale) projects examined in the evaluation made a concrete contribution to growth and jobs and a quarter of them a large contribution (Table 6.10). The most common outcomes were an improvement in skills and an expansion of local businesses, but there were also beneficial effects on a range of other factors from health to business creation and increased labour market participation.

6. Environment, transport and energy networks

6.1 The environment

The environment has been a focus of cohesion policy support since 1989. Along with transport, it is one of the policy areas eligible for financing from the Cohesion Fund, on the grounds that it is important to have common environmental standards across the EU for both the health of people and to protect the eco-system.

The ex post evaluation for the 2007–2013 period found a significant shift in EU-12 countries in the disposal of waste away from landfill to recycling. A substantial number of landfill sites which did not

Table 6.10 ERDF urban and social projects, 2007–2013 (% reporting a contribution to various goals)

Improved skills/ educational attainment/ qualifications	39%
Improved performance/ expansion of local businesses	32%
Improved health outcomes	25%
Entrepreneurship/new business creation	24%
Higher rate of female and/or youth participation in the labour market	17%
Other	26%
Total reporting some contribution	73% (and 24% a high contribution)

Source: Ex post evaluation of cohesion policy 2007–2013

comply with EU standards were closed down while in the Czech Republic, Hungary, Lithuania, Poland and Slovenia, as well as Croatia, the proportion of waste which was recycled was increased by over 10 percentage points. Much of this shift was co-financed by the ERDF and Cohesion Fund.

EU cohesion policy is also key to making the circular economy a reality, by ensuring funding for waste management, innovation, SME competitiveness, resource efficiency and low-carbon investments and by promoting green public procurement.

The following achievements were identified in the case studies on waste management:

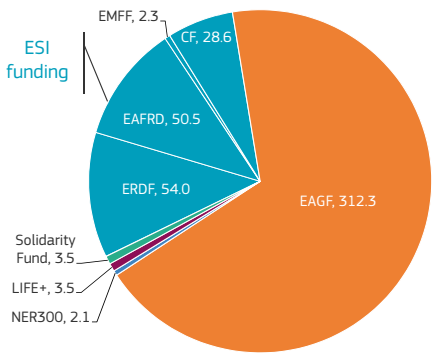
- In Bulgaria, the proportion of waste landfilled was reduced from 80% to 70% between 2007 and 2013. A mechanical biological treatment facility, co-financed by EU funding, was opened in Varna in 2011 and a similar facility, but including a composting plant, was opened in Sofia in 2015.

- In Estonia, 39 landfills and 11 industrial waste sites were closed down between 2007 and 2013, the share of municipal solid waste composted nearly doubled to 6% and the share of biodegradable waste sent to landfill was reduced significantly.

- In Poland, the share of municipal waste going to landfills was reduced from 90% to 53%, while the share of waste going to recycling increased from 6% to 16% and the share composted rose from 6% to 13%. A number of regional waste management centres were constructed to replace smaller local and less efficient ones. For example, a centre with a recovery facility to handle various types of waste and a composting facility was constructed in Gdansk, with €48.2 million of the total cost of €83.5 million coming from EU funds.

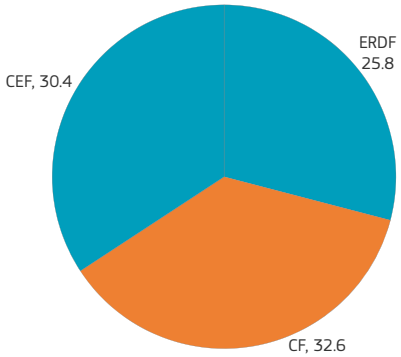
- In Slovenia, EU funds co-financed some 200 waste collection centres and the construction of a number of regional centres for waste management as well as an incinerator and the clean-up of old municipal waste landfills. Between 2007 and 2013, recycling nearly doubled to over 40% and composting was also

Figure 6.13 Main EU sources of funding for agriculture and the environment, 2014-2020 (€ bn)



Source: ESIF Open Data Platform and KPMG (2017)

Figure 6.14 Main EU sources of funding for transport and energy infrastructure, 2014-2020 (€ bn)



Source: ESIF Open Data Platform and KPMG (2017)

Table 6.11 Additional people served by water and wastewater projects co-financed by the ERDF and Cohesion Fund, 2007–2013 (up to end-2014)

	Additional population ('000) served by:	
	Water projects	Wastewater projects
Czech Republic	371.3	490.3
Estonia	13.7	15.8
Hungary		478.1
Lithuania		78.5
Latvia	672.2	90.1
Poland	262.2	537.3
Slovenia	291.6	194.2
Slovakia	33.0	44.2
Spain	1 929.0	2 172.3
Greece	1 455.5	370.8
Italy		825.0
Portugal	359.8	1 270.0
Germany		213.0
France	514.6	101.4
EU-12	1 644.0	1 928.5
EU-4	3 744.3	4 638.1
EU-15 Other	514.6	314.4
EU	5 902.9	6 880.9

Note: EU-4 = EL, ES, IT and PT
Source: DG REGIO, derived from Annual Implementation Reports for 2014

increased, though it remained relatively small (only around 7% of the total in 2013).

Achievements as regards water supply and wastewater treatment included:

- an additional 5.9 million people connected to a new or improved supply of clean drinking water, 1.6 million of whom were in the EU-12 and 3.7 million in Convergence regions in the four southern EU-15 Member States, most of them in Spain and Greece;

- an additional 6.9 million people connected to new or upgraded wastewater treatment facilities, of whom 1.9 million were in the EU-12 and 4.6 million in the four southern Member States (Table 6.11).

A striking example is the construction of a new sludge treatment facility at the Vilnius wastewater treatment plant in Lithuania. Before the construction, most of the sludge was landfilled while now it is composted and used as fertiliser. The aim was not only to comply with the EU Sludge Directive (86/278/EEB) but also to reduce the smell from untreated sludge, which affected half the population of Vilnius.

Table 6.12 Common indicators and targets for 2014–2020 as regards the environment

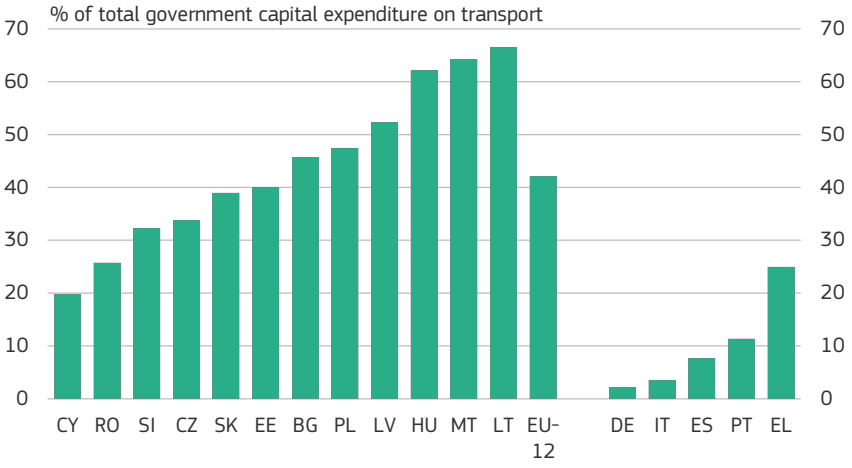
Risk prevention and management: Population benefiting from flood protection measures	Persons	13.2 million
Risk prevention and management: Population benefiting from forest fire protection measures	Persons	11.8 million
Nature and biodiversity: Surface area of habitats supported to attain a better conservation status	Hectares	6.4 million
Water supply: Additional population served by improved water supply	Persons	12.4 million
Land rehabilitation: Total surface area of rehabilitated land	Hectares	5 000
Solid waste: Additional waste recycling capacity	Tonnes/year	5.8 million
Wastewater treatment: Additional population served by improved wastewater treatment	Persons	16.9 million

Source: ESIF Open Data Platform — https://cohesiondata.ec.europa.eu/

6.2 Transport investment

Investment in transport has always been a major focus of support from both the ERDF and Cohesion Fund, which represent substantial sources of funding for such investment, accounting for over 40% of total Government capital expenditure on transport over the 2007–2013 period in the EU-12. (Figure 6.15).

Figure 6.15 ERDF and Cohesion Fund allocation to transport, 2007-2013



Source: European Commission (2016k).

Given the large number of projects, it is impossible to describe them all, but the following examples drawn from the ex post evaluation case studies[14] give a flavour of the types of investment concerned and the benefits they give rise to.

Cernavoda-Constanța motorway, Romania

The road is a 51 km long section of the A2 motorway linking Bucharest and Constanta on the Black Sea coast, the fifth largest city in Romania and the largest port on the Black Sea as well as being one of the largest in Europe. It also forms part of the TEN-T priority axis number 7, which runs from Patra in Greece, through Athens to Sofia and on to Budapest and which is part, in turn, of the Orient-East-Med Corridor. Accordingly, it is strategically important for both the Romanian and the wider EU economy. The section which completed the A2 motorway opened to traffic towards the end of 2012.

Urban transport projects

A number of public transport projects were supported over the period which had the effect of reducing congestion in cities and improving the urban environment as well as reducing travel times. Examples include the development of metro systems in Budapest, Porto and Sofia (described below), tramlines in Le Havre in France, Szeged in the South of Hungary (also described below) and Warsaw in Poland and the upgrading of urban or suburban railways between Gdynia, Sopot and Gdansk in Poland and between Nantes and Châteaubriant in France (described below as well) together with the city rail tunnel in Leipzig.

Sofia metro extension

Cohesion policy funding co-financed the construction of metro line no.2 and the extension of line no.1 in Sofia which increased the network from 18 km in 2009 to 39 km in 2015 and the number of stations from 14 to 34. As a result, the Sofia metro now serves the major residential areas situated in the north and south of the city, as well as the Sofia Business Park, and the airport. This has led to changes in travel patterns, with an increased proportion of journeys being made by public transport and fewer by car, so resulting in significantly less congestion in the city and reduced toxic emissions.

14 See annex 3 for references, where further details can be found.

Table 6.13 Common indicators and targets for 2014–2020 as regards transport

Railway: total length of new railway line	km	1 150
Railway: total length of reconstructed or upgraded railway line	km	8 680
Railway: total length of new railway line, of which: TEN-T	km	570
Railway: total length of reconstructed or upgraded railway line, of which: TEN-T	km	4 640
Roads: total length of newly built roads	km	3 430
Roads: total length of reconstructed or upgraded roads	km	10 390
Roads: total length of newly built roads, of which: TEN-T	km	2 020
Roads: total length of reconstructed or upgraded roads, of which: TEN-T	km	800
Urban transport: total length of new or improved tram and metro lines	km	750

Source: ESIF Open Data Platform — https://cohesiondata.ec.europa.eu/

Development of Szeged electric public transport

Cohesion policy funding was used to upgrade and extend the tram system in Szeged in Hungary to expand the capacity of routes linking residential areas with the city centre and to give added incentive to people to use public transport rather than cars. Tramline 1 and sections of lines 3 and 4 were, therefore, modernised (18.3 km in total) and a new line 2 was constructed (of 4.8 km) along with an extension of the trolleybus network (of 3.7 km). Nine new low-floor trams and 10 new trolleybuses were also purchased and a new passenger information and traffic management system was installed together with 8 bike-and-ride stations next to tram and trolleybus stops. The result has been a reduction in travel time between the main residential areas and the city centre. Noise and air pollution has also been reduced by expanding electric public transport and favouring its use in the city.

Reopening of railway line Nantes — Châteaubriant

The railway line, covering a distance of 64 km, was re-opened in 2014 having been closed for passenger traffic since 1980. The project was co-funded by the ERDF and involved the replacement of existing track, the electrification of the line, the installation of safety systems at level crossings and of signalling and telecommunication equipment and the improvement of access to stations and services at Nantes and other places along the route. The line, which is now used by tram-trains, has made commuting and other journeys to Nantes, a centre of essential services in the area, much easier. It has increased the attractiveness of using public transport instead of cars and so has reduced both congestion and pollution levels.

6.3 Energy efficiency in buildings[15]

As noted in Chapter 3, heating, cooling and lighting buildings account for a substantial proportion of the energy consumed across the EU. Accordingly, improving the efficiency of energy use in buildings can contribute considerably to reducing overall energy consumption, so saving on the depletion of fossil fuels, alleviating poverty, increasing energy security and contributing to climate change mitigation and adaptation.

Following the adaption of the regulations in June 2009 as part of the European Economic Recovery plan, improving energy efficiency in housing became eligible for support in all parts of the EU, the maximum funding for this being increased to 4% of the total ERDF allocation at the same time. The express intention was to boost economic activity as well as to further social cohesion by helping to reduce disparities in access to good quality housing and to relieve energy poverty.

The ex post evaluation found that almost all of the funding going to investment in increased energy efficiency in buildings, overall around 90% of the total, took the form of non-repayable grants. Only a small amount of funding — around 9%, less

15 Cohesion policy investments in energy are broader, but this section concentrates on energy efficiency in buildings, a significant area of investment and a specific focus of investigation in the ex post evaluation of the 2007–2013 period.

Table 6.14 Common indicators and targets for 2014–2020 as regards energy efficiency and renewables

Energy efficiency: number of households with improved energy consumption classification	Households	870 000
Renewables: additional capacity of renewable energy production	MW	7 700
Energy efficiency: decrease of annual primary energy consumption of public buildings	kWh/year	5.3 billion
Energy efficiency: number of additional energy users connected to smart grids	Users	3.3 million

Source: ESIF Open Data Platform — https://cohesiondata.ec.europa.eu/

than €1 billion — was in the form of loans, interest subsidies, guarantees and other types of financial instrument (FI), equities in particular. Many of the FIs were organised through JESSICA funds managed by financial intermediaries, the central purpose of which was to provide funding for urban regeneration[16].

The evaluation reviewed 27 OPs and found an overall reduction of 2 904 GWh[17] a year in electricity consumption up to the end of 2013 from energy efficiency measures, including 1 438 GWh from measures for residential and public buildings. To put this into perspective, the reduction in respect of buildings amounts to an estimated cut of some 0.2% in total yearly energy consumption in the countries and regions concerned, not large but significant given the relatively small amount of funding involved. Moreover, by the end of 2013, only around 55% of the total funding available for energy efficiency had been spent, so a much larger effect is expected when all projects had been completed.

In addition, for 20 OPs, data were also collected on the reduction in greenhouse gas emissions from the projects supported. Up to the end of 2013, this amounted to a cut of 826.4 kilo tonnes of CO_2 equivalent emissions a year from the projects undertaken to increase energy efficiency in buildings (and one of 1 454 kilo tonnes a year from all the energy efficiency projects supported). This amounts to an estimated reduction of 0.1% a year in annual emissions in the OP areas concerned.

In Lithuania, the result of the projects carried out was much greater, in line with the larger share of funding going to increasing energy efficiency in buildings. By the end of 2014 (i.e. one year later than the figures quoted above), energy use in the 864 public buildings which had been renovated had been reduced by 236 GWh a year, which corresponds to 3% of annual electricity consumption in the country.

Other less quantifiable achievements came in the form of technological advances as a result of innovative projects undertaken, awareness raising of the benefits of investing in energy saving and policy learning, in the sense of acquiring a better understanding of the policy measures available and how they can best be implemented and assessed.

7. Reinforced cooperation and addressing territorial challenges

The current round of interregional cooperation (Interreg) has a budget of €10.1 billion for 2014–2020 invested in over 100 cooperation programmes between regions and territorial, social and economic partners (Table 6.15). This amount also includes the ERDF allocation for Member States to participate in EU external border cooperation programmes supported by other instruments (Instrument for Pre-Accession and European Neighbourhood Instrument). The breakdown of programmes is as follows:

16 JESSICA stands for Joint European Support for Sustainable Investment in City Areas, which is an initiative of the European Commission in cooperation with the European Investment Bank (EIB) to support urban regeneration and development through financial instruments.

17 Enough to light the city of Stuttgart for a year — or 1% of the UK's annual electricity consumption.

Table 6.15 Evolution of Interreg 1990–2020

	Interreg I 1990–1993	Interreg II 1994–1999	Interreg III 2000–2006	Interreg IV 2007–2013	Interreg V 2014–2020
Legal status	Community Initiative		Integrated into Structural Funds Regulation		Own Regulation
Benefiting Member States (internal borders)	11	11 - then - 15	15 - then - 25	27 - then - 28	28
Commitment budget (in current prices)	ECU 1.1 bn	ECU 3.8 bn	€5.8 bn	€8.7 bn	€10.1 bn

Source: DG REGIO

- 60 cross-border programmes — Interreg V-A, along 38 internal EU borders: ERDF contribution: €6.6 billion.
- 12 IPA cross-border programmes: Instrument for Pre-Accession and European Neighbourhood Instrument
- 16 ENI cross-border programmes: International Cooperation and Development
- 15 transnational programmes — Interreg V-B, covering larger areas of cooperation such as the Baltic Sea, Alpine and Mediterranean regions: ERDF contribution: €2.1 billion.

The Interreg Europe regional cooperation programme and three networking programmes (Urbact III, Interact III and ESPON) cover all 28 EU Member States and provide a means of exchanging information and experience between regional and local bodies in different countries. The ERDF contribution amounts to €500 million.

In accordance with the new design of EU cohesion policy for the 2014–2020 period and the focus on concentration of funding, simplification of administration and results as well as the pursuit of the Europe 2020 targets, Interreg has been significantly reshaped to achieve greater impact and more effective use of funding.

Table 6.16 Key common indicators and targets for Interreg programmes, 2014–2020

Indicator	Unit	Target
Number of enterprises participating in cross-border, transnational and interregional research projects	Enterprises	6 900
Number of participants in projects promoting gender equality, equal opportunities and social inclusion across borders	Persons	9 900
Number of participants in joint local employment initiatives and joint training	Persons	53 000
Number of participants in cross-border mobility initiatives	Persons	240 000
Number of participants in joint education and training schemes to support youth employment, educational opportunities and higher and vocational education across borders	Persons	53 000
Number of research institutions participating in cross-border, transnational and interregional research projects	Organisations	1 400

Source: ESIF Open Data Platform — https://cohesiondata.ec.europa.eu/

A minimum of 80% of the budget for each cooperation programme is concentrated on a maximum of four thematic objectives of the 11 set out in the ERDF regulations.

The amounts allocated to Interreg are relatively small. The cross-border programmes, which account for the bulk of funding, amounted to only some €20 per head of population in the regions covered in the 2007–2013 period. The programmes, therefore, have to be highly strategic and focused.

By the end of 2013, these programmes had funded over 6 800 projects in policy areas at the core of the Lisbon, and later, Europe 2020 strategy. They included the creation and expansion of economic clusters, the establishment of centres of excellence, higher education and training, cooperation networks between research centres and cross-border advisory services for enterprises and business start-ups. The 1 300 or so environmental projects involved the joint management of natural resources, including sea and river basins, cooperative action to combat natural risks, to respond to climate change and to preserve biodiversity and pilot initiatives to develop renewable energy.

Specific examples as regards RTD include the joint development of support for SMEs for image analysis and optical measurement process control in the mining industry and cross-border research and business cooperation for the development of new propulsion systems, liquefied natural gas technology and a new generation of wind-assisted motor boats.

Although the indicators available are limited and incomplete, they show that around 3 500 jobs were directly created as a result of the projects undertaken, 487 km of roads were improved and over 500 000 people participated in joint education or training activities.

In the case of the transnational programmes, the indicators show that 2 207 jobs were created and 260 transnational projects in RTD and innovation, accessibility, risk prevention and water management were carried out. Most of the projects involved tackling common problems through collaboration, joint research or exchange of experience. The most frequent outcomes were the establishment of networks or partnerships between SMEs and research centres, the joint management of natural resources and joint action for environmental protection. A major aspect was the creation of critical mass, i.e. assembling funding on a sufficient scale to tackle territorial and environmental problems, to set up RTD networks and to create common services (such as in the case of transport in the North-West Region).

In the case of the interregional cooperation programme, the aim of which was to improve the effectiveness of regional policies through cooperation and exchanges between regions, the programme succeeded in setting up a framework in which local and regional authorities from across the EU could share experience and examples of good practice in relation to the problems they faced. However, the evaluation found little evidence of knowledge or experience being disseminated outside of the regions involved in the projects and outside of Interreg more generally.

Beyond the outputs and results described above, the programmes also had wider effects, notably in terms of alleviating barriers to cooperation (mainly cultural and physical barriers) and increasing social integration.

Transnational cooperation under the ESF has helped to make employment and social policies more effective and has contributed to the implementation of reforms, by facilitating the exchange of experience and good practice. For 2014–2020, Transnational Cooperation has been extended through the establishment of Thematic Networks[18] that bring together representatives from the bodies managing the ESF Operational Programmes, policy experts, academics, social partners and civil society organisations in order to share examples of good practice and innovation, as well as to coordinate the launch of calls for projects.

18 Employment, Inclusion, Social economy, Youth employment, Learning and skills, Migration, Governance, Partnership and Simplification

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