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Ninth report on economic, social and territorial cohesion

Regional and Urban Policy

Ninth report on economic, social and territorial cohesion

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Foreword

Jacques Delors said that every widening or deepening of Europe must be accompanied by reinforced cohesion. This is the firm foundation, on which the European social market economy has been built.

In 2023 we celebrated 30 years of the Single Market, and this year we celebrate 20 years since the enlargement of 2004. Countries who joined then have seen their GDP per capita rise from 52 % of the EU average in 2004, to nearly 80 % in 2023. Both events represent cornerstones of European integration – and both were underpinned by Cohesion Policy, which has helped every region to make the most of its EU membership.

This 9th Cohesion Report presents a wealth of data and analysis on Europe's territories – including a snapshot of their current situation, an analysis of the changes over the past decades, and trends for the future. It shows that Cohesion Policy delivers tangible results. Every region in Europe has benefitted from EU-funded investments and from the positive spillovers of higher trade and demand, and stronger supply chains.

Cohesion Policy generates considerable return on investments. Each euro invested between 2014 and 2027 will, by 2030, have generated EUR 1.3 of GDP, almost tripling by end-2043 (30 years after these programmes began).

But some gaps persist: convergence at national level hides internal disparities, and some regions have fallen into a development trap and are experiencing economic stagnation. In addition, current challenges, such as geopolitical tensions, geoeconomic competition, climate transition, demographic decline and technological transformation, often impact the EU's poorer regions more heavily. That is why we have to always consider the asymmetrical impact of transformations and new challenges and come up with people- and place-sensitive policies to address them.

To continue delivering economic progress in EU regions – and to ensure that in reality 'no-one is left behind' – Cohesion Policy must adapt and modernise. This is why we launched a debate on the future of Cohesion Policy. We wanted to encourage a full, transparent debate with all the partners, fed by expert input. While the debate continues, some broad lines are emerging.

First, everyone should be able to reap the benefits of the transformations of our economy, and no place should be or feel forgotten – or get stuck in a development trap. For every region to reach their full potential, investments need to target strategic sectors and industries – such as the STEP initiative – that can increase our competitiveness, improve Europe's productivity and generate quality jobs. New methods will have to be embraced, focussing even more on performance and results.

Second, we must make the most of people and partners. People are our greatest asset, and the skills of young people must continue to be developed, –providing them opportunities so they can thrive in all corners of the EU. Cohesion Policy must be simpler and more user-friendly, while strengthening administrative capacity, so that regional partners can deliver the right projects in a timely and effective fashion. The strength of Cohesion Policy has long been the close link with local people and partners – our future must build on this.

Third, Cohesion Policy investments alone are not enough. Other policies, at EU and national level must take into account their spatial impact. Growth-enhancing reforms, and institutional capacity building, can help amplify the impact of these investments.

The history of the European project has been defined by cohesion and solidarity. This underpinned the success of the Single Market and previous enlargements. This is also how the Union has responded to the crises of recent years and how we have thrived as the economy and society changed. And this is how we will face the future.

We recommend this report, its analysis and lessons, to all who are interested in the future of the European Union.

Elisa Ferreira,
Commissioner for Cohesion and Reforms

Nicolas Schmit,
Commissioner for Jobs and Social Rights

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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). It is also known as regional policy.

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

Note on data used in the report: All figures, tables, charts and maps featuring in the report are based on data that were available at the end of 2023, with the exception of the figures of Map 1.1 (GDP/head by region, 2022), which were released in February 2024.

Abbreviations

AI	Artificial intelligence
AMECO	Annual macro-economic database of DG ECFIN
ANC	Area facing natural or other specific constraints
ARDECO	Annual regional database of DG REGIO
AROP	At risk of poverty
AROPE	At risk of poverty or social exclusion
BCR	Benefit-to-cost ratio
CAP	Common Agricultural Policy
CARE	Cohesion's Action for Refugees in Europe
CEAP	Circular Economy Action Plan
Cedefop	European Centre for the Development of Vocational Training
CEF	Connecting Europe Facility
CF	Cohesion Fund
CLC	CORINE land cover
CLLD	Community-led local development
COFOG	Classification of functions of government
CRII	Coronavirus Response Investment Initiative
CRiT	Coal regions in transition
CSR	Country-specific recommendation
CV	Coefficient of variation
DEGURBA	Degree of urbanisation
DG ECFIN	Directorate-General for Economic and Financial Affairs, European Commission
DG REGIO	Directorate-General for Regional and Urban Policy, European Commission
EAFO	European Alternative Fuels Observatory
EAFRD	European Agricultural Fund for Rural Development
EAGF	European Agricultural Guarantee Fund
EDGAR	Emissions database for global atmospheric research
EDI	Economic development index
EEA	European Environment Agency
EEN	Enterprise Europe Network
EIBIS	European Investment Bank investment survey
EIS	European innovation scoreboard
EQI	European quality of government index
ERDF	European Regional Development Fund
ERP	Enterprise resource planning
ESD	Effort sharing decision
ESF+	European Social Fund (the former abbreviation was ESF)

ESIF	European Structural and Investment Funds
ETS	Emissions Trading System
EU	European Union
EUIPO	European Union Intellectual Property Office
EU-SILC	EU statistics on income and living conditions
EU-SPI	EU regional social progress index
EUSSSM	EU Strategy on Sustainable and Smart Mobility
FDI	Foreign direct investment
FemAI	Female achievement index
FemDI	Female disadvantage index
FUA	Functional urban area
FRA	Functional rural area
GBER	General Block Exemption Regulation
GDP	Gross domestic product
GHG	Greenhouse gas
GNI	Gross national income
GVA	Gross value added
GVC	Global value chain
HDEP	High decarbonising employment potential
ILA	Individual learning account
IPCC	Intergovernmental Panel on Climate Change
ISCED	International standard classification of education
ISCO	International standard classification of occupations
ITI	Integrated Territorial Investment
JRC	Joint Research Centre, European Commission
JTF	Just Transition Fund
JTM	Just Transition Mechanism
LAI	Local autonomy index
LAU	Local administrative unit
LBM	LUISA base map
LFS	(EU) Labour force survey
LIFE	L'Instrument Financier pour L'Environnement
M&A	Mergers and acquisitions
MAD	Mean absolute deviation
MA	Managing authority
MFF	Multi-annual Financial Framework
MNE	Multinational enterprise
MUNIFI	Municipal fiscal data (database)
NACE	Nomenclature statistique des activités économiques (statistical classification of economic activities)
NECP	National Energy and Climate Plan
NECD	National Emission Reduction Commitment Directive
NEET	Not in employment, education or training
NGEU	NextGenerationEU)NMVOC Non-methane volatile organic compound
NSI	National Statistical Institute
NUTS	Nomenclature of territorial units for statistics
OECD	Organisation for Economic Co-operation and Development
OP	Operational Programme
PISA	(OECD) Programme for international student assessment
PO	Policy objective

pp	Percentage point
PPS	Purchasing power standards
PSM	Propensity score matching
RAI	Regional authority index
RCI	Regional competitiveness index
R&D	Research and development
RDEP	Restricted decarbonising employment potential
REACT	Recovery Assistance for Cohesion and the Territories of Europe
REGOFI	Regional government finance and investment database
R&I	Research and innovation
RIS	Regional innovation scoreboard
RRF	Recovery and Resilience Facility
RTDI	Research, technological development and innovation
SAM	Social accounting matrix
SDEP	Slow decarbonising employment potential
SDG	Sustainable development goal
STEM	Science, technology, engineering and mathematics
TED	Tenders Electronic Daily
TEN-T	Trans-European transport network
TFP	Total factor productivity
TJTP	Territorial Just Transition Plan
TSI	Technical Support Instrument
UCLG	United Cities and Local Governments
UIC	International Union of Railways
VEG-GAP	Vegetation for Urban Green Air Quality Plan
VET	Vocational education and training
WGI	Worldwide governance indicator
WHO	World Health Organization
WJP	World justice project
YEI	Youth Employment Initiative

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

Geographical groupings

Member State groupings

By geographic area

Eastern Member States: BG, CZ, EE, HR, LV, LT, HU, PL, RO, SI, SK
Southern Member States: EL, ES, IT, CY, MT, PT
North-western Member States: BE, DK, DE, IE, FR, LU, NL, AT, FI, SE

By level of development

Less developed Member States: BG, EL, HR, LV, LT HU, PL, RO (GNI per head below 75 % of EU-27 average in 2015–2017).
Moderately developed Member States: CZ, EE, CY, MT, PT, SI, SK (GNI per head between 75 % and 90 % of EU-27 average in 2015-2017).
Highly developed Member States: BE, DK, DE, IE, ES, FR, IT, LU, NL, AT, FI, SE (GNI per head at least 90 % of EU-27 average in 2015-2017).
Less developed and moderately developed Member States are those eligible for support by the Cohesion Fund 2021-2027.

Types of NUTS 2 regions

Cohesion policy in the period 2021-2027 uses three categories of regions based on the GDP per head for the years 2015, 2016 and 2017 (see Map).
Less developed regions: GDP per head (PPS) below 75 % of the EU-27 average.
Transition regions: GDP per head (PPS) between 75 % to 100 % of the EU-27 average.
More developed regions: GDP per head (PPS) above 100 % of the EU-27 average.

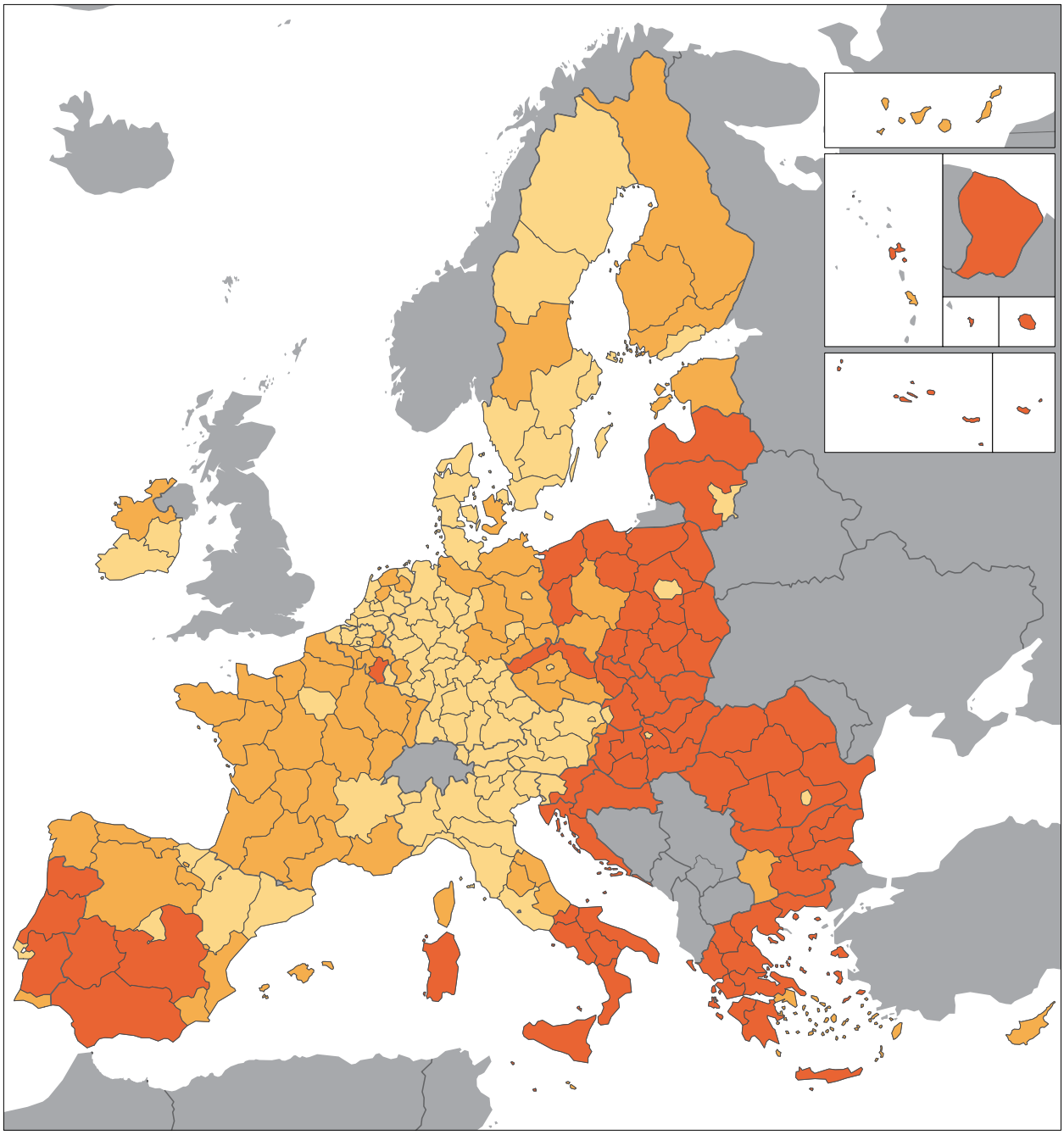
Types of regions and areas

Metropolitan regions

This is a classification of regions at NUTS 3 level, established as EU territorial typology in the TERCET Regulation. This classification was developed in co-operation with the OECD. It consists of NUTS 3 approximation of all functional urban areas of more than 250 000. Two types of metropolitan regions are identified: capital and other. The capital metropolitan region contains the national capital. A detailed methodology is included in the Eurostat Methodological manual on territorial typologies (2018 edition).

Predominantly urban, intermediate, predominantly rural regions

This is a classification of regions at NUTS 3 level, established as EU territorial typology in the TERCET Regulation. A detailed methodology is included in the Eurostat Methodological manual on territorial typologies (2018 edition). See maps 3.1 and 3.2 in this report.



Category of regions for Cohesion Policy (ERDF and ESF+), 2021–2027

- Less developed regions (GDP per head (PPS) less than 75 % of the EU-27 average)
- Transition regions (GDP per head (PPS) between 75 % and 100 % of the EU-27 average)
- More developed regions (GDP per head (PPS) above 100 % of the EU-27 average)

GDP per head: average 2015–2016–2017.

0 500 km

Border regions

Border regions are NUTS 3 regions with an international land border or regions where more than half of the population lives within 25 km of such a border.

Outermost regions

EU outermost regions are Canarias (Spain), Guyane, Guadeloupe, La Réunion, Martinique, Mayotte and Saint-Martin (France), Açores and Madeira (Portugal). For the purpose of the NUTS classification, Saint-Martin is part of the NUTS 2 region Guadeloupe.

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 % living in an urban centre.
Rural area: local administrative units with more than 50 % of their population in rural grid cells.
The degree of urbanisation classification is based on a typology of 1 km^2 grid cells. At grid cell level, a more detailed typology has been defined, distinguishing six classes:

- Cities
- Towns
- Suburbs
- Villages
- Dispersed rural areas

Mostly uninhabited areas. For more information see:
https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/ks-02-20-499

Cities, commuting zones and functional urban areas

Cities: same definition as above.
Commuting zones: contiguous local administrative units with at least 15 % of their working population commuting to a city.
Functional urban areas: the city plus its commuting zone. For more information see:
https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/ks-02-20-499

Highlights and policy takeaways[1]

1. Introduction

Economic, social and territorial cohesion is a European public good

The EU was founded on the values of solidarity, equal opportunities, and cohesion. From the outset, the Treaty of Rome set the goal of 'reducing the differences existing between the various regions and the backwardness of the less-favoured regions'. This economic and social cohesion, the reduction of internal disparities, has been rightly perceived as benefitting all of Europe and remains equally valid today.

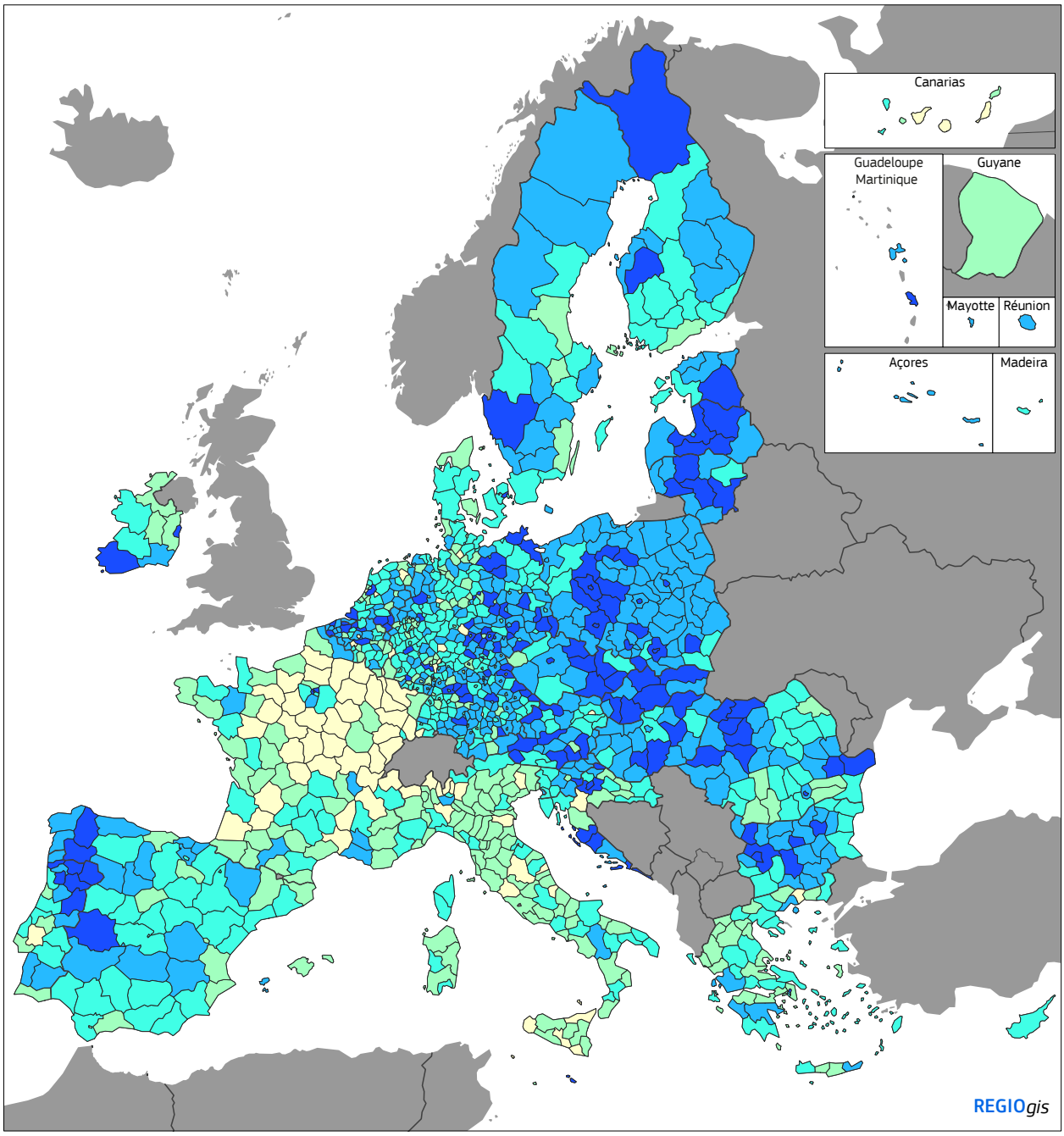
Since then, Cohesion Policy has been one of the key pillars of the European project. From the creation of the Single Market, the Economic and Monetary Union, to several enlargements, Cohesion Policy has supported every step of European integration – including, in recent years, the green and digital transitions. Market forces alone cannot ensure that the benefits from these key integration steps are evenly spread across Europe, therefore Cohesion Policy is necessary to help Member States and regions contribute, benefit and reach their full potential. Over time, Cohesion Policy has also acted as an economic stabiliser, a reliable source of support and investment during the financial crisis, and, more recently, during the pandemic and Russia's war of aggression against Ukraine, along with other instruments such as the Recovery and Resilience Facility. With its regional focus and place-based approach, Cohesion Policy is one of the most visible expressions of European solidarity, an integral part of the European growth model, and a cornerstone of our European house.

Stakeholders confirm the key role and importance of Cohesion Policy. They have made this clear in discussions on the future of the Policy. Over the past year, regional authorities and other stakeholders have provided inputs and 20 Member States have organised debates. A High-Level Group of Specialists published key orientations for the future policy[2] in February. The European Parliament, the Council of the European Union, the European Economic and Social Committee and the European Committee of the Regions have all adopted opinions and conclusions regarding key elements for the future of Cohesion Policy. Taken together, these inputs confirm the key role of the policy, paint a picture of emerging challenges, together with lessons learned and possible responses.

Thirty years after the parallel launch of the European Single Market and of a reinforced Cohesion Policy, and twenty years after the 2004 enlargement, the long-term trend is clear: many parts of Europe have experienced a remarkable upward economic and social convergence. However, socio-economic

1 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the 9th Cohesion Report (COM(2024)149, adopted by the College on 27 March 2024).

2 Forging a sustainable future together – Cohesion for a competitive and inclusive Europe: report of the High-Level Group on the Future of Cohesion Policy.



Map 1 Economic Development Index at NUTS 3 level, 2001–2021

Likelihood of being in a high growth trajectory

- < 0.3
- 0.3 – 0.4
- 0.4 – 0.5
- 0.5 – 0.6
- > 0.6
- no data

This index measures if a region's growth is higher than that of the EU, of its country, or of the region itself during the previous five years. It considers growth of GDP per head, productivity, and employment per head over a five-year period.
A region scores 1 for each time its growth is higher. This score between 0 and 9 is then rescaled to 0 and 1.
Source: DG REGIO calculations based on JRC and Eurostat data.

0 500 km

disparities persist and a growing number of regions risk struggling with new challenges. In this context, it is necessary to take stock: not just of the achievements of Cohesion Policy, but also how it can adapt. The Treaty objective of economic, social and territorial cohesion remains as relevant as ever, but the methods should evolve.

2. Cohesion Policy: long-term growth and competitiveness, quality jobs

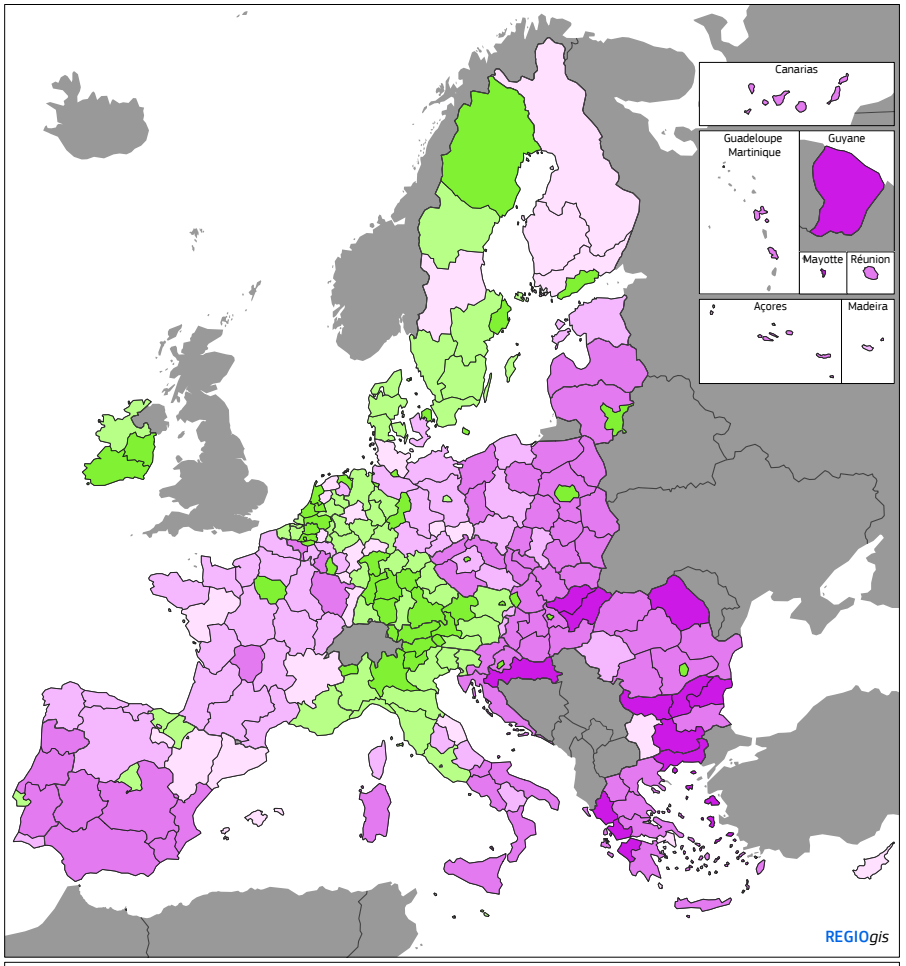
The historic EU enlargement in 2004 is a clear example of the positive impact of Cohesion Policy. Twenty years later, the average GDP per capita in the Member States that joined has increased from about 52 % of the EU average in 2004 to nearly 80 % in 2023. Unemployment rates in these Member States have decreased from an average of 13 % to 4 % over this period.

This upward convergence has been driven by an increase in productivity (GDP per person employed) in less developed regions. This testifies to the long-term improvement of the competitiveness and business environment of these regions. This catching-up also enabled tangible social progress, for instance in terms of better health outcomes, and reductions in unemployment and poverty rates across almost all regions over the last ten years.

However, convergence has been uneven across the EU. This reflects differences in productivity and competitiveness. Whereas several Eastern regions have experienced impressive catch-up since 2004, benefiting from a post-enlargement economic boost, many other regions have experienced a gradual divergence, meaning they fail to catch up with the EU average. This is notably the case of regions in Southern Member States, and especially since the financial crisis of 2008, but also of a group of transition regions in more developed Member States. In fact, about a third of EU regions have yet to see a return to 2008 levels of GDP per head. These regions cover all stages of development and can be found even in more developed Member States.

Real GDP per capita has even declined in several regions in Southern Member States since the turn of the century reflecting the impact of economic shocks and persisting structural challenges: productivity growth, quality of institutions and the smooth functioning of labour markets. At the same time, most Eastern regions should maintain the convergence momentum and extend their drivers of growth beyond metropolitan areas to mitigate deepening interregional disparities.

Cohesion Policy has contributed to a better functioning of the Single Market by stimulating long-term growth and competitiveness. It has improved access to goods and services through physical and digital infrastructure, increasing connectivity. Furthermore, Cohesion Policy has boosted local economies and attractiveness by improving innovation and entrepreneurship through support for SMEs, as well as reinforcing human capital with training and education. Cohesion Policy has also supported good governance, cooperation and administrative efficiency.



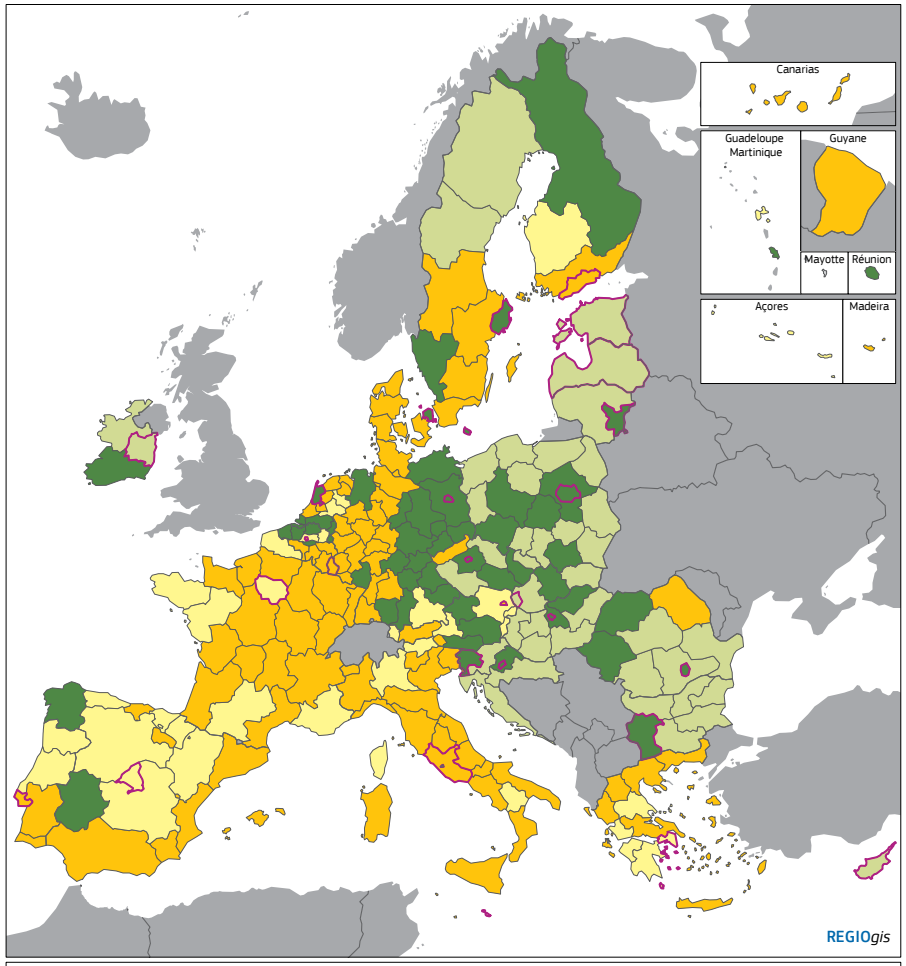
Map 2 GDP per head (PPS), 2021

Index, EU-27 = 100

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

Source: Eurostat (nama_10r_2gdp).

0 500 km



Map 3 Regional growth of GDP per head compared with growth in the EU and Member State, annual average, 2001–2021

Category

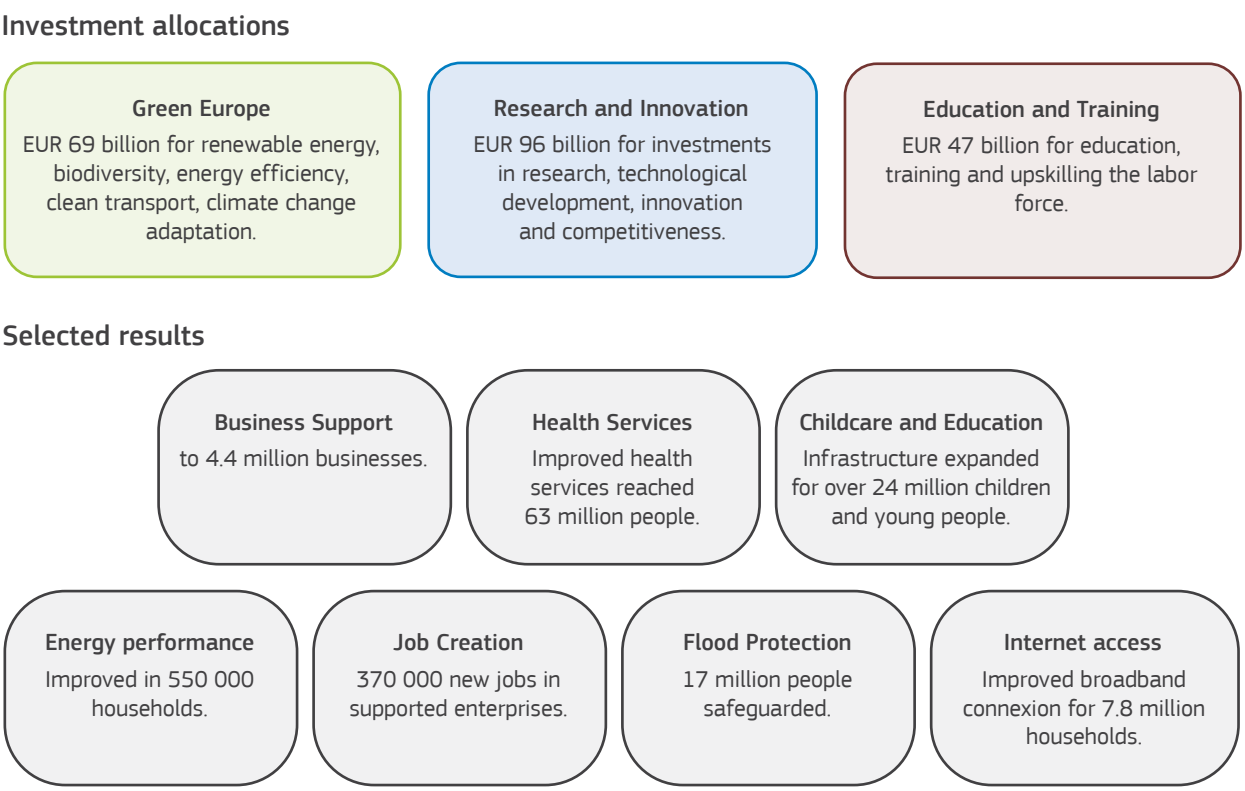
- above EU average and above Member State average
- above EU average and below or equal to Meber State average
- below EU average and above Member State average
- below EU average and below or equal to Meber State average
- no data
- capital regions

Source: DG REGIO based on JRC-ARDECO data.

0 500 km

Note: The map on the right shows regional GDP per capita growth since 2001. All the regions in green (light and dark) experienced growth above EU average, whereas the growth of regions in yellow and orange was below EU average. The shade of the colour (light and dark green, and yellow and orange) shows regional growth vis-à-vis the national average.

Figure 1 Achievements of 2014–2020 Cohesion Policy programmes



Cohesion Policy has played a key role in supporting public investment. For example, Cohesion Policy represents almost 13 % of total government investment[3] in the EU as a whole, and 51 % in less developed Member States[4]. These investments have strengthened the European growth model, spurring economic growth in line with key policy priorities from the twin transition, to innovation, business and skills, from childcare, education and health to protection from natural disasters.

Beyond its direct social and economic impacts, Cohesion Policy has also contributed to improving administrative capacity and the quality of governance in Member States. Cohesion Policy investments come with pre-requisites, called 'enabling conditions'. These support key EU priorities, as well as the quality and sustainability of investments. The horizontal impact of enabling conditions are complementary with implementation of country-specific reforms promoted through the European Semester.

In addition, the fundamental principles ruling the programming and implementation of Cohesion Policy, through evaluation, partnership, transparency or audit and control requirements, have positive spillover effects on national practices.

3 Gross fixed capital formation of general government.

4 Member States with Gross National Income per capita below 90 % of the EU average.

Cohesion Policy strengthens the Single Market and levels the playing field

Convergence enables every region to fully participate in the Single Market. Removing barriers to the free movement of goods, services, capital, and workers has promoted a better allocation of resources across the EU and fostered the exchange of ideas and innovation. The growing diversity of EU regions has provided the Union and its firms with an enlarged pool of competitive advantages. By investing in infrastructure, innovation, education, and other key areas, Cohesion Policy helps all regions to participate and reap the benefits of economies of scale created by the Single Market and by international competition. A larger, well-developed, innovative, connected Single Market is crucial for the development of strong intra-EU value chains that are important for the EU's open strategic autonomy.

Cohesion Policy has significant and positive effects for Europe as a whole. Macroeconomic modelling[5] suggests that the 2014–2020 and 2021–2027 programmes, taken together, could increase EU GDP by 0.9 % by the end of 2030. This impact is long-lasting: remaining at 0.6 % by 2043. The impact is, of course, much stronger in Cohesion countries[6] where support is concentrated: Croatia's GDP will be up to 8 % higher in 2030, 6 % higher in Poland and Slovakia and 5 % higher in Lithuania than in the absence of Cohesion support. More developed regions, which receive lower per capita support from Cohesion Policy, also benefit from strong positive spillovers generated by programmes elsewhere. Developed regions gain partners in their supply chains, and markets for their exports and investments.

The positive return on investment of Cohesion Policy to the Single Market can be illustrated by the multiplier. Each euro invested in the 2014–2020 and 2021–2027 programmes will have generated 1.3 euros of additional GDP in the Union by 2030 and will almost triple in 2043, which is equivalent to an annual rate of return of around 4 %. Modelling also estimates around 1.3 million additional jobs for the EU as a whole by 2027, with a large share in the sectors linked to the green and digital transitions.

The targeted nature of Cohesion Policy support largely mitigates the risk of crowding out private investment. Cohesion Policy mostly focusses on areas where private investment is insufficient, either because of the existence of market failures (e.g. access to finance for start-ups, micro- and small enterprises) or in order to support public goods (e.g. education, childcare). Quantitative analyses underpinning the 9th Cohesion Report[7] consistently show positive net effects – confirming that the policy encourages significant private investment over and beyond the lifetime of programmes. The increased use of financial instruments can help lever in further private investment.

5 The impact of the 2014–2020 and 2021–2027 programmes was assessed using RHOMOLO, a European Commission spatial computable general equilibrium model. See Chapter 9 of the 9th Cohesion Report for a more detailed analysis.

6 Czechia, Poland, Slovakia, Croatia, Bulgaria, Romania, Estonia, Greece, Cyprus, Latvia, Lithuania, Hungary, Malta and Slovenia.

7 See Chapter 9 of the 9th Cohesion Report.

Future enlargements will require the integration in the Single Market of new Member States. The EU's Cohesion Policy objectives remain valid in a wider Union, both in current and future Member States[8]. However, socio-economic convergence with the EU should already start in the pre-accession phase. The New Ukraine Facility, the Growth Plan for the Western Balkans and the Reform and Growth Facility for the Western Balkans have the threefold objective of increased access to the EU Single Market, increased financial assistance and accelerated reform implementation.

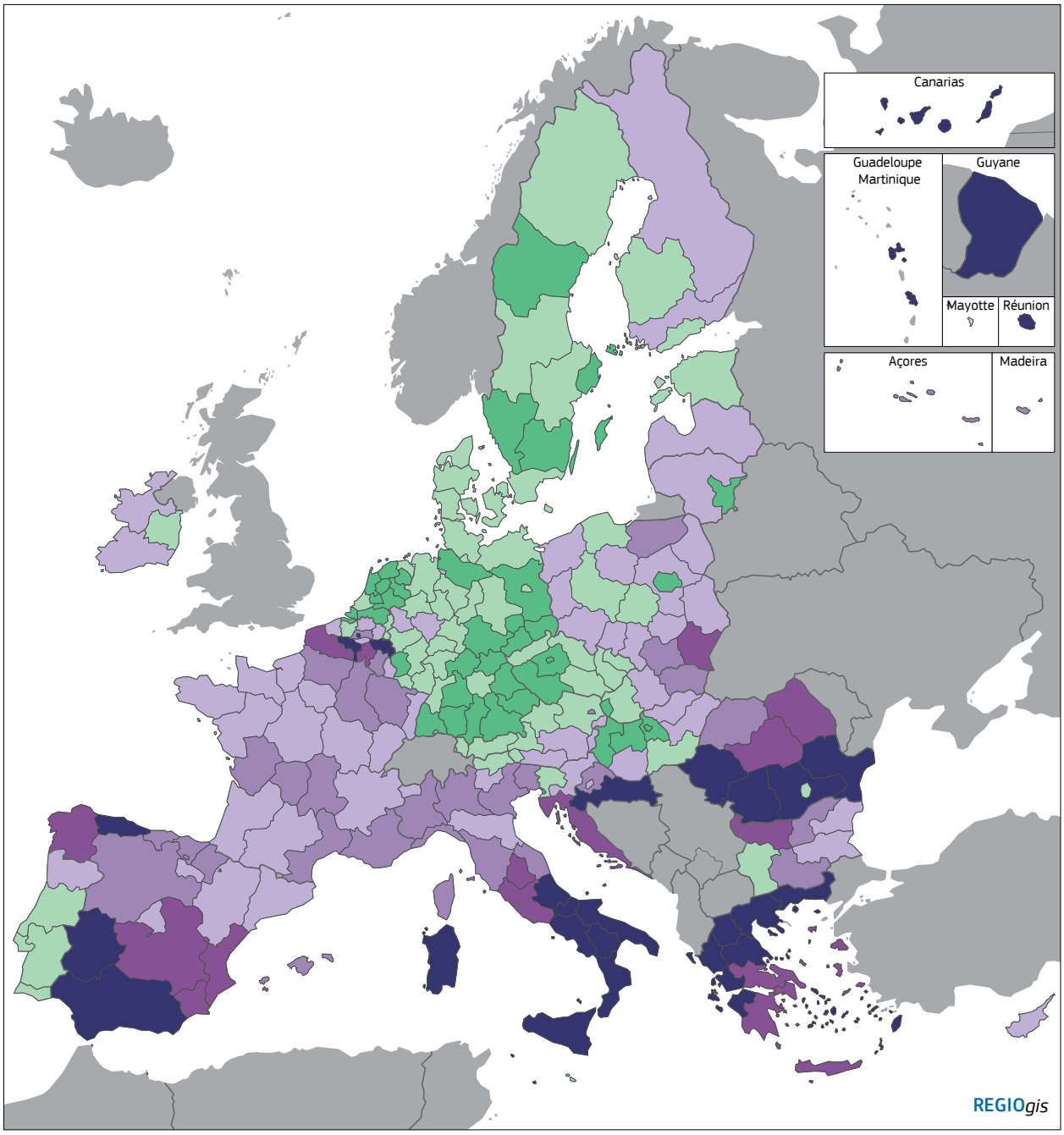
Cohesion Policy has helped mitigate the asymmetric impacts of recent crises

The series of unprecedented crises has had an uneven impact across the Union. From the COVID-19 pandemic to Russia's war of aggression against Ukraine, different regions and social groups have been affected very differently. For the pandemic, the effects were more severe in regions dependent on tourism, cultural industries or other labour-intensive services, as well as industries deeply integrated in global value chains. Regarding Russia's war of aggression against Ukraine, the negative impacts were particularly felt in the border regions, as well as in regions where industry is vulnerable to high energy prices, or supply chain disruptions. In general, for all the crises, peripheral and less developed regions were more exposed. And asymmetric impacts were magnified by the uneven institutional capacity at the various levels required to respond to challenges.

The EU has reacted promptly to mitigate the impacts of the crises and pave the way for a robust recovery. Cohesion Policy has been quick in mobilising support to vulnerable regions, reducing the risk of further widening disparities. Actions included the injection of new liquidity to support investment, flexibility to support the continuation of projects, job retention schemes, and further targeted flexibilities in programming and implementation. Notably through the Coronavirus Response Investment Initiative (CRII) packages. In addition, under NextGenerationEU, comprehensive support has been channelled to Member States to foster their economic recovery process and long-term resilience, through the implementation of reforms and investments under the Recovery and Resilience Facility (RRF), as well as the Recovery Assistance for Cohesion and the Territories of Europe (REACT-EU). Together with REPowerEU, launched in the wake of Russia's war of aggression against Ukraine, the flexibilities provided under Cohesion Policy with the Supporting Affordable Energy (SAFE) initiative, have been instrumental to support the most vulnerable, in particular, people at risk of energy poverty and SMEs vulnerable to high energy prices. In parallel, the Cohesion Actions for Refugees in Europe (CARE) provided financial support to local authorities and NGOs welcoming people fleeing Ukraine, as a result of Russia's war of aggression.

Together with the Support to mitigate Unemployment Risks in an Emergency (SURE) and NextGenerationEU, notably the RRF, Cohesion Policy interventions contributed to a **fast economic recovery in 2021 and 2022, especially for less developed regions**, and to low unemployment rates. Whereas the

8 COM(2024) 146 final, 20.3.2024.



Map 4 Employment rate (20–64), 2022

% of population aged 20–64

- < 66
- 66 – 70
- 70 – 74
- 74 – 78
- 78 – 82
- >= 82
- no data

EU-27 = 74.6
The employment rate target is 78 % by 2030.
Source: Eurostat (lfsd_r_lfe2emprt).

0 500 km

COVID-19 crisis had triggered a contraction of GDP of 5.7 %, income had virtually returned to the 2019 level in two years in all categories of regions. In contrast, following the 2008 crisis, the downturn was less sharp (4.3 % of GDP), but two years later, in 2010, less developed regions had contracted even further and transition and more developed regions had barely started to recover. Supported by the mitigation measures mentioned above and national support actions, EU labour markets have shown remarkable resilience. It took just one year to return to, or surpass, 2019 employment levels in most EU regions. In contrast, during the 2008 financial crisis, the contraction in employment lasted until 2013, returning to pre-crisis levels by 2016 and only by 2019 in Southern EU countries.

The recent crises have, nonetheless, highlighted the vulnerability of many regions – and the need for more resilience in their economies and labour markets. To this end, the promotion of future-proof European value chains should be encouraged – notably through the uptake and upscaling of critical and emerging technologies in strategic sectors, as supported through the Strategic Technologies for Europe Platform (STEP)[9].

Social convergence has progressed, although many challenges remain

Social convergence is driven forward by the strong commitment taken by EU institutions, Member States and social partners during the Porto Social Summit to achieve the targets of the European Pillar of Social Rights:

- At least 78 % of people aged 20 to 64 should be in employment,
- At least 60 % of all adults should participate in training every year,
- The number of people at risk of poverty or social exclusion should be reduced by at least 15 million, including at least 5 million children.

EU Cohesion Policy has played a pivotal role in the overall improvement of employment and social indicators in the EU in the last decade. Eastern EU countries have made significant progress in social inclusion and reducing poverty, converging to the EU average (poverty rates of 21 %). However, Southern EU countries have stagnated since 2019 (at around 25 %). The gap between more developed and less developed regions has also narrowed from around 14 pp in 2016 to 9 pp in 2022.

Yet, positive trends in social inclusion and poverty reduction could be jeopardised by inflation and high energy prices, and uneven progress across population groups. Rural areas in the East and South of the EU are the most directly affected by energy poverty. However, pockets of poverty can be found in every region – including developed urban areas. Some population groups, such as marginalised communities, live in persistent poverty, marked by housing segregation, insufficient education and employment opportunities, and limited access to basic services.

9 Regulation 2024/795 establishing the Strategic Technologies for Europe Platform (STEP).

Disparities in employment between regions have narrowed, with the active support of Cohesion Policy. Although employment rates remain weaker in less developed regions at 68 % in 2022, compared to 78 % in more developed re8 gions, the gap has narrowed by 5 pp since 2013.

Unemployment rates have also converged. The improvement is impressive in less developed regions, where the rate has almost halved, from 15.8 % in 2013 to 8 % in 2022, while the reduction in more developed regions from 8.3 % to 5 % also shows significant progress.

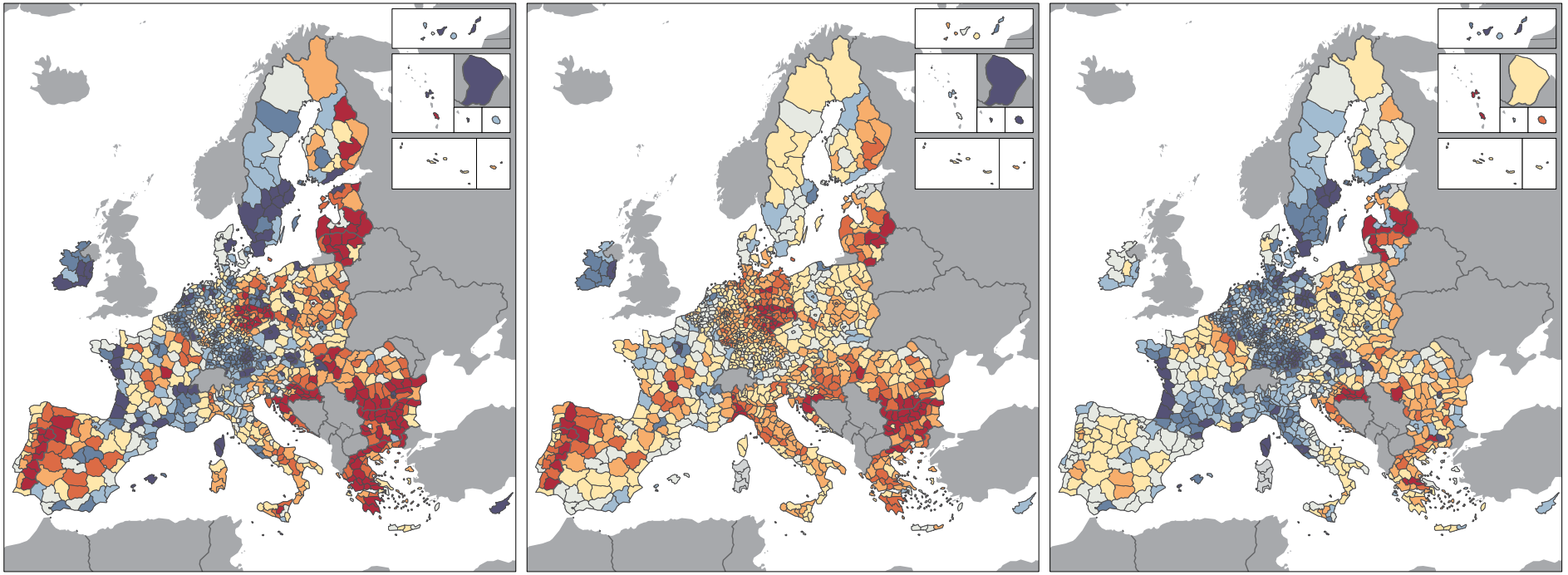
However, despite progress in recent years, youth unemployment and the rate of young people not in education, employment or training (NEETs rate) in the EU remain a significant challenge, as are the persistent lower employment rates of persons with disabilities. The decline in youth unemployment and NEET observed since 2014 resumed in 2021 and 2022 after a temporary increase in 2020 during the COVID-19 pandemic. The unemployment rate of people aged 15 to 24 has sharply dropped by more than 10 pp since 2013, to 14 % in 2022. Nonetheless, youth unemployment is more than double of overall unemployment, which has dropped to 6.2 %. The NEETs rate has declined since 2013 by more than 4 pp, to 12 % in 2022. Further progress is needed to reach the European Pillar of Social Rights target of 9 %.

Disparities in youth unemployment between less developed regions and other regions decreased between 2013 and 2022, thanks to higher reductions in less developed regions and in Southern EU countries. They nonetheless remain high, with the youth unemployment rate at 22 % in less developed rey gions being almost twice that of more developed regions. The disparities in the NEETs rate between less developed regions and other regions also declined between 2013 and 2022. Still, the NEETs rate in less developed regions remains 16 %, that is nearly double that in more developed regions.

Increasingly, low unemployment and high labour demand put pressure on labour markets. Labour and skill shortages are on the rise and have become a major challenge in a variety of occupations and sectors across all skills levels, and particularly in some regions. These shortages are exacerbated by the concomitant challenges of demand for specific skills to respond to the digital and green transitions, structural industrial transitions and the sharp reduction of the working age population, which is expected to shrink by 50 million by 2050. In this regard, inclusive labour market participation of underrepresented groups plays a key role in achieving convergence and addressing labour shortages in the EU, together with strengthening lifelong learning and education policies, as well as with labour market reforms. Women's participation in the workforce continues to rise, thanks to high educational attainment, improved access to childcare services and more flexible work arrangements, and third country nationals' employment rate rebounded after a drop in 2020.

Despite a visible decline in disparities in labour market performance, some regions are underperforming – the Central-Northern regions of the EU have stronger labour markets (and broadly speaking a better social situation) than Southern and South-Eastern regions. Progress in closing the gender gap in

Map 5 Total population change, natural growth and net migration by NUTS 3, 2010–2021



Population change | **Natural growth** | **Net migration**

Average annual change per 1 000 residents

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

EU-27 = 1.5

EU-27 = -0.7

EU-27 = 2.2

0 1 000 km

Source: DG REGIO calculations based on Eurostat (demo_r_gind3) and Joint Research Centre (JRC) (ARDECO) data.

labour market participation has slowed or stagnated in recent years: for the EU as a whole, the gender gap still stands at 11 pp, which remains a contributing factor to labour market disparities.

There has been a general increase in educational attainment. The share of early school leavers has decreased across the EU, particularly in the less developed regions. The positive trend in tertiary educational attainment has continued across all regions, with the overall rate reaching 34 % in 2022. In contrast, adult participation in education and training decreased when COVID-19 hit, but bounced back especially in less developed regions and Eastern EU Member States.

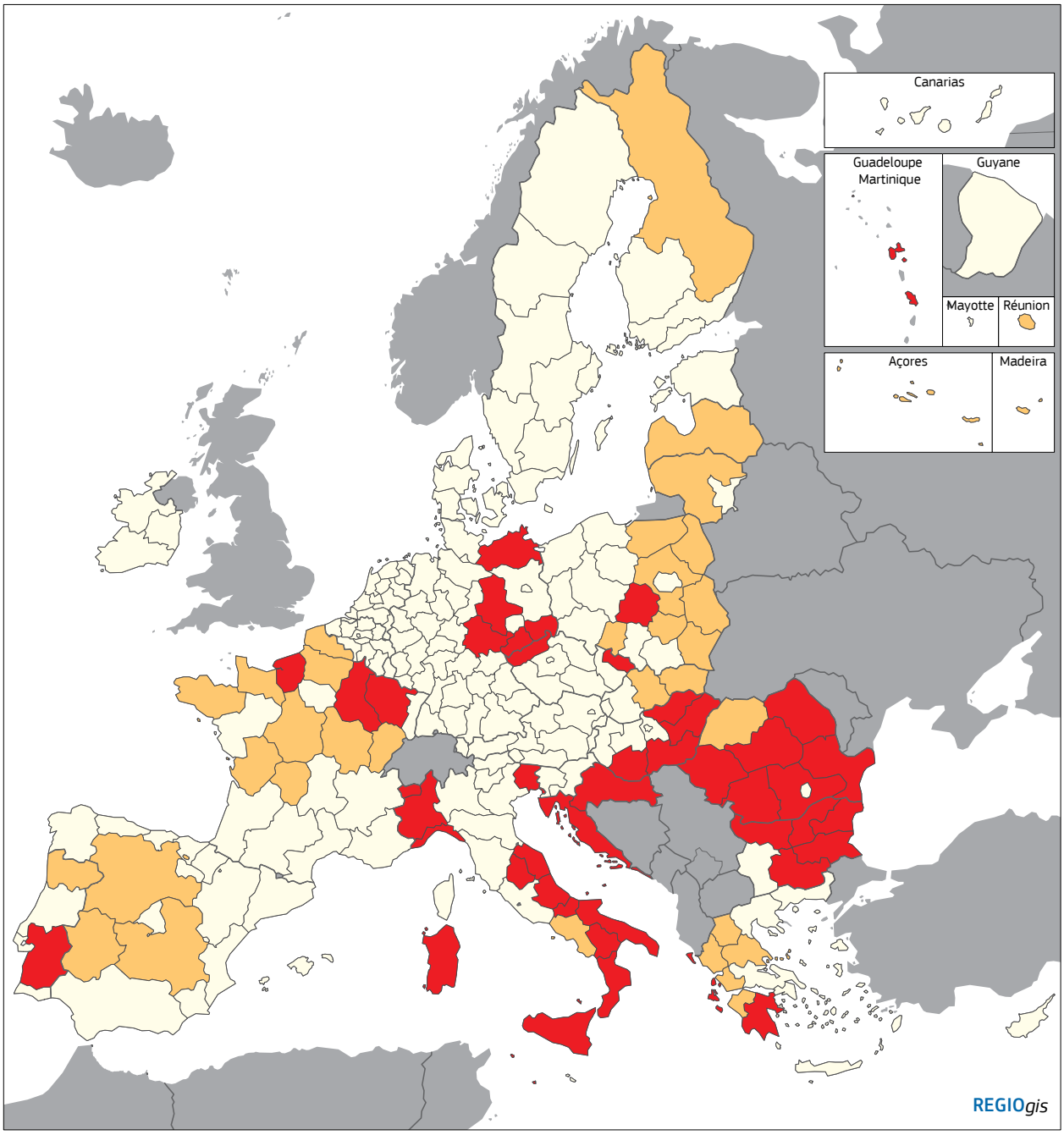
Skills levels and innovation play a pivotal role in driving long-term productivity growth and competitiveness. More skilled and creative workers are key for innovation and the creation of new and competitive products and services. In 2022 there was a strong increase in adult participation in education and training, surpassing the pre-Covid pace. However, substantial progress is needed to attain the target of the European Pillar of Social Rights of 60 % of adults participating in education and training every year. Experience in some Member States with Individual Learning Accounts[10] show a clear path for progress.

Disparities in education and training persist, notably due to a strong concentration of tertiary graduates in cities (where most possibilities to acquire tertiary education are concentrated). These lead to imbalances, sometimes further increased by the outmigration of tertiary educated people from the regions where they had graduated. This 'brain drain' constitutes a serious challenge for the future sustainability of regional economies and social fabrics. These imbalances in the availability of talent across regions are due to insufficient quality job opportunities and other factors such as lower level of infrastructure endowment, access to childcare, education and training, health services and facilities and other services.

Demographic change is expected to further exacerbate labour shortages and increase pressure on public budgets. After decades of growth, the EU population has been declining since 2020, as net migration is no longer compensating for negative natural growth. At EU-27 level, natural population change and net migration are highest in urban regions, and lowest (and often negative) in rural ones. Moreover, remote regions experience overall negative net migration, linked to a lack of economic and employment opportunities, as well as lack of access to key services (including education, childcare and healthcare), which makes them less attractive and may cause people to move away.

The reduction of the working age population will require accelerated productivity gains to maintain living standards and increased employment rates, notably for people not yet active on the labour market. In this regard, regions are unevenly equipped. Regions combining a low share of highly skilled people and outward migration of the young and educated may fall into a talent development trap, limiting their capacity to build sustainable, competitive and

10 Individual learning accounts give people of working age a budget to spend on quality training to improve their skills and employability.



Map 6 Regions in a talent development trap and regions at risk of falling in a talent development trap

Category

- Shrinking working-age population and lagging level of tertiary education
- Net out-migration of people aged 15–39
- Other regions

A region is in a talent development trap if it has
(a) a shrinking working-age population,
(b) a below-average and stagnant level of tertiary education and/or
(c) net out-migration of people aged 15–39.

Source: DG REGIO based on Eurostat data (demo_r_d2jan, demo_r_magec, lfst_r_lfsd2pop).

0 500 km

knowledge-based economies. As detailed in the Communications 'Harnessing talent in EU regions'[11] and 'Demographic change in Europe: a toolbox for action'[12], a strategic policy mix combining reforms and investments is needed to revert or adapt to this reality.

Demographic change requires adaptation at the level of regions and cities. For example, the integration of demographic projections into spatial policy-making, adjusting the provision of public services, adapting public governance, increasing employment rates and fostering productivity drivers. Vocational education and training has a strong capacity to address labour shortages and deliver on the green and digital transitions and play a major role in smart specialisation strategies: helping retain and attract talent, generate absorptive capacity in the societies and economies in which they are located, and to help build sustainable (and more equitable) communities.

...and not all regions benefit from the same growth dynamics

Economic disparities remain large across the continent. More than one in four people in the EU (28 %) live in a region with GDP per capita below 75 % of the EU average. Most of them live in Eastern Member States, but also in Greece, Portugal, Spain, Southern Italy and outermost regions. Since 2001, real GDP per capita growth has been negative in several regions, notably in Greece and Italy, although it has recently been picking up.

Changes in subnational disparities show different patterns across Member States. In many Eastern Member States (such as Slovakia, Bulgaria and Romania), increases in disparities have been driven by very high growth rates in the most developed regions (typically the capital city region). In France and Greece, internal disparities have increased because growth of GDP per capita in poorer regions was particularly low. In some other Member States, such as Portugal, the decrease in regional disparities is due to the relatively poor performance of some developed, previously dynamic regions.

In many Member States economic development is driven by the competitiveness of capital regions and major agglomerations. Coupled with a lack of catching up of other areas, this leads to internal divergence. This spatial polarisation can be a source of negative externalities (tensions on labour and housing markets, congestion, pollution) and the underutilisation of economic potential of the whole country. This can undermine Member States' competitiveness and in turn the sustainability of their growth pattern in the longer term.

Rural, mountainous, island, and sparsely populated areas continue to face specific challenges that hinder economic growth and development, stemming from lower physical and digital connectivity or limited education and training opportunities. Average income in rural areas is 87.5 % of average income in urban areas[13]. However, over the period 2001–2021, non-urban regions (on average) experienced a significantly higher GDP per capita growth than urban

11 COM(2023) 32 final, 17.1.2023.

12 COM(2023) 577 final, 11.10.2023.

13 Urban-rural Europe - income and living conditions - Statistics Explained (europa.eu)

regions: 1.5 % as opposed to 0.8 %. The trend is nonetheless different in Eastern Member States, where the growth is more prominently driven by large agglomerations and capital cities. The public report on 'The long-term vision for the EU's rural areas: key achievements and ways forward' sets the scene for a debate on the future of rural areas.

These territorial disparities compound a situation in which a number of regions face economic stagnation or decline, with the risk of falling into a development trap (i.e. they fall behind EU and national average growth rates, as well as their own past performance). These include some larger former industrial poles in more developed regions. Policymakers in trapped regions often struggle to find solutions to regain the economic dynamism of the past. This situation fuels frustration, which is increasingly turning into political discontent.

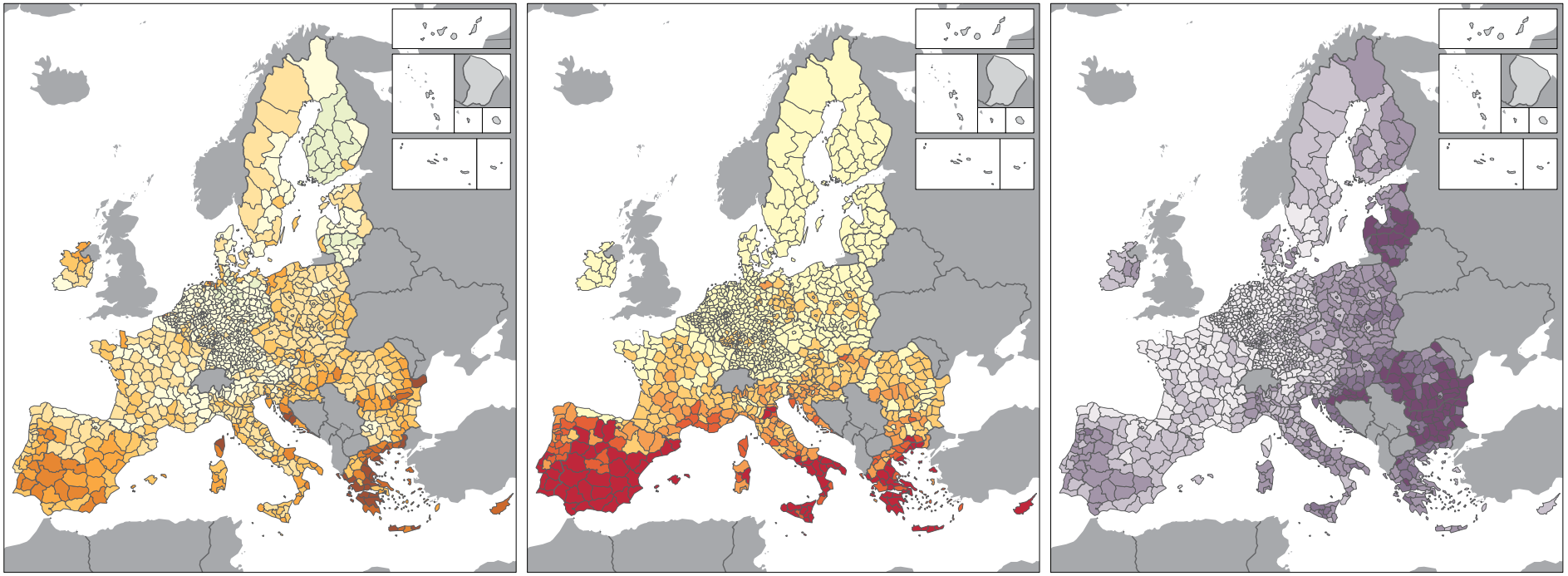
The root causes of development traps differ between regions. This requires an individual diagnosis, and may involve various interlinked factors, such as insufficient specialisation, weak public governance, an inefficient innovation ecosystem, a gap in services or skills mismatches. These factors deserve dedicated analysis for each region and subsequent tailored policy responses, through a targeted set of investments and reforms.

3. If left unaddressed, structural and emerging challenges could widen territorial disparities

The green and digital transitions bring new opportunities and are necessary to maintain the competitiveness of the EU in the future, to ensure a good quality of life for citizens. But they also require structural changes, which need to be accompanied by supporting policies – particularly for people, companies and regions that are most vulnerable and exposed, with the risk otherwise of increasing regional and social disparities. The EU's climate policy seeks to ensure fairness, notably with green house gas reduction targets being more stringent for wealthier Member States, whereas those with lower GDP per capita receive a larger share of the auctioning revenues from the Emissions Trading System. In addition to cross-cutting EU funds, such as Cohesion Policy and the RRF, a set of dedicated funding instruments has also been deployed to mitigate the social and economic impacts of climate transition, notably through the Just Transition Mechanism and the forthcoming Social Climate Fund.

Climate change risks increasing regional inequalities. The frequency and severity of weather-related disasters such as extreme temperatures, storms, inland and coastal flooding, droughts and wildfires, are increasing. For example, the floods in the regions on the Belgian-German border in 2021 have inflicted direct damage estimated at EUR 34.5 billion. Heat-related mortality has increased, especially in relation to an ageing population. These events and their impact on people and the economy, as well as their capacity to cope with them, are unevenly distributed across Europe. Coastal, Mediterranean and Eastern regions, which are already poorer than the EU average, are more vulnerable and disproportionally affected, and face estimated annual economic losses of at least 1 % of GDP and greater human exposure to climate-related harms.

Map 7 The impact of climate change under a 2°C global warming scenario in NUTS 3 regions, 2050



Additional economic costs

% of GDP

- <= 0.0
- 0.0 – 0.5
- 0.5 – 1.0
- 1.0 – 1.5
- 1.5 – 2.0
- 2.0 – 2.5
- 2.5 – 3.0
- > 3.0
- no data

Additional economic costs of a 2°C global warming scenario by 2050 compared with the present-day baseline.
Source: JRC.

Human exposure to harmful climate impacts

% of population

- <= 10
- 10 – 25
- 25 – 50
- 50 – 75
- > 75
- no data

Share of the population exposed to wind storms, coastal flooding, river flooding, water shortage and wildfire danger.
Source: JRC.

0 1 000 km

Mortality from less-than-optimal temperatures

Deaths per million inhabitants

- <= 1 000
- 1 000 – 1 500
- 1 500 – 2 000
- 2 000 – 2 500
- > 2 500
- no data

Mortality from heat and cold under a 2°C global warming scenario by 2050.
Source: JRC.

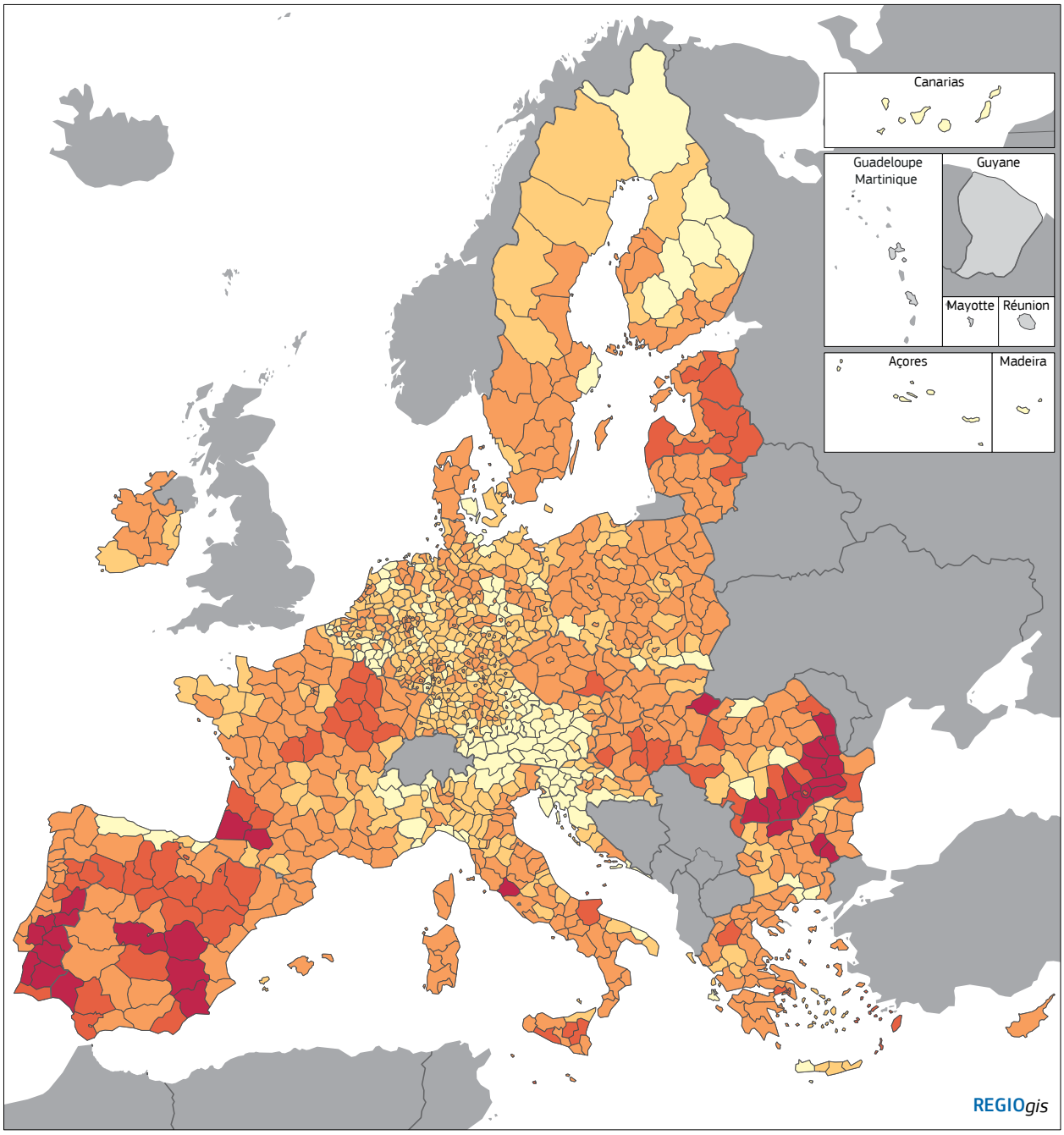
Air pollution in the EU is still characterised by socio-economic differences. Air pollution is generally higher in cities than in rural areas, due notably to the impact of traffic. Although air quality improved in both the richest and poorest regions of the EU over the period 2007–2020, inequalities persist as the concentration of fine inhalable particles is consistently around a third higher in the poorest regions more dependent on solid fuels for heating.

Mitigating climate change and improving the quality of the environment demands a rapid reduction of emissions of greenhouse gases and air pollutants in all sectors, including through the circular economy and restoration of ecosystems. This requires action at all levels of government, as these challenges tend to have strong territorial and social impacts. Natural, geographical and socio-economic differences between regions also lead to different capacities to reduce emissions.

The transition to a climate-neutral economy needs to be accomplished in a just and fair manner. The uneven capacity of regions to reap the benefits of this transition may exacerbate territorial disparities. The economic shift associated with this transition tends to benefit the regions that are more able to attract investment and mobilise skilled labour. At the same time, many rural and less developed regions have a high potential to produce renewable energy from wind and solar or for carbon capture and storage in natural ecosystems. The development of this potential would serve not only the regions themselves but energy security across Europe as a whole.

The climate transition also brings both opportunities and challenges for employment and for households. Certain sectors that are heavily dependent on fossil fuels are likely to be affected by job losses or restructuring. At the same time, climate change represents a challenge for traditional sectors such as agriculture, tourism, industry or even energy production, especially in areas where water scarcity becomes the norm. Workers in sectors where the impact of climate change is stronger – especially those with specific skills or limited opportunities to move into other industries – may struggle to find new jobs, leading to unemployment and pressures on household incomes. In the case of sectors that are dominant in the regional and local economies, the impacts will be of a broader scale, requiring the economies in these regions to adapt to stay competitive. In addition, the implementation of climate-friendly technologies and measures require additional investments, creating difficulties for low-income households.

A comprehensive approach is needed to foster jobs and opportunities across regions, deal with the asymmetric costs of climate change and implement the climate and green transition, including accelerating the mitigation of greenhouse gases and air pollutants emissions, the necessary investments in climate resilience, improving the management of natural resources and nature restoration, creating healthy ecosystems and nature-based solutions, supporting climate change adaptation and disaster risk management, investing in water efficiency and wastewater treatment (where necessary), in the circular economy, in energy efficiency of dwellings and shifting to climate-friendly transport modes.



Map 8 Untapped potential from solar, wind and hydro power by NUTS 3 region

MWh/km²/year

- <= 500
- 500 – 1000
- 1000 – 5000
- 5000 – 10000
- > 10000
- no data

Potential annual production per unit area.
Source: JRC.

0 500 km

The digital transition provides opportunities for all regions in terms of increased productivity of businesses, innovation, resilience and access to services and an opportunity especially for rural and more remote territories. However, the digital transition may also entail risks for cohesion, due to the uneven capacity of territories and people to adopt and make use of digital technologies – including for those in disadvantaged situations and marginalised communities. In the absence of adequate public policies, digital skills gaps may widen, potentially deepening social and regional divides within Europe. Moreover, the lack of investments in digital connectivity infrastructure and the deployment of digital technologies can hamper the long-term growth and competitiveness of affected regions. This can have a negative impact on the socio-economic attractiveness of such regions, making it more difficult to retain skilled workforce and innovative businesses.

Continuous support for regions, especially the least prepared ones, and in particular in rural and remote areas, is needed to ensure that they can reap the benefits of the digital transformation. Such support is in particular needed as regards investments in the rollout of advanced digital network infrastructures and services, the acquisition of basic and advanced digital skills as well as the uptake of digital technologies by businesses, citizens and public administrations.

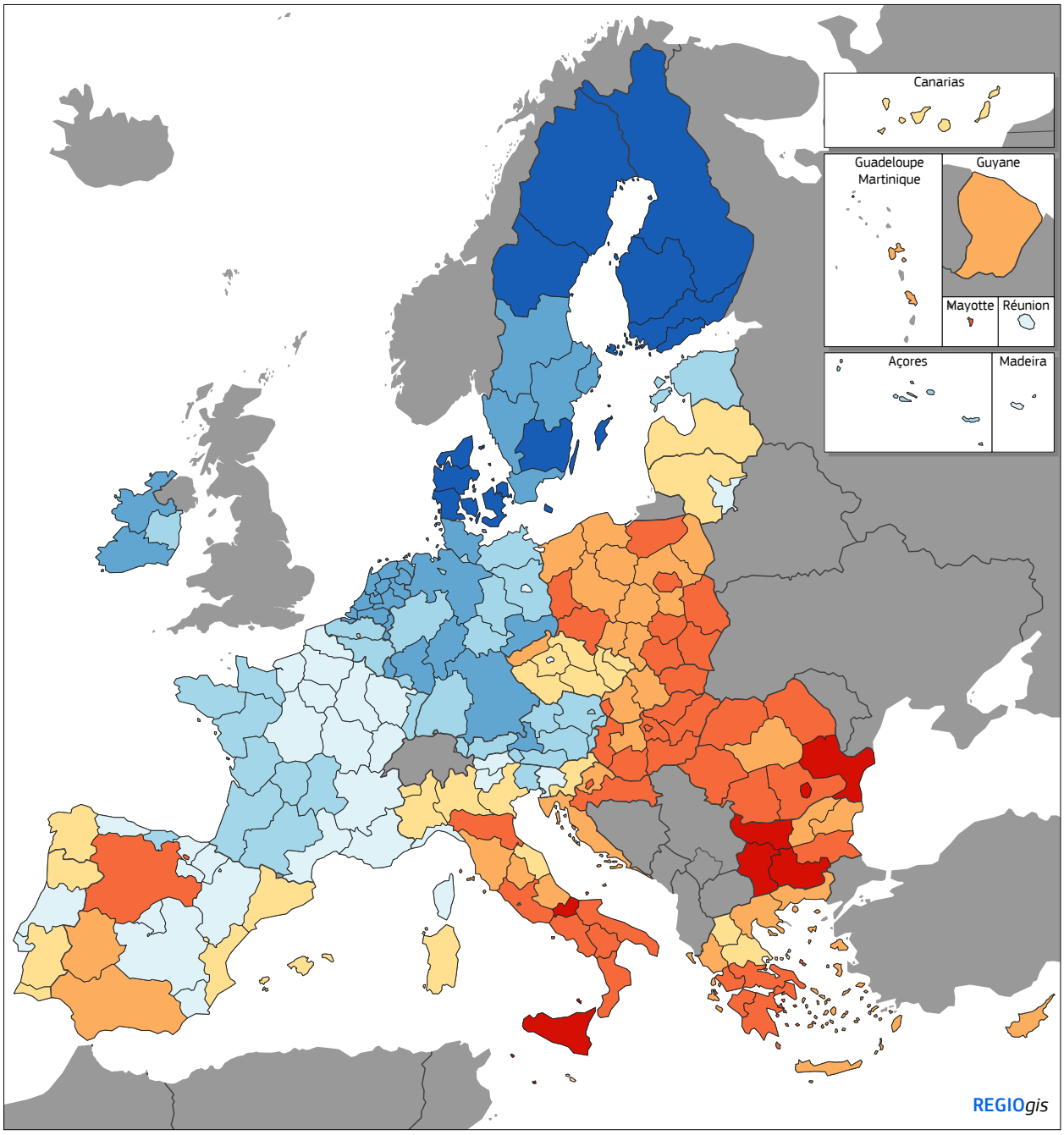
The new geopolitical landscape may also severely impact numerous EU regions. Russia's war of aggression against Ukraine led to some regions experiencing a sharp reduction of investment, trade flows and economic activities (including tourism), as well as new economic barriers and job losses. The war also resulted in an unprecedented number of people needing shelter in the EU. With a combination of legal, operational and financial support, the EU has helped ensure that both those fleeing to the EU and the Member States receiving them are well supported. However, some regions have seen a particularly high number of arrivals, putting pressure on local integration systems. Regions bordering Russia and Belarus are also facing security challenges and the threat or use of instrumentalisation of migration.

Continuous support is also needed to some Southern peripheral regions and outermost regions exposed to particular migratory pressure at the external border or experiencing an increase in irregular arrivals.

Rising tensions and greater international competition call for more diversified value chains. In the context of an open strategic autonomy, the diversity of EU regions and their existing and potential competitive advantages are an asset. Regional diversity can strengthen the Single Market and value chains across Europe. But to achieve this, regions must be equipped with the right physical, human and innovation resources – and be able to unleash their potential and added value.

Governance matters

Deficiencies in public governance and administrative capacity hamper the development potential and remain a structural challenge in several regions



Map 9 European Quality of Government Index, 2024

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

<= -1.5	0.0 – 0.5	no data
-1.5 – -1.0	0.5 – 1.0	
-1.0 – -0.5	1.0 – 1.5	
-0.5 – 0.0	> 1.5	

EU = 0
Note: Scores are expressed in z-scores, and the EU average is therefore equal to 0. Positive (negative) values reflect a quality of government that is higher (lower) than the EU average.
All countries at the NUTS 2 level except Belgium and Germany, which are at the NUTS 1 level.
Source: The Quality of Government Institute, University of Gothenburg.

0 500 km

and Member States. The quality of institutions – including respect for the rule of law, and administrative capacity – is crucial for the return on public and private investment. There is a strong correlation between the quality of governance and the impact of Cohesion Policy investments. This calls for strengthening administrative capacity in European regions, including in view of future EU enlargements, since improving the quality of governance at national, regional and local level can increase the effectiveness of national and European policies and investments.

The development potential of many regions may also be affected by the lack of diversification of funding sources at regional and local levels, when relying largely on transfers from national budgets. Subnational entities are in charge, on average, of more than half of public investments. This proportion is lower, yet increasing, in less developed Member States. This type of dependence undermines the resilience of the concerned countries to shocks. Higher and diversified financing capacity of regional and local authorities, notably the possibility to mobilise private investment, together with reinforcement of their institutional capacity and administrative competences, would therefore reinforce the sustainability of their development strategies.

4. Taking stock of Cohesion Policy achievements and drawing lessons for the future

As highlighted above, while Cohesion Policy has successfully contributed to convergence between Member States, the picture at sub-national level is more nuanced. Indeed, this national convergence process is sometimes overshadowed by increasing sub-national disparities, notably between large metropolitan areas and other regions, as well as by regions lagging behind, often caught in a 'development trap'.

The 2021–2027 programmes started with some delay because of the impact of the pandemic and, in some Member States, due to other factors such as the need to prepare Recovery and Resilience Plans at the same time. Managing authorities in Member States and regions had to deal in parallel with different governance systems and timeframes. Less developed Member States and regions, which most need Cohesion Policy investments, often encounter design and implementation difficulties – and have more limited administrative resources. Despite the measures to simplify Cohesion Policy introduced through the 202–2027 legislative framework and the support to administrative capacity provided over the last decades, further simplification of the policy is necessary.

To strengthen its effectiveness in delivering its Treaty objectives, notably in the light of challenges, **there is a need to reflect on how the design of Cohesion Policy could be further improved**.

Delivering on the Treaty objective: reducing disparities in economic development

Cohesion Policy has constantly evolved over past periods, to adapt to new circumstances and to support EU priorities. This has involved changes to the investments supported, geographical coverage, delivery mode, the use of conditionalities and the link with the European Semester process. At the same time, the fundamental values and principles of the policy have been maintained and even strengthened over time: a long-term framework for programming, partnership with stakeholders and civil society, multilevel governance, evaluation and data collection, and most of all, the place-based approach – where support is tailored to regional specific needs and opportunities.

In line with its Treaty objectives, Cohesion Policy resources have been concentrated on the EU's less developed regions and Member States: 70 % of both the European Regional Development Fund and the European Social Fund Plus are allocated to these regions under the 2021–2027 programmes. The Cohesion Fund is entirely allocated to Member States with GNI per capita below 90 % of the EU average. Although all regions receive funding from Cohesion Policy, the aid intensity in 2014–2020 is higher in the less developed regions, with around EUR 297 being allocated per inhabitant and per year on average, against EUR 117 for the average EU.

While maintaining the main focus on less developed regions, attention should also be paid to development dynamics and long-term trends, tackling problems before they become ingrained and helping regions caught (or at risk of being caught) in development traps. In short, taking a more pro-active approach to delivering on the Treaty objective of promoting harmonious development.

Different regions have different starting points – and different development paths

Regions have different development starting points, needs, and capacities. They are also unevenly equipped to cope with emerging challenges, given their different administrative and financial capacities. **They will therefore take different development paths to manage ongoing and future transformations.**

The EU, through Cohesion Policy (but not only), should channel targeted, place-based support focusing on the specific needs of each region, consistent with EU priorities and with due attention to the challenges, frameworks, and policies in each Member State.

Regional development programmes have long been the mainstay of Cohesion Policy, but the Just Transition Fund has illustrated how support can be further tailored to specific territories' development needs, with a view to addressing pre-identified climate transition challenges. Similarly, smart specialisation strategies have proven to be helpful in strengthening regional innovation ecosystems: based on local capacities and assets, relying on a network of local and regional stakeholders, and addressing the innovation divide.

The green and digital transitions, the demographic transformation, changing global economic trends and climate change will affect all regional economies. But the scale and nature of these challenges will differ between regions – as well as their ability to face them.

Therefore, **a thorough reflection is needed on how to best further tailor the policy to the different economic profiles and geographical features of regions to strategically target investments.** There is a growing need to reflect better multiple development challenges, reform needs and differing social and employment circumstances in order to facilitate more efficient programming of EU funds in outermost, sparsely populated, islands, mountainous, border regions, rural areas and areas affected by industrial transition and beyond.

Promoting more balanced territorial development

Sub-national economic development is often characterised by strong polarisation between capital regions and large metropolitan centres on the one hand, and regions with lower population density on the other. The uneven distribution of growth drivers leads more developed regions to perform better in terms of innovation and competitiveness, quality of public governance and administration, and education attainment. This can also mean that significant economic and quality job creation potential remains to be exploited in less developed rural and intermediate regions.

Metropolitan areas, cities and their surroundings play a central role in regional development. They concentrate human capital (including universities, vocational training centres and R&D centres) and ensure high connectivity and high quality services. Because of this, they naturally attract investment. But their attractiveness comes at a price: higher congestion, social challenges, and housing costs – which, coupled with higher wage costs, may undermine their competitiveness.

Small towns and medium-sized cities also play a pivotal role in territorial development, by fostering the growth of their surrounding areas. They are key in the provision of public and private services and offer employment and education opportunities to the surrounding areas.

Better cooperation across EU regions can also contribute to achieving more balanced territorial development. Cohesion Policy, especially through Interreg programmes, has helped to support interregional collaboration through cross-border and transnational cooperation, including through macro-regional strategies. These foster innovation, development, and better governance. There is nonetheless room for strengthening regional cooperation at different levels – notably in delivering common public goods across borders, given the added-value of supporting cross-border investments with the European budget.

Territorial imbalances could be mitigated by a more polycentric development model: building on small and medium-sized cities and promoting accessibility of public services in areas far from large urban centres. Regional cooperation could be strengthened by building the capacity of relevant authorities and stakeholders.

Partnership, multilevel governance and empowerment of stakeholders

People on the ground have more knowledge of the exact needs of their territory. As such they must be involved in decision and policy making. This inclusion and empowerment can also serve to counteract rising political discontent[14] and distrust of public authorities.

The 2021–2027 framework reinforced partnership and the involvement of regional and local actors, civil society, and social partners. Actions included the promotion of territorial delivery models, such as Community-led local development (CCLD) or integrated territorial investments. These combine funding from multiple sources to serve the implementation of a territorially based strategy, involving local partnership, bottom-up approaches and territorial governance. Further reflection is needed on how to best involve sub-national authorities and other relevant stakeholders, and enhance territorial multilevel governance mechanisms. The aim is to better respond to the needs of economic and social partners and citizens, in line with EU priorities. This enhanced role for local partners requires improving their administrative capacity – how best to do this should be part of the debate.

Promoting institutional convergence by addressing existing public governance and administrative capacity shortcomings

Good governance, strong institutions, respect for the rule of law, and strong administrative capacity are a precondition for effective and efficient design and implementation of any development strategy, and more generally for economic and social progress. Administrative and governance weaknesses impede some Member States and regions in reaping the full benefits of Cohesion Policy – notably due to their difficulties in preparing and implementing investments.

Weaknesses in governance and capacity are still widespread. Current support from Cohesion Policy, through technical assistance, mostly fills capacity gaps in fund management and delivery arrangements, including when they relate to combating fraud and corruption.

Other EU instruments have also contributed to reinforcing administrative capacity, mostly the Technical Support Instrument, which increasingly supports regional and local authorities. Reforms of public administrations supported by the RRF (for example in permitting procedures or public procurement) have benefited investments financed both by the RRF and Cohesion Policy.

A more ambitious and comprehensive approach is necessary to address weaknesses in the national and regional administrations, as well as among beneficiaries and partners. Such a strategic approach could combine tailored technical support with reform requirements in certain domains.

14 A. Rodriguez-Posé, L. Dijkstra and H. Poelman: The Geography of EU Discontent and the Regional Development Trap, Regional Policy Working Papers 03/2023.

Addressing administrative shortcomings would not only improve the effectiveness of Cohesion Policy, but also contribute to stimulate investments and exchanges within the Single Market, increase the attractiveness of the concerned regions and Member States and improve their capacity to implement the EU acquis.

Enhancing the effectiveness of Cohesion Policy investments and promoting in reforms

Investments are a necessary, but not sufficient, condition to ensure economic development. Some regions, despite receiving Cohesion Policy support for many years, still experience weak economic performance. Reforms are needed to remove obstacles to regional development – be it specific investment barriers, regulatory obstacles or measures to improve the functioning of the labour market and the business environment.

Cohesion Policy, under the 2021–2027 framework, has promoted stronger linkages between investments and reforms through enabling conditions, and alignment with the European Semester. By removing obstacles to regional growth and development, such linkages can have a positive impact on the Single Market.

Enabling conditions establish a uniform framework to increase the effectiveness of Cohesion Policy investments, ensuring for example the economic relevance and financial sustainability of transport investment planning or the coherence of water management with EU priorities and requirements. However, the application of these conditions, through a common set of requirements established in the regulatory framework, may limit their capacity to take account of Member States' specific difficulties, needs and challenges as they evolve over time.

A stronger coordination has also been put in place between the European Semester and Cohesion Policy investments. While the European Semester focuses on national reforms, the strengthened territorial and social dimension in the Semester since 2018 has increased its role in guiding Member States to harness the economic potential of their whole territory and reduce inequalities. Indeed, the investment-related country-specific recommendations steered the 2021–2027 Cohesion Policy programmes and the use of the Just Transition Fund. The 2024 recommendations will have a key role in the mid-term review and adjustments of programmes in 2025 with an enhanced focus on regional specificities and challenges.

In order to further stimulate regional growth and convergence, **there is a need to explore how the link between investments and reforms could be further strengthened to maximise the impact of Cohesion Policy.** This reflection should take into account the experience of other EU instruments – notably the RRF, which has introduced a stronger complementarity of investment policy and reforms in Member States. Reflections should cover the scope of the reforms needed, the role of the European Semester, and the coordination between European, and national and regional policies.

Better coordination and coherence with national policies

Promoting cohesion is not the responsibility of Cohesion Policy alone. Leveraging the economic potential of all EU regions, while reducing socio-economic inequalities, requires common effort – and should be a shared objective of investment policies, at EU and national levels. This has not always been sufficiently the case. Hence, there is need to further reflect on how EU and national action to address disparities and to promote the Treaty objective of economic, social and territorial cohesion should work together, reinforcing each other and tailoring support to different types of territory.

For instance, integrating, where relevant, the territorial dimension into policy design could reinforce greater coherence between regional-specific needs and horizontal (European and national) policies.

Making delivery more effective

Delays in programming and implementation of Cohesion Policy programmes (partially rooted in the backloading of financial implementation, coupled with administrative shortcomings in some Member States and regions) suggest that the delivery mode of the policy can be improved. This can be done notably by ensuring further simplification for administrations and beneficiaries.

The 2021–2027 framework has put forward important simplification measures – including a reduced list of policy objectives, a clearer intervention logic through indicators, lighter reporting, and single audit arrangements. It also extended possibilities to use alternative payment options beyond invoice-based costs, i.e. financing not linked to costs, or simplified costs options. This has paved the way for simpler implementation, with quicker payment possibilities. However, Member States have not yet made full use of these options.

The positive experiences that have been gained through the implementation of the ESF and ESF+, moving towards a performance-based delivery model, can help provide lessons for the future. It is important to assess whether this delivery model, with payments linked to the achievement of outputs (instead of the reimbursement of incurred costs), could bring a reduction of administrative burden for programme authorities and beneficiaries, accelerate financial implementation, and increase the result orientation of the policy.

The mid-term evaluation of the RRF[15] has also provided some important reflection to consider for the future design of EU funding instruments. The associated consultations show that there is broad support for performance-based funding instruments at EU level. Funds under the RRF are disbursed upon the achievement of milestones and targets, which represent concrete steps in the implementation of reforms and investments by Member States, thus rewarding progress along the way.

15 COM(2024) 82 final, 21.2.2024.

The mid-term evaluation also finds that combining reforms and investments in an integrated manner provides effective incentives to deliver on long-standing reform needs – and can lead to more coherent and efficient implementation. The recovery and resilience plans foster holistic policymaking by incentivising Member States to design a coherent set of reforms and investments, with clear deliverables, that address both EU policy priorities and country-specific challenges. At the same time, the evaluation shows that local and regional authorities, stakeholders, and social partners, have been pointing to their insufficient involvement, and recalls the importance of their effective involvement – not only in the design, but also in the implementation and monitoring of the measures that affect them. Finally, the evaluation also underlines potential areas for future simplification to ensure sufficient flexibility in the design and implementation of the plans, notably regarding their revision procedure, the formulation of milestones and targets as well as the current audit and control framework.

Any future change to Cohesion Policy or any new delivery model needs to be aligned with the Treaty objective of economic, social and territorial cohesion, and take into account the experience from Cohesion Policy programming and its regional and place-based approach, as well as lessons learned from the RRF. There are also practical issues which would have to be considered – for example, implications for the audit and control system.

Reaching long-term objectives – but with built-in flexibility, for unforeseen circumstances

Cohesion Policy programmes pursue long-term development objectives with an implementation period spanning over a decade.

The existing possibility to amend Cohesion Policy programmes already allows for flexible adjustment to take account of changing circumstances. This flexibility has increased over time. It has been used to great effect in response to economic crises and unexpected shocks, notably in the areas of emergency management, recovery and prevention. The legislative framework includes options for a swift reallocation of funds between and within programmes, the mid-term review exercise, and specific provisions for temporary derogations in response to exceptional or unusual circumstances.

While it was crucial for Cohesion Policy to contribute to the EU's response to the socio-economic fallout of the COVID-19 pandemic and of Russia's war of aggression against Ukraine, its main focus must remain on the achievement of long-term structural objectives. Economic resilience can only be achieved through long term investments, notably in the diversification of regional economies, building adaptability to technological and demographic change and upskilling the labour force.

5. Conclusion

The 9th Cohesion Report highlights significant achievements of Cohesion Policy in terms of fostering upwards economic and social convergence in the Union. Challenges remain especially at regional level, and these will be further impacted by structural transformations. Lessons learned from past implementation periods, and from the interplay with other instruments, underline the need for further improvement of the design of Cohesion Policy. A stronger and modernised policy is essential to fortify Europe's growth model, to build an inclusive Union, and to deliver on the Treaty objective of economic, social and territorial cohesion.

1

ECONOMIC COHESION

- There has been remarkable convergence in GDP per head in the EU following the 2004 enlargement. In central and eastern Europe as a whole, income per head increased from 45 % of the EU average in 1995 to nearly 80 % today. Nevertheless, large differences persist; there is ample room for further upward convergence.
- Across the EU, regional disparities narrowed until the financial crisis but then stagnated, mostly because of slower growth of less developed regions in central and eastern Europe and the divergence of some less developed and transition regions, especially in southern Europe.
- By 2021, around a third of EU regions – less developed, transition, and more developed regions alike – have yet to see a return to 2008 levels of GDP per head. These are primarily in Italy, Spain, Greece and France, but also in Germany, Finland and the Netherlands. The slowdown in the pace of convergence after the 2009 crisis was associated with a relatively large fall in productivity, investment and employment in many previously converging regions.
- Growth of GDP per head in the EU averaged 1 % a year over the period 2001–2021, but in many regions it stagnated or even declined. In many cases, stagnation came along with little or no increase in household income and persistent inequalities, fuelling political discontent and a decline in support for democratic values and the EU.
- On the positive side, several regions escaped stagnation, using their local strengths to move to more complex economic activities and become integrated into European and global value chains.
- The recovery from the COVID-19 pandemic has been faster than after the 2009 recession, partly because of swift EU policy action, with the rapid mobilisation of Cohesion Policy and the adoption of NextGenerationEU. More recently, escalating geopolitical tensions, with war erupting on the EU's doorstep, and the surge in energy, raw materials and food prices have exacted a heavy toll on many EU regions.
- Looking ahead, disparities between EU regions and current candidate countries are large but not unlike those between the EU-15 and accession countries in 2004, suggesting that there is a very large untapped potential for further upward convergence.

Chapter 1
Economic cohesion

1. Introduction

Reducing territorial disparities is a cornerstone of European integration, dating back to the Treaty of Rome, which sets the goal of 'reducing the differences existing between the various regions and the backwardness of the less-favoured regions'. Accordingly, Cohesion Policy is not only the most visible expression of EU solidarity but also a central pillar of its Single Market and growth model[1]. Removing barriers to the free movement of goods, services, capital and workers has promoted a better allocation of resources across the EU and fostered the exchange of ideas and innovation. However, market forces alone do not ensure that everyone benefits from economic integration. By investing in infrastructure, innovation, education and other key areas, Cohesion Policy helps less developed regions directly and all other regions indirectly to reap the benefits and economies of scale created by the Single Market.

This report comes 31 years after the introduction of the EU Single Market, 25 years after the launch of the euro and 20 years after the historic EU eastern enlargement of 2004. It shows the remarkable economic convergence that eastern regions and countries have achieved since then. GDP per head in central and eastern Europe (shortened to 'eastern Europe' in this report) increased from around 45 % of the EU's average in 1995 to 52 % at the moment of accession in 2004, to nearly 80 % in 2021. This is an extraordinary achievement of European integration and Cohesion Policy, which has invested nearly EUR 1 trillion to support balanced economic development in the EU since 2000.

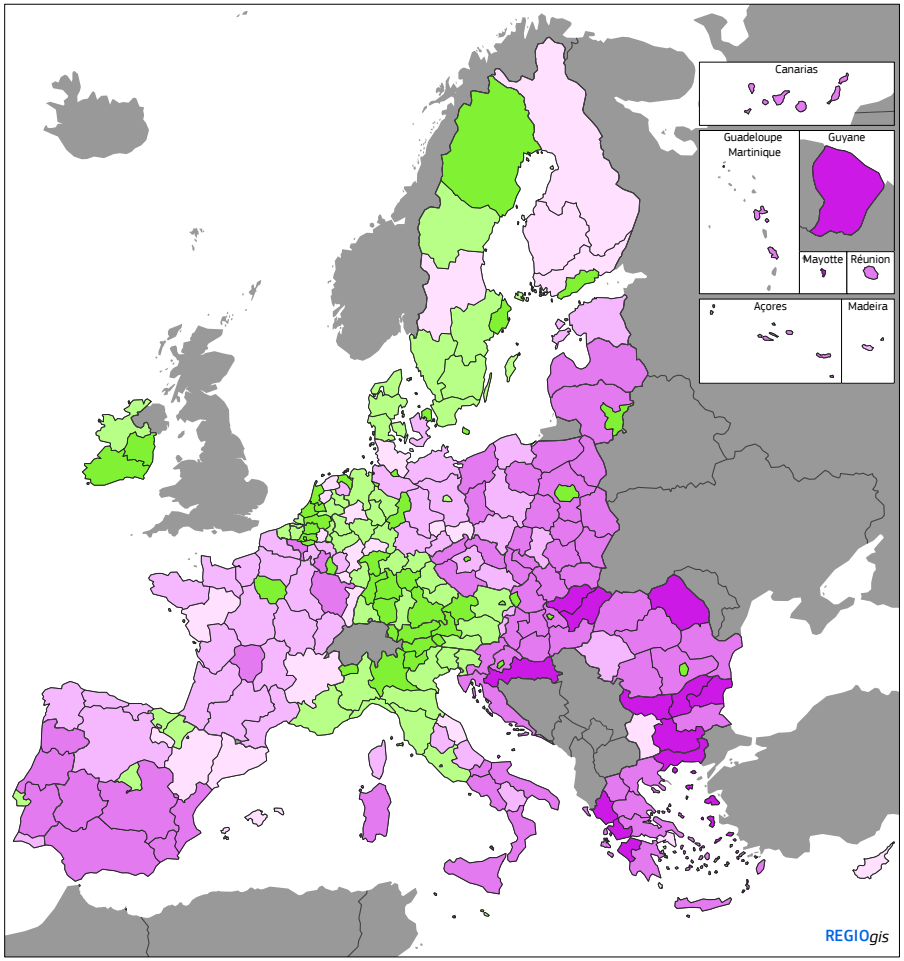
Some parts of Europe, however, have found it more difficult to converge. As indicated in previous reports, GDP per head in some transition and less developed regions began to diverge from the EU average after the 2009 recession, revealing an increased likelihood of falling into what can be termed a 'development trap'[2], with implications for social and territorial cohesion (Chapters 2 and 3).

Most recently, the outbreak of the COVID-19 pandemic and escalating geopolitical tensions, with war erupting on the EU's doorstep, have tested cohesion. The disruptions in global supply chains and the surge in energy, raw materials and food prices have exacted a heavy toll on households – especially the most vulnerable ones – and the economy at large. Despite encouraging signs of recovery, the long-term impact of these events on cohesion remains difficult to predict, especially in a context where secular structural challenges linked to the green and digital transitions are set to reshape much of the EU economy (Chapters 4, 5 and 6).

Against this background, this chapter provides an update of the state of economic cohesion in the EU by assessing long-term economic convergence between regions over the past 20–30 years and the short-term impact of the pandemic. Tapping into the growth potential of the 82 regions with GDP per head below 75 % of the EU average is key to fostering convergence and the prosperity of the EU. Accordingly, it indicates how productivity and competitiveness have evolved across regions and how they can contribute to economic cohesion going forward.

1 See Box 1.6.

2 The likelihood of being in a development trap is measured by a composite indicator capturing a protracted period of low or negative growth, weak productivity increases and low employment creation. See: Diemer et al. (2022) and European Commission (2022a).



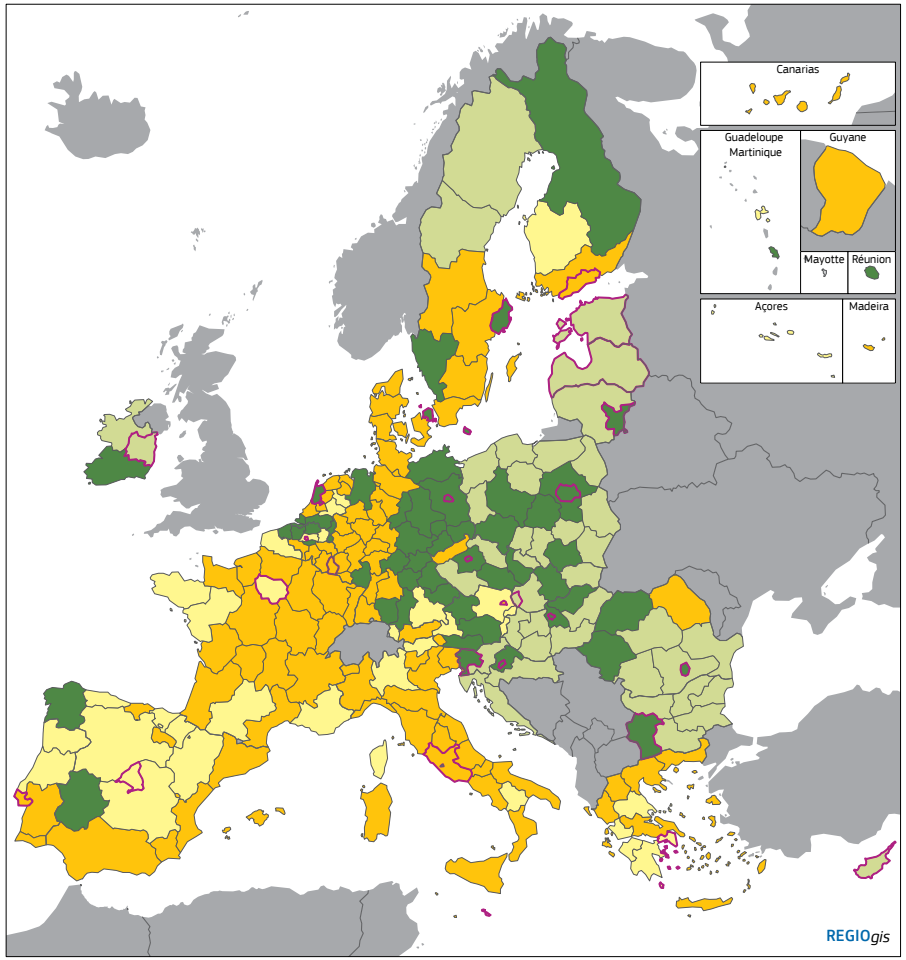
Map 1.1 GDP per head (PPS), 2021

Index, EU-27 = 100

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

Source: Eurostat [nama_10r_2gdp].

0 500 km



Map 1.2 Regional growth of GDP per head compared with growth in the EU and Member States, annual average, 2001–2021

Category

- above EU average and above Member State average
- above EU average and below or equal to Member State average
- below EU average and above Member State average
- below EU average and below or equal to Member State average
- no data
- capital regions

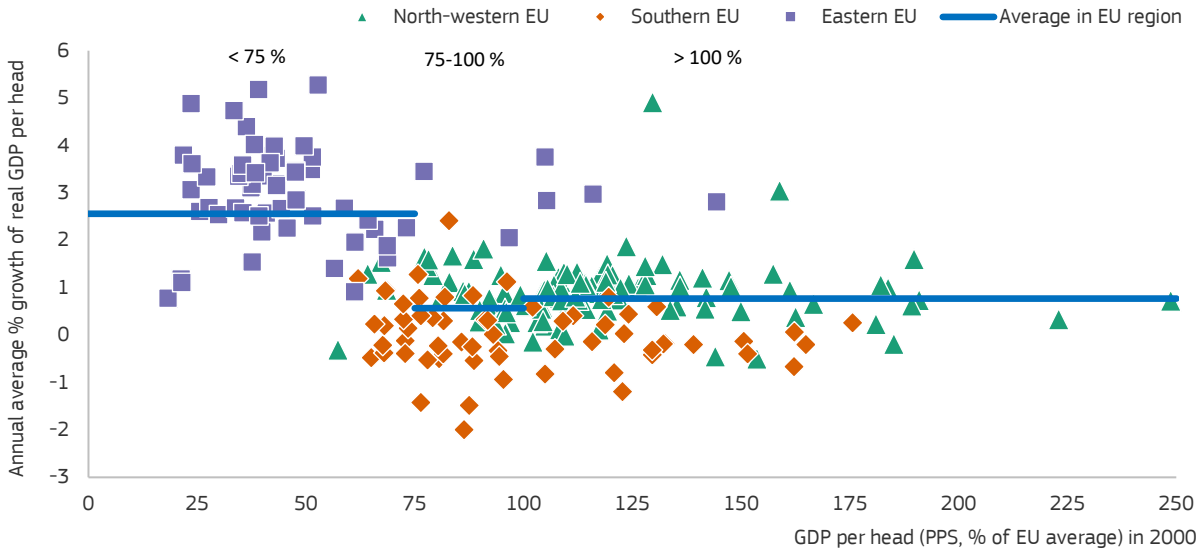
Source: DG REGIO based on JRC annual regional database (ARDECO) data.

0 500 km

2. Long-term trends in convergence and regional economic cohesion

Differences in regional GDP per head in the EU have steadily diminished over the past two decades but there is ample room for further upward convergence[3]. Some 20 years after the 2004 enlargement, the regions then entering the EU have achieved a remarkable economic convergence, with GDP per head in eastern Europe increasing from 50 % of the EU average in 2004 to nearly 80 % in 2021. However, there is still substantial scope for further convergence. Over 1 in 4 people in the EU (28 %) still live in regions with GDP per head below 75 % of the EU average in PPS terms[4], most of them in eastern Member States, but also in outermost regions and increasingly in southern Europe (Map 1.1 and Chapter 3)[5]. In Bulgaria, for instance, GDP per head was below 50 % of the EU average in all regions, except in Yugozapaden, the capital city region. To put this into perspective, differences in GDP per head across US states bottom out at about 60 % of the US average and only 1 in 12 people live in a state with GDP per head below 75 % of the US average[6]. This suggests that there is still a large untapped potential for upward convergence in GDP per head – and in living standards – within the EU. Moreover, in 2021 around a third of EU regions – with a similar share of EU population, around 150 million people in total – have a GDP per head that is yet to return to its 2008 level. These are equally divided between less developed, transition and more developed regions and are present in 11 Member States: Italy (19), Spain (15), Greece (13), France (10), Germany (4), Finland (4), the Netherlands (3), Portugal (3), Romania (3), Austria (2) and Belgium (1).

Figure 1.1 Annual growth in real GDP per head in EU regions by level of development, 2001–2021



Source: Eurostat [nama_10r_2gdp] and DG REGIO calculations.

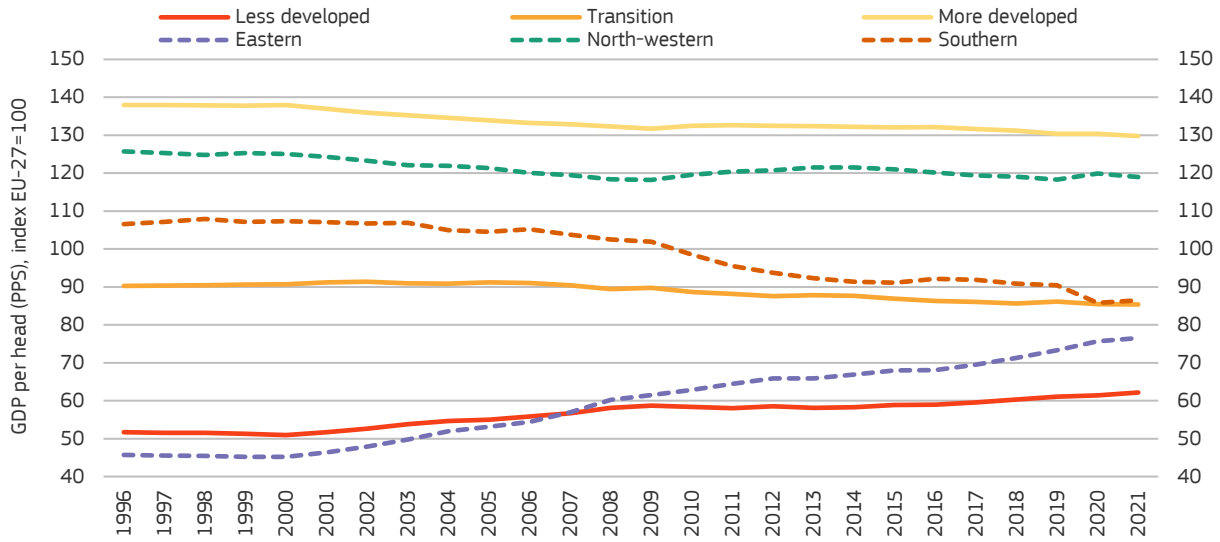
3 European Commission (2023).

4 GDP per head in PPS terms is the total value of goods and services produced per inhabitant adjusted for differences in price levels between countries. Regions here and throughout the chapter are defined at the NUTS 2 level.

5 The EU includes nine outermost regions: Guadeloupe, La Réunion, Mayotte, Guyane, Martinique and Saint-Martin (France), Madeira and Açores (Portugal) and Canarias (Spain). In the outermost region of Mayotte (France), for instance, GDP in PPS was as low as 28 % of the EU average in 2021.

6 Clearly the US is not comparable to the EU in political or historical terms but it remains the most comparable economic area in terms of market size, economic development, geographical area and population. It is therefore a relevant benchmark from an economic cohesion perspective: see Head and Mayer (2021). It should be noted, however, that EU NUTS 2 regions are on average smaller in size than US states, which in itself tends to increase disparities.

Figure 1.2 GDP per head in EU regions, PPS, 1995–2021, % of EU average



Source: Eurostat.

Growth of GDP per head over the past two decades has been robust in eastern regions but subdued in southern and some outermost ones. Over the 2001–2021 period, GDP per head in real terms increased in most EU regions, though by only 1 % a year or less in most north-western and southern regions. In line with standard economic convergence theory, regions with low levels of GDP per head experienced higher rates of growth on average (Figure 1.1). Per capita growth was particularly high in eastern regions (around 2.5 % a year on average)[7]. There are, however, exceptions. In most regions in Greece and Italy, in particular, GDP per head fell over this period. At the same time, growth was very low in transition regions in France and Spain and negative in a few more developed regions in north-western Europe (Figure 1.2). In the recent past, for the first time in the post-war period, nearly 1 in 6 regions in the EU, 38 in total with over 60 million people, experienced two decades in which GDP per head declined[8]. The next section examines convergence dynamics further using a range of statistical indicators.

2.1 Key indicators of economic convergence

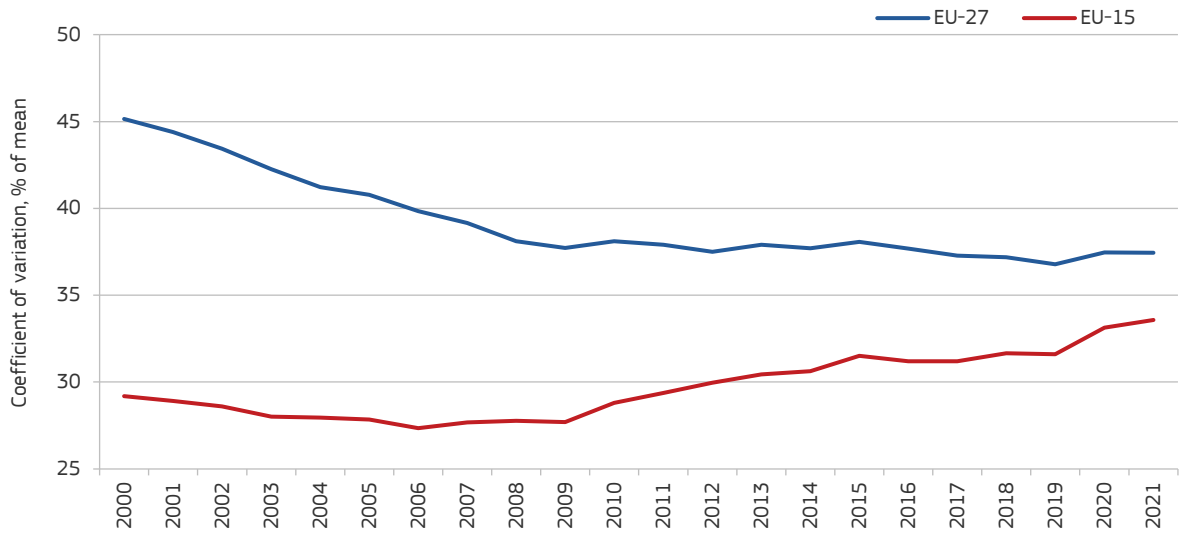
There are important differences in convergence dynamics between the EU-27 and the EU-15 (i.e. the 15 Member States before the 2004 enlargement). A commonly used statistical indicator to assess disparities in GDP per head is the coefficient of variation, which is a measure of its dispersion across regions (see Box 1.2)[9]. This indicator shows that disparities in GDP per head across EU regions declined sharply over the period 2000–2021 (Figure 1.3). On the one hand, this was largely driven by strong upward convergence of eastern regions. On the other hand, it is evident that convergence dynamics differ markedly between the EU-27 and the EU-15. In the former, regional disparities declined up until 2009 and stabilised afterwards.

7 Many of the eastern Member States have witnessed significant outmigration during the past two decades, thereby lowering the denominator. This trend is of great social and economic importance and is analysed more in detail in Chapter 6. However, the results of exceptional economic convergence are confirmed when measured in terms of productivity or GDP per person employed (see Section 2), a measure that is not affected by net migration. It is also confirmed by indicators of household disposable income and investment. Despite the enormous progress made, this report shows that there remains ample room for forward upward convergence, and a large heterogeneity of income within countries and among households.

8 18 of the regions are in Italy, nine in Greece, four in Spain, two in France and one each in Portugal, the Netherlands, Finland, Austria and Belgium. From 2010 to 2021, GDP also fell significantly in some outermost regions – in Canarias from 83 % of the EU average to 62 %; in the Açores from 75 % to 66 %; and in Madeira from 81 % to 70 %.

9 The coefficient of variation is a way of quantifying the variability of a dataset in relation to its mean. It is calculated by dividing the standard deviation by the mean and then expressing this as a percentage, allowing for comparisons between datasets with different units or scales.

Figure 1.3 Regional (NUTS 2) disparities, EU-27 and EU-15, GDP per head (PPS)

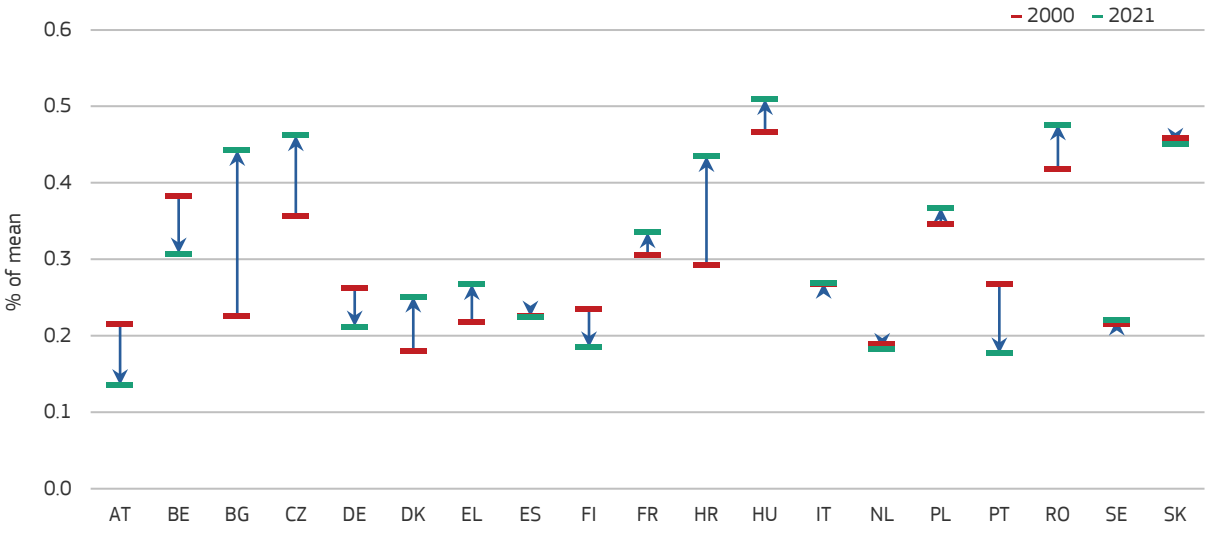


Source: DG REGIO calculations based on Eurostat data.

In the EU-15, disparities declined up until 2006 and at a much slower pace and began to increase after 2009. The coefficient of variation indicates that regional disparities in the EU-27 were still some 30 % larger in 2021 than those in the EU-15 in 2004, suggesting that ample room for upward convergence remains.

Regional disparities are wide in many Member States and have tended to widen further in most of them since 2000 (see also Chapters 2 and 3). In Member States with more than four regions, regional disparities in GDP per head increased in 11 of the 19 Member States concerned between 2000 and 2021 (Figure 1.4). Increases were largest in Bulgaria, Croatia and Czechia, but there were also increases in the EU-15, in Denmark, Greece and France. On the other hand, disparities declined in Portugal, Austria, Belgium and Germany. The drivers of within-country regional disparities

Figure 1.4 Coefficient of variation within Member States, GDP per head (PPS), NUTS 2 regions, 2000 and 2021



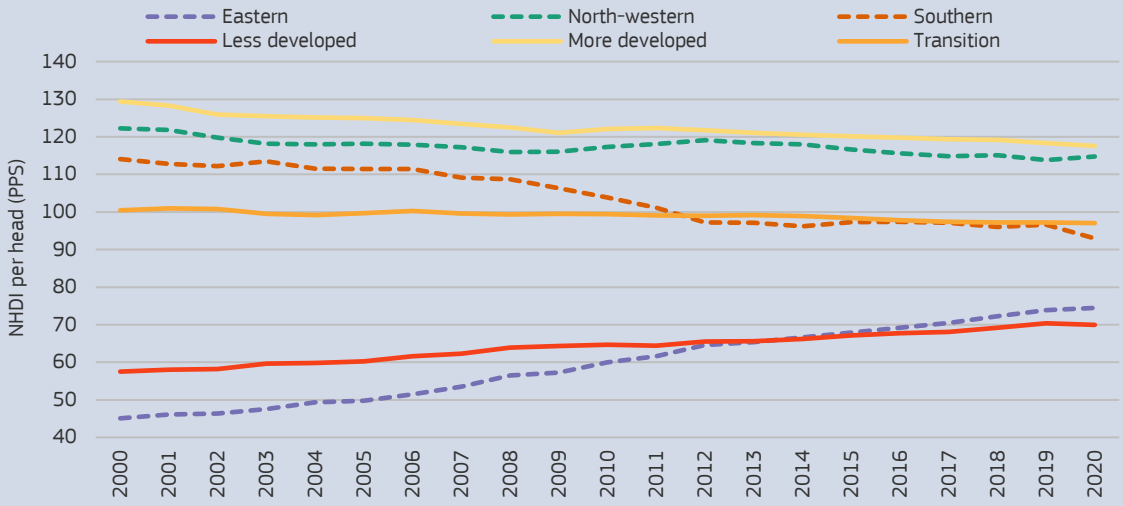
Source: DG REGIO calculations based on Eurostat data.

Box 1.1 Household disposable income and economic cohesion

Household income per head can be used to show how convergence in GDP per head is reflected in people's income (Figure 1.5). As for GDP per head, there are large regional differences in growth rates of household income. Net household disposable income (NHDI) per head relative to the EU average increased steadily between 2000 and 2020 in eastern regions (from 45 % to 75 %) and, to a lesser extent, in less developed regions as a whole (from 60 % to 70 %). On the other hand, it declined substantially in southern regions between 2000 and 2012 (from 115 % to below 100 %) and remained unchanged up until 2020, when it fell (to 95 %) because of the effect on their economies of the COVID-19 pandemic.

GDP and household income per head are key indicators for assessing economic convergence and disparities across regions, but do not shed light on the extent to which the benefits of growth are shared among people within regions. There were large regional differences in growth rates of mean equivalised household income across the EU (Figure 1.6). Over this period, two thirds of regions experienced growth in mean household income, whereas the rest registered no growth or a decline. Many of the high-growth regions are in eastern Europe, while many of those with no growth or a decline are in southern Europe. However, a number of advanced economies from north-western Europe (France, Austria, Belgium and Denmark) also saw mean household income stagnate during this period. The largest differences in growth rates occur between and not within countries. An exception is France, with some regions experiencing sustained growth and others a decline, including some of the outermost regions[1]. Moving beyond average income, the European Commission found that high-income households in the EU have benefited most from income growth in countries where growth was above the EU average over the period 2007–2017 (largely catching-up countries)[2]. Conversely, in countries where income declined, the decline was more equally distributed.

Figure 1.5 Net households disposable income per head in PPS, % of EU average, by group of NUTS 2 region, 2000–2020

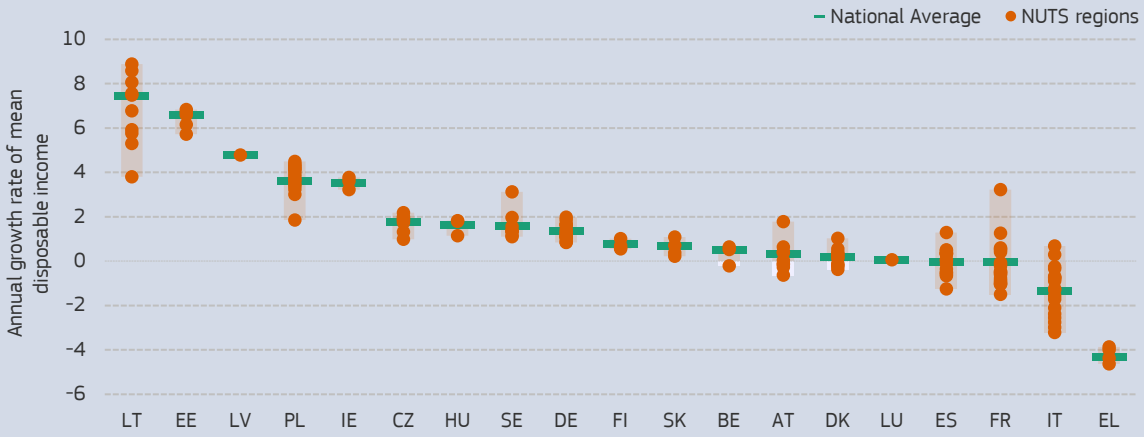


Source: Eurostat.

1 Significant differences in disposable income persist between some French outermost regions and mainland regions. In Mayotte, the yearly median disposable income was EUR 3 140 in 2019, far below the national average of EUR 21 680.

2 European Commission (2020).

Figure 1.6 Growth in mean equivalised disposable household income, 2010–2019

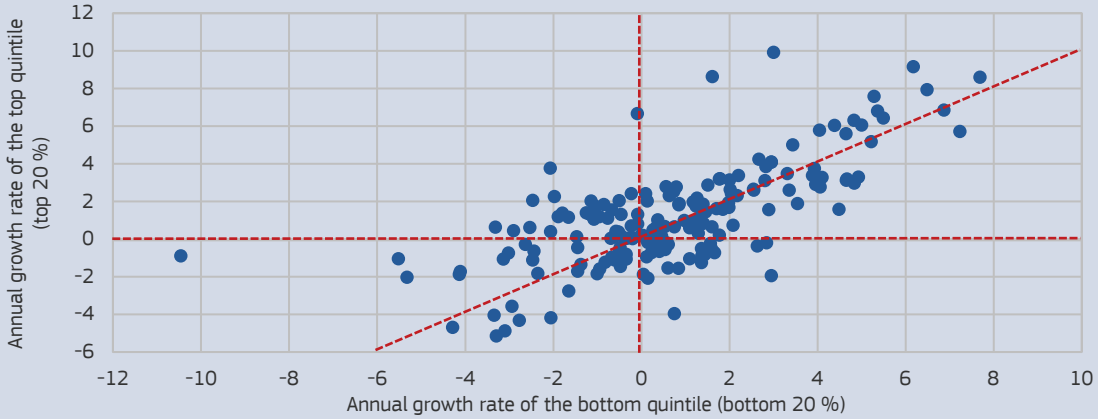


Note: NUTS 3 regions for DK, EE, LT, and SK, NUTS 2 regions for AT, CZ, ES, FI, FR, IE, LU, LV, and PL, and NUTS 1 for the remaining countries. Households are defined as one or more persons living in the same dwelling. Disposable income is defined after taxes and transfers. This is equivalised by dividing the total disposable income of the household by the square root of the number of household members.

Sources: OECD computations based on microdata from the Luxembourg Income Study (LIS) and EU Statistics on Income and Living Conditions (EU-SILC).

Survey-based data shed light on the distribution of regional income between households. Inequalities tend to be persistent and high in EU regions[3]. The top 20 % of households in EU regions, in terms of income, received on average almost 5 times (4.7) more than the bottom 20 % in 2019, an increase of 5 % from 2010. However, increased inequality was not common to all regions. Only in a small majority of regions (54 %) did top incomes grow more, or decline less, than bottom incomes, and in the rest income inequality narrowed (Figure 1.7). In regions with increasing household income inequality, this was driven by low-income households becoming poorer rather than high-income ones becoming richer.

Figure 1.7 Growth in mean equivalised disposable household income for the top and bottom quintiles, 2010–2019



Note: NUTS 3 regions for DK, EE, LT, and SK, NUTS 2 regions for AT, CZ, ES, FI, FR, IE, LU, LV, and PL, and NUTS 1 for the remaining countries. Households are defined as one or more persons living in the same dwelling. Disposable income is defined after taxes and transfers. This is equivalised by dividing the total disposable income of the household by the square root of the number of household members.

Sources: OECD computations based on microdata from the Luxembourg Income Study (LIS) and EU Statistics on Income and Living Conditions (EU-SILC).

3 OECD (2022).

These results indicate the importance of regional statistics on income distribution and the need to extend their coverage. This can be achieved by using additional sources of data to measure inequalities more accurately and at more detailed spatial levels[4]. Making progress on this is important for several reasons. Firstly, it would help to throw further light and on categories of people in particular places that have benefited most from regional convergence or suffered most from recessions or shocks. Secondly, persistent or expanding pockets of poverty and social exclusion can limit opportunities for people, so reducing the growth potential of regions, such as through lower employment rates. Thirdly, if growing inequalities are compounded by a broader worsening in living standards, this can lead to discontent, and so a decline in regional cohesion and a more polarised political landscape[5].

4 E.g. Königs et al. (forthcoming); Bauluz et al. (2023).

5 Dijkstra et al. (2020); 2023; Rodríguez Pose (2018); Lee et al. (2023).

are quite heterogeneous across Member States. More developed regions (typically capital city regions) are generally widely outperforming other regions in eastern Member States such as Bulgaria or Romania. In other Member States, such as Portugal, the decline in regional disparities is due to low growth in some developed, previously dynamic, regions. In France, instead, internal disparities increased because growth of GDP per head in regions with low levels was particularly slow. Differences in GDP per head within Member States are often as large as between Member States, indicating that important regional variations are often hidden by national averages. The same holds for disparities in employment rates and in a number of social indicators, including between rural and urban areas (Chapters 2 and 3)[10]. Convergence trends in household disposable income show some similarities with those of GDP per head but also differences (see Box 1.1).

GDP per head in less developed regions grew, on average, faster than in other regions before the 2009 recession but not after it. Another widely used indicator of convergence is the beta coefficient (see Box 1.2), which shows the tendency for lower-income economies or regions to grow faster than higher-income ones, narrowing disparities over time. As seen above, this has indeed happened since 2000, especially among less developed regions in eastern Europe. However, in the EU-15, though regions with lower GDP per head grew faster than those with higher levels over the 12 years 1996–2008, their growth was lower in the 12 years 2009–2021[11]. The estimated beta coefficient of convergence indeed turned from negative (Figure 1.8) to positive after the global recession (Figure 1.9). In the EU-12 (those before 1995), GDP per head in lower-income regions grew faster than in higher-income ones throughout the period, but not to the same extent after the global recession. The estimated beta coefficient, indeed, remained negative, as expected, but declined by a third[12]. This tendency is consistent with a larger fall than elsewhere in investment and total factor productivity in many of the countries concerned after the global recession[13].

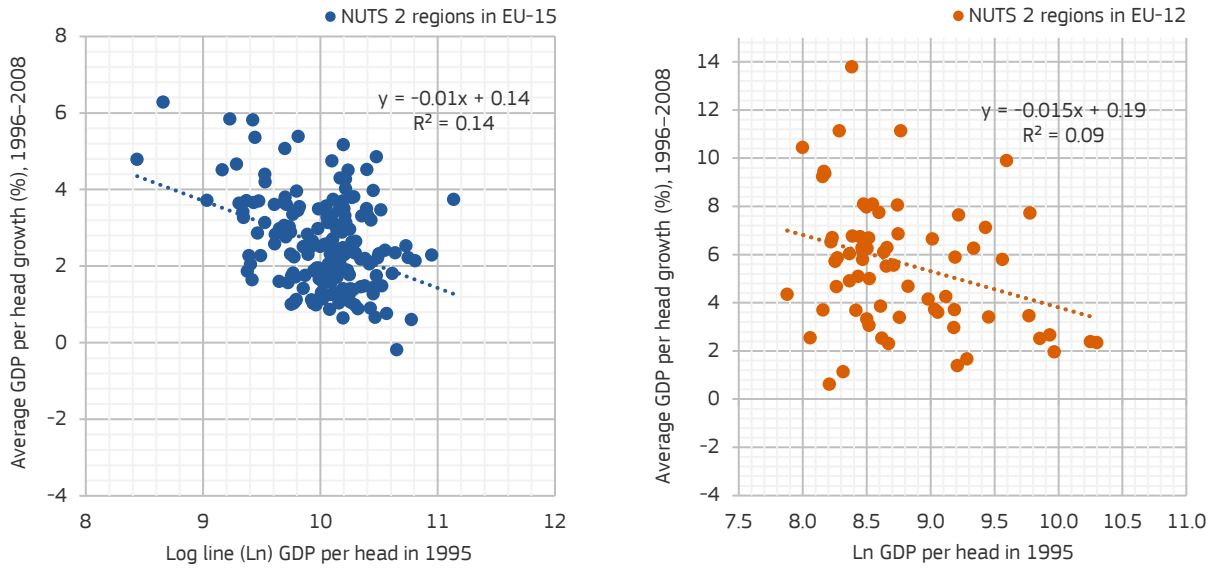
10 Participation rates, for instance, are very high in some Member States (e.g. 82 % in the Netherlands, and almost 90 % in Åland in Finland), but much lower in Greece (63 %), as low as 44 % in Sicilia, and under 40 % in Mayotte.

11 The beta coefficient remained more stable in the NUTS 2 regions in the EU-12. As expected with logarithmic functional forms and standard economic theory, it flattened slightly over time, reflecting assumed decreasing returns to scale and a slowdown in the pace of convergence the closer a region gets to the technological frontier.

12 A significant decline is also found for other estimates of the beta coefficient over time (through rolling regressions) for the EU as a whole. See: Monfort (2020).

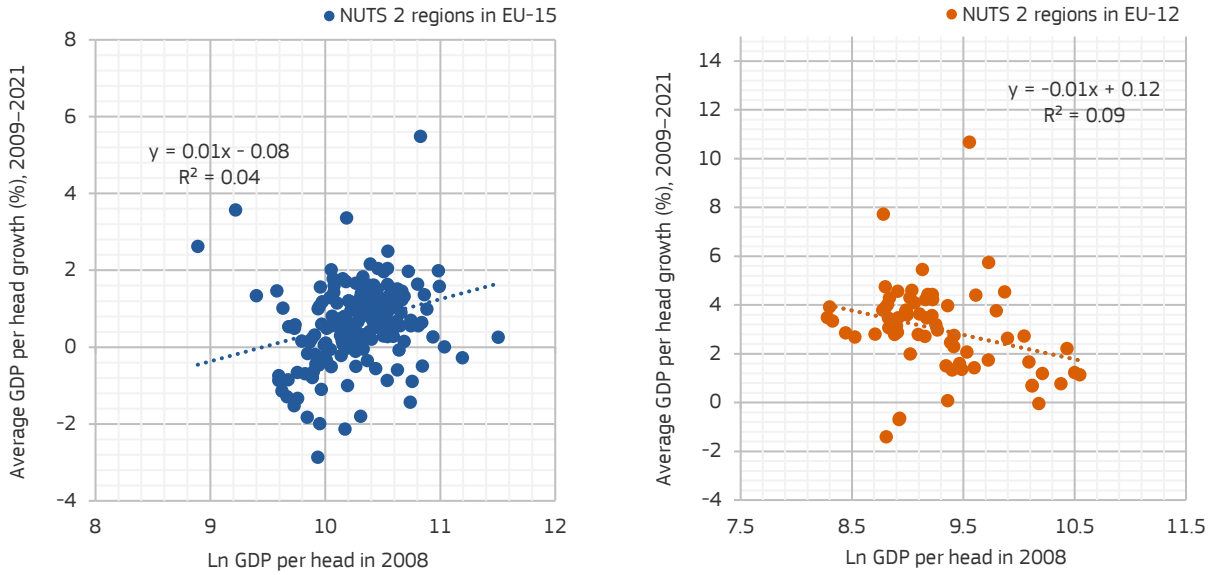
13 Through an analysis of conditional beta convergence (see Box 1.2), Licchetta and Mattozzi (2022) find that limited productivity catch-up is a major explanation for the lack of convergence, especially of southern regions. However, they also note that capital accumulation was particularly sluggish in the euro area in the decade following the global recession and gross fixed capital formation (GFCF) took 10 years to return to its pre-recession level. This was in sharp contrast to the period before 2008, where growth in GFCF was higher than average in many euro area converging countries, although largely (and arguably excessively) concentrated in the construction sector, where it declined markedly afterwards.

Figure 1.8 Estimated beta-coefficient for NUTS 2 regions in the EU-15 and EU-12, 1996–2008



Source: DG REGIO calculations based on Ardeco data.

Figure 1.9 Estimated beta-coefficient for NUTS 2 regions in the EU-15 and EU-12, 2009–2021



Source: DG REGIO calculations based on Ardeco data.

Differences in economic structure and geographical features can partly explain differences in the pace of convergence. A recent statistical approach is built around the notion of 'club convergence'[14]. The clubs or clusters concerned may have a common economic structure, geographical features or other characteristics that affect the pace of convergence. One study[15] employs this approach

14 In this context, measures of club convergence, such as pair-wise statistical convergence, enable convergence, or divergence, to be examined between pairs of countries or regions, rather than examining entire groups simultaneously as with sigma and beta convergence: see Pesaran (2007). The measure, therefore, complements these more traditional indicators by allowing for the identification of patterns of convergence within the sample analysed.

15 Arvanitopoulos and Lazarou (2023).

Box 1.2 Three indicators of statistical convergence: sigma, beta and club convergence

These three concepts are often used in empirical research to assess dynamics of economic development and convergence among different countries or regions and to explore whether disparities are diminishing, how fast convergence is occurring, and whether different types of economies exhibit different convergence patterns.

Sigma (σ) convergence

Sigma convergence refers to a situation where the dispersion or inequality of income, or other indicators, between countries or regions declines over time. Accordingly, it indicates that the standard deviation – a measure of dispersion around the mean – is narrowing, pointing to a reduction in disparities. In this report, the coefficient of variation, which expresses the standard deviation as a percentage of the mean, is used to examine the presence of sigma convergence.

Beta (β) convergence

Beta convergence is an indicator of the rate at which different economies are approaching a common 'steady state' of economic development or income[1]. It shows whether lower-income countries or regions grow at a faster pace than higher-income ones, leading to a reduction in disparities between them. A related concept is that of conditional beta convergence, as used, for instance, in the study by Licchetta and Mattozzi referenced above. This starts from beta convergence but enables account to be taken of the influence of specific conditions or features on the rate of convergence in addition to initial levels of GDP per head. Conditional beta convergence allows for a more nuanced analysis of convergence dynamics by recognising that factors such as investment, education or governance can also affect the rate at which economies catch up with others.

Club convergence

Club convergence refers to the notion that groups or 'clubs' of countries or regions may exhibit distinct patterns of economic convergence[2]. These may have a common economic structure, geographical features or other characteristics that can at least partly explain different paces of convergence. Within this, pair-wise statistical convergence is a method that assesses the convergence or divergence between pairs of countries or regions, rather than looking at entire groups simultaneously as with sigma and beta convergence[3]. The method is often used to identify and analyse distinct groups of economies that exhibit similar convergence patterns (club convergence). It allows researchers to determine which countries or regions are moving closer together and which are not, so increasing understanding of differences in convergence patterns within a broader group of economies. Overall, the results for EU regions found by Arvanitopoulos and Lazarou are broadly in line with those obtained by Pesaran for the world economy. While technological progress seems to have been spreading reasonably widely across economies, there are important geographical and structural factors that mean there are differences in GDP per head that remain persistent.

1 Barro and Sala-i-Martin (1992).

2 Quah (1996).

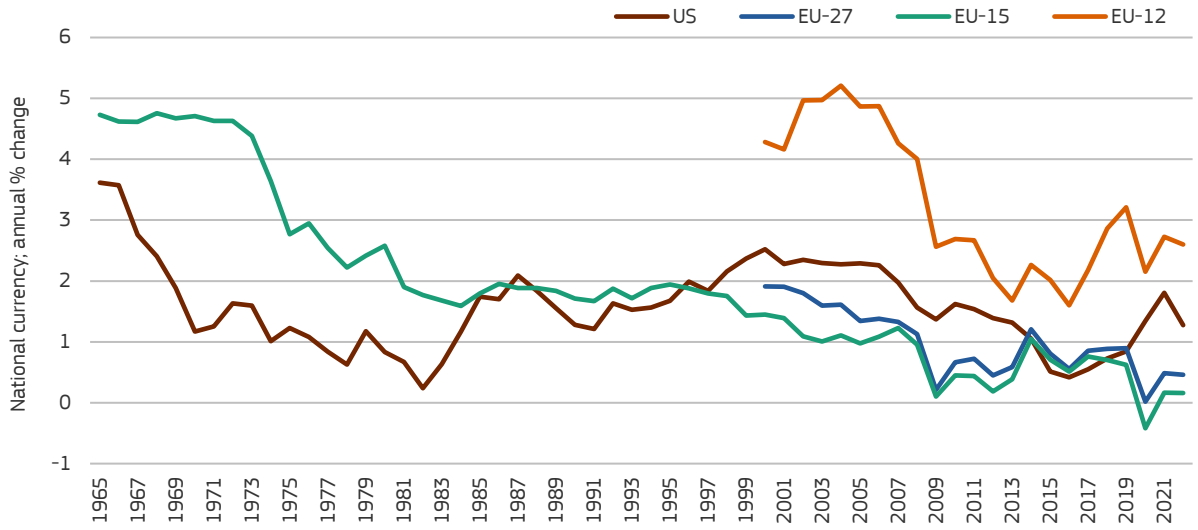
3 Pesaran (2007).

to identify pairs of EU regions that exhibit similar growth dynamics over the period 1980–2018[16]. In broad terms, their results suggest that geography matters. In the EU, there is consistent evidence of convergence between regions that share similar geographical features, such as being metropolitan, coastal or mountainous (club convergence). Results for urban and rural areas, however, are mixed as no common pattern is identifiable[17]. As regards economic structure, there is consistent evidence of similarity in sectoral specialisation having a sizeable negative effect on club convergence dynamics.

16 Arvanitopoulos and Lazarou (2023).

17 As analysed in more detail in Chapter 3, remote rural regions are falling behind compared with other type of regions.

Figure 1.10 Productivity slowdown in the US, EU-27, EU-15 and EU-12, 1965–2021



Note: Five-year averages of the growth rate of real GDP per worker.
Source: Ameco.

Regions with similar sectoral specialisation tend to diverge, while the opposite is the case for regions with different specialisations[18]. This result is consistent with the growing interdependence of economies across the world having a differentiated regional impact within the Single Market[19]. While some regions have been well positioned to take advantage of the new opportunities offered, others have suffered shrinking market shares, job losses, and stagnating wages (see also Section 4 on the development traps).

2.2 Productivity and economic cohesion in the EU

Productivity dynamics play a prominent role in determining economic, social and territorial cohesion patterns across regions. Productivity is a major determinant of economic growth and prosperity. As countries and regions become more productive, they generate higher income, which can be redistributed both spatially and between people to improve infrastructure, education, healthcare and other public and social services. Higher productivity, indeed, is positively correlated with higher educational attainment and increased life expectancy[20] and can contribute to social cohesion and equity. While uneven productivity growth can lead to increased territorial inequality[21], there is also evidence of it having positive spatial spill-overs. Indeed, the latest regional competitiveness index (RCI) shows strong performance of large metropolitan areas but also an improvement of less developed regions (see Section 5).

Productivity growth has consistently slowed down in all advanced economies since the late 1960s, raising concerns about the possibility of having entered a period of secular stagnation[22]. Despite tumultuous events and wars, industrialised economies witnessed a significant increase in output and productivity during the first half of the

18 This result is also found by Cavallaro and Villani (2021).

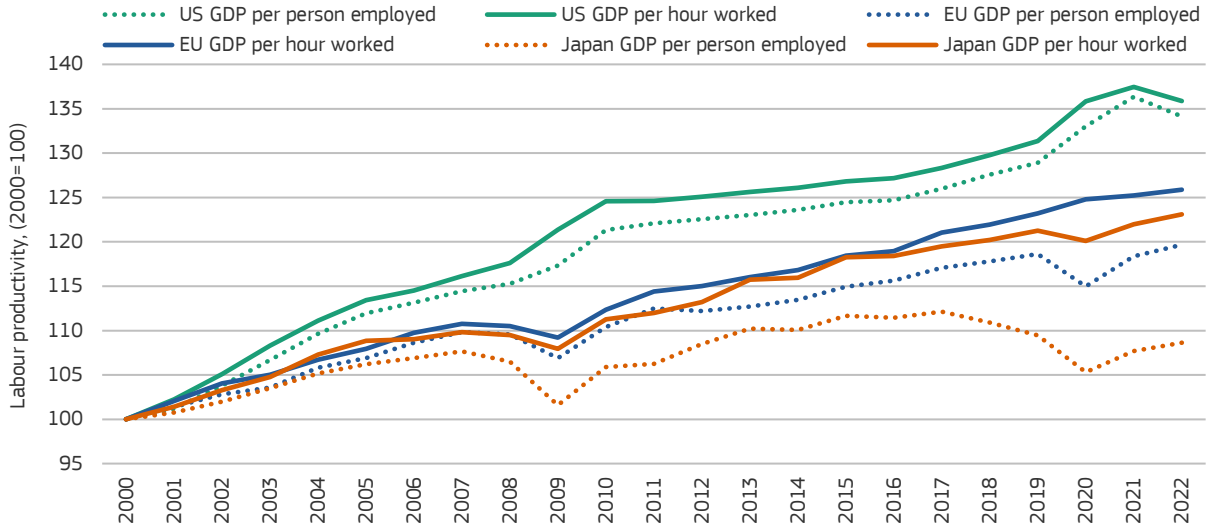
19 European Commission (2017).

20 Barro (2001); Cervellati and Sunde (2013).

21 Krugman (1991).

22 Gordon (2015) has made a strong case for the 'secular stagnation' hypothesis. This view, however, is countered by those who point to the opportunities that may lie ahead in terms of new disruptive technologies such as artificial intelligence, robotics and ever increasing computing capacity. According to this more optimistic view, these innovations may be able to reverse the long-run slowdown in productivity growth by extending the technological frontier (Brynjolfsson and McAfee, 2014).

Figure 1.11 Labour productivity in the EU, US and Japan, 2000–2022 (2000=100)



Note: Index of real GDP per person employed and of real GDP per hour worked.
Source: Ameco.

20th century[23]. The post-World War II period saw an even more rapid acceleration, marked by annual growth rates of 3 % to 5 %[24]. However, since the late 1960s, productivity growth has steadily declined, and today the norm is an annual growth rate of around 1 % or below (Figure 1.10). In a context of declining productivity growth, the gap between the EU and the US also widened in the period 1995–2005[25], as well as in the immediate aftermath of the 2009 recession[26] (Figure 1.11).

The general downward trend in productivity growth conceals significant differences across the EU. The largest decline in productivity growth in the EU-15, measured in terms of GDP per person employed, seems to have taken place around the turn of the century. Over the period 1980–2000, it averaged around 1.5 % a year, but fell to 0.5 % a year in the period 2001–2021. In the 1980s, less developed regions had higher productivity growth, on average, than other types of regions, whereas since the 1990s more developed regions have had the higher growth.

The picture is more positive for the EU-27. Over the 2001–2021 period, the increase in GDP per head in the wider EU was largely associated with growth of both productivity and employment (Table 1.1 and Map 1.3)[27]. Many less developed regions, especially those in the eastern Member States, had above-average productivity and employment growth, offset only slightly by a decline in the working-age population as a share of the total, so that growth of GDP per head was above the EU average[28]. The overall picture, however, masks the fact that in a number of regions, especially in the south, GDP per head fell over this period, with productivity declining or increasing very little.

23 Maddison (2007).

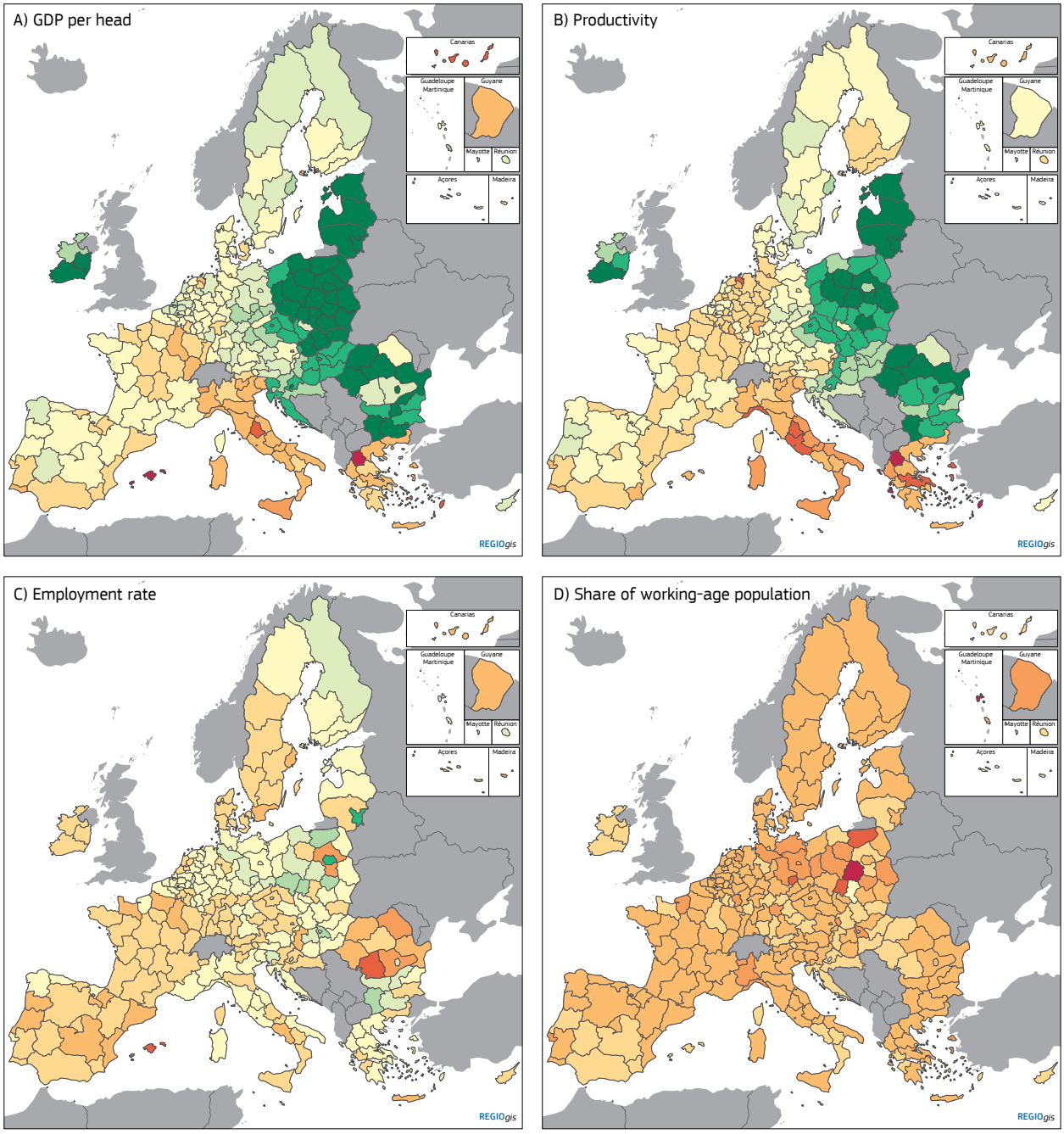
24 Eichengreen (2007).

25 Gordon and Sayed (2019).

26 After a prolonged period of modest productivity growth after the industrial crisis of the 1970s, the US exhibited a substantial increase, surpassing both the EU and Japan. Moreover, in the two years following the 2009 recession, the US experienced a surge in output per hour worked, primarily attributable to a sharper decline in employment offset by a stronger rebound in hours worked per employee (Figure 1.11). However, after the global recession, US productivity growth has closely mirrored that of the EU.

27 Note that productivity growth on this measure does not reflect the reduction in average hours worked per person employed over the period.

28 The working-age population (defined as those aged 20–64) as a share of the total decreased slightly in the EU and in most regions over this period.



Map 1.3 Growth of GDP per head, productivity, employment rate and working-age population, 2001–2021

Average percentage change on the preceding year

- <= -1.0
- -1.0 – -0.75
- -0.75 – -0.5
- -0.5 – 0.0
- 0.0 – 0.5
- 0.5 – 1.0
- 1.0 – 1.5
- 1.5 – 2.0
- 2.0 – 3.0
- > 3.0
- no data

Employment rate defined as workplace-based employment divided by population aged 20–64.
Source: DG REGIO based on JRC-ARDECO and Eurostat [lfst_r_lfsd2pop] data.

2.3 Cohesion shocks and cycles in the 2000s

In terms of the dynamics of economic convergence and productivity examined above, the past two decades can be divided into four sub-periods: the 'convergence years' of 2000–2008, the 'low employment' period of 2009–2013, the 'delayed recovery' of 2014–2019 and the 'quick rebound' of 2020–2021 (Map 1.4).

Between 2001 and 2008, nearly all regions experienced growth in GDP per head, with average rates of over 5 % a year in many eastern regions[29]. Productivity growth in the transition and more developed regions was, however, already below 1 % a year. The five years following the 2009 recession brought a major blow to convergence, signalling the beginning of a phase of divergence for less developed and transition regions in southern Europe and some in eastern Europe, especially those in countries affected by financial and banking instability. Importantly, the 2009–2013 period in southern Europe was the only one in which the decline of GDP per head was accompanied by mass unemployment, rather than slower productivity growth. In fact, productivity growth in southern Europe was, on average, higher in this recessionary period than in the relatively expansionary 2000–2008 one. The 2014–2019 period finally brought recovery from the Great Recession. Almost all regions experienced growth in GDP per head, though at a lower rate than in the pre-recession period. As a result, 10 years after the 2009 recession, over a quarter of the EU population (100+ million) still lived in regions where real GDP per head had not returned to the pre-recession level (see Box 1.3 for further details).

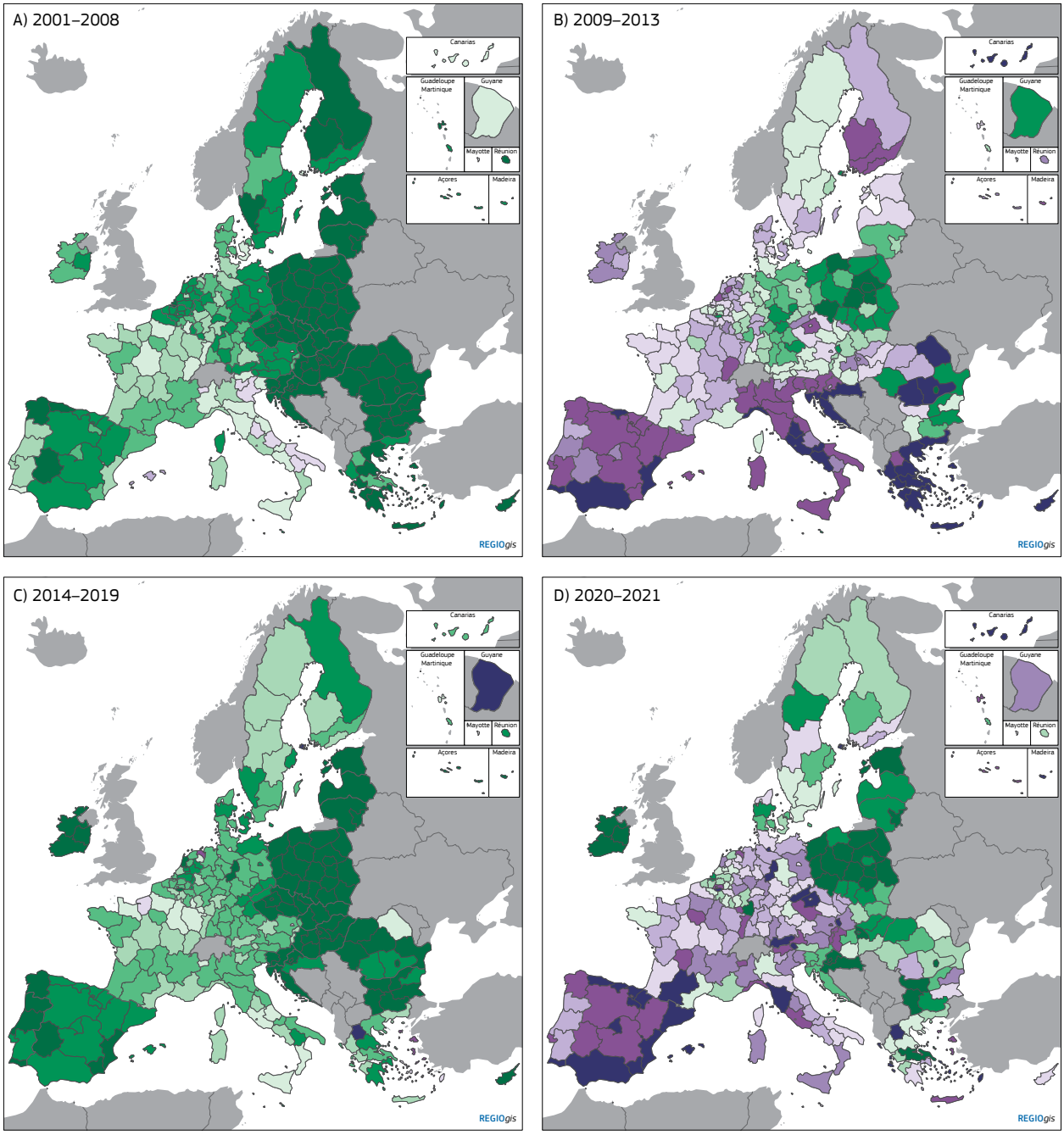
The COVID-19 pandemic in 2020 brought another major recession in all regions. Although it is too early to assess its structural impact and that of the subsequent Russian war of aggression in Ukraine on economic cohesion, economic recovery in 2021 was quite broad-based from a regional perspective. As shown in the next section, both less developed and transition regions have rebounded much more strongly than after the 2009 recession.

High productivity growth in less developed eastern regions partly stems from structural changes in their economies and investment dynamics (Table 1.2). The latter have differed greatly across the EU. In eastern Europe, investment increased at an average rate of 3.5 % a year over the period 2001–2021 – over 3 times the EU average (1.1 %) and over twice that in more developed regions (1.4 %). Eastern regions have also had a larger share of investment in industry, with both industry and services generating value-added as employment in agriculture declined[30]. Investment in more developed and transition regions is instead mainly led by the financial sector, which was responsible for 40 % of the total over the five years 2016–2020. Transition and more developed regions are also more comparable in terms of the division of employment, with the largest share in services.

Southern Europe, however, stands out in terms of investment dynamics. Investment declined by 0.5 % every year between 2001 and 2021, stagnating or declining in all sectors except agriculture. Employment in industry declined in all three types of regions, though much less so than in agriculture. By contrast, employment and gross value added (GVA) in services increased in all regional groups over the period, particularly in financial activities, and especially so in less developed regions. (There are large differences in economic structural dynamics at a more detailed territorial level – see Chapter 3.)

29 Some less developed regions, however, did not share this benign economic cycle and actually saw income per capita declining even during these relatively buoyant years (e.g. south of Italy).

30 Regions at different levels of development tend to have different economic structures. Employment in agriculture fell between 2001 and 2020 in the EU, especially in the less developed regions, reflecting their economic restructuring and agricultural modernisation. Nonetheless, less developed regions still tend to have relatively large shares of employment in agriculture. GVA per person employed in agriculture is also lower than in more developed regions, implying untapped potential for productivity increases.



Map 1.4 Growth of GDP per head in real terms 2001–2021, main sub-periods

Average percentage change on the preceding year

- < -2.5
- -2.5 – -1.5
- -1.5 – -1.0
- -1.0 – -0.5
- -0.5 – 0.0
- 0.0 – 0.5
- 0.5 – 1.0
- 1.0 – 1.5
- 1.5 – 2.5
- >= 2.5
- no data

Source: DG REGIO based on JRC-ARDECO data.

Table 1.1 Decomposition of annual average change in GDP per head, 2001-2021 and sub-periods

	GDP per head	Productivity	Employment	Share of working-age population
Average percentage change on the preceding year				
200–2021				
EU-27	1.06	0.74	0.51	-0.19
Less developed regions	1.55	1.32	0.31	-0.08
Transition regions	0.77	0.50	0.53	-0.25
More developed regions	0.88	0.55	0.56	-0.23
2001–2008				
EU-27	1.68	1.08	0.44	0.16
Less developed regions	2.76	2.21	0.00	0.54
Transition regions	1.56	0.89	0.44	0.22
More developed regions	1.34	0.78	0.67	-0.12
2009–2013				
EU-27	-0.41	0.44	-0.53	-0.31
Less developed regions	-1.17	0.39	-1.37	-0.19
Transition regions	-0.69	0.29	-0.57	-0.41
More developed regions	-0.31	0.17	-0.14	-.034
2014–2019				
EU-27	1.91	0.87	1.49	-0.46
Less developed regions	2.69	1.42	1.88	-0.61
Transition regions	1.46	0.58	1.52	-0.63
More developed regions	1.70	0.77	1.19	-0.26
2020–2021				
EU-27	-0.30	-0.28	0.47	-0.48
Less developed regions	0.23	-0.14	1.05	-0.68
Transition regions	-0.71	-0.79	0.70	-0.62
More developed regions	-0.41	-0.12	0.02	-0.30

	GDP per head	Productivity	Employment	Share of working-age population
Average percentage change on the preceding year				
200–2021				
EU-27	1.06	0.74	0.51	-0.19
Eastern	3.46	2.94	0.65	-0.15
Southern	0.11	-0.08	0.36	-0.17
North-western	0.97	0.68	0.51	-0.23
2001–2008				
EU-27	1.68	1.08	0.44	0.16
Eastern	5.10	4.30	0.15	0.61
Southern	0.92	-0.01	0.88	0.05
North-western	1.41	1.08	0.34	-0.01
2009–2013				
EU-27	-0.41	0.44	-0.53	-0.31
Eastern	0.68	1.51	-0.48	-0.34
Southern	-2.16	0.14	-2.02	-0.28
North-western	0.07	0.12	0.27	-0.31
2014–2019				
EU-27	1.91	0.87	1.49	-0.46
Eastern	4.23	2.92	2.09	-0.79
Southern	1.62	0.07	1.84	-0.29
North-western	1.49	0.87	1.00	-0.38
2020–2021				
EU-27	-0.30	-0.28	0.47	-0.48
Eastern	1.70	1.20	1.23	-0.73
Southern	-1.90	-1.41	-0.06	-0.44
North-western	-0.15	-0.13	0.37	-0.39

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

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

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

Green bars indicate positive changes, red bars negative changes. Workplace-based employment is divided by the population aged 20–64. Less developed regions exclude Mayotte.

Source: Eurostat [nama_10r_3empers], ARDECO, Cambridge Econometrics, AMECO, DG REGIO calculations.

Table 1.2 Investment (GFCF) in the EU at the NUTS 2 level, 2001–2021, by economic activity (NACE[1]), category of development and geographical region

Average shares in 2016–2020 (%)	Less developed	Transition	More developed	Eastern	North-western	Southern	EU-27
A: Agriculture, forestry and fishing	5.9	3.3	1.5	4.4	1.8	3.2	2.4
B-E: Industry (except construction)	27.4	22.1	21.8	28.2	21.2	23.6	22.4
F: Construction	4.3	2.8	2.3	5.1	1.6	4.5	2.6
G-J: Wholesale and retail trade, et al.	20.7	15.6	19.9	24.0	17.5	21.5	19.0
K-N Financial and insurance activities, et al.	25.6	39.5	41.0	24.8	42.8	33.7	39.0
O-U: Public administration, et al.	16.0	16.8	13.6	13.4	15.1	13.5	14.6
Total	100	100	100	100	100	100	100

Average % change on the preceding year, 2001–2020							
A: Agriculture, forestry and fishing	1.7	-0.1	0.7	3.3	0.2	0.2	0.7
B-E: Industry (except construction)	1.2	0.7	1.4	2.8	1.4	0.0	1.2
F: Construction	0.6	0.1	1.2	5.0	1.0	-1.0	0.8
G-J: Wholesale and retail trade, et al.	1.3	1.0	1.5	2.8	2.0	-0.5	1.4
K-N Financial and insurance activities, et al.	-0.3	0.4	1.4	4.1	1.3	-0.7	1.0
O-U: Public administration, et al.	0.8	0.4	1.4	4.3	1.3	-0.8	1.0
Total	0.7	0.5	1.4	3.5	1.4	-0.5	1.1

Source: DG REGIO calculations on ARDECO data.

1 Nomenclature statistique des activités économiques (statistical classification of economic activities).

Box 1.3 Cohesion cycles in the 2000s: a regional snapshot

In broad terms, four cohesion sub-periods can be distinguished in the two decades 2001–2022.

The 'convergence years' (2001–2008)

Between 2001 and 2008, nearly all regions experienced growth in GDP per head. Overall, growth was above average in both the less developed and the transition regions, with rates of over 5 % a year in many eastern Member States. This is in line with traditional economic growth theories, which predict that growth will tend to be higher the lower the initial level of GDP per head. Most of these regions are in less developed and moderately developed Member States, where for the most part growth was faster than the EU average. In Romania and Bulgaria, where growth was particularly high, catching-up was not uniform across the country but was driven by the capital city region. Regions in southern Italy, however, did not follow this pattern of catching up. They already experienced a decline in GDP per head in the 2000s even though their GDP per head was well below the EU average.

The 'low employment period' (2009–2013)

The global recession of 2009 led to GDP per head in the EU declining between 2009 and 2013, with many of the less developed and transition regions growing more slowly (or shrinking more quickly) than the EU average, so reversing the earlier tendency towards convergence. Around 60 % of the EU population lived in regions with a declining GDP per head. The regions hit hardest were mainly in the southern EU, though also in Romania, Ireland and Finland. In most Greek regions, the reduction in GDP per head averaged over 3 % a year. Notable exceptions were most regions in Poland and some in Bulgaria and Romania.

The 'delayed recovery' (2014–2019)

The 2014–2019 period shows a clear recovery from the Great Recession. Almost all regions experienced growth in GDP per head, though at a lower rate than in the pre-recession period. High growth rates were restored in most eastern regions, so leading again to convergence. Growth in many north-western regions also remained below pre-crisis rates, Ireland being the main exception. In many regions in the hard-hit southern Member States, especially in Portugal and Spain, growth rates recovered, but in Greece and many regions in Italy growth remained low. Overall, 10 years after the 2009 financial crisis, over a quarter of the EU population still lived in regions where real GDP per head had not returned to pre-crisis levels. This includes the entire population of Greece and Cyprus, 80 % of the population of Italy and a third of that of Spain, but also 75 % of the population of Finland and over a third of that of Austria. In most of the eastern Member States, GDP per head had returned to pre-crisis levels in all or nearly all regions. However, in Romania and Croatia, 40 % and 25 % of the population, respectively, lived in regions where this was not the case.

The 'quick rebound' (2020–2022)

The 2020–2022 period is characterised by the double shock of the COVID-19 pandemic and Russia's war of aggression in Ukraine. Due to the nature of these shocks, they affected some regions more than others and – within them – some workers and sectors more than others (e.g. tourism, cultural activities, and industries affected by supply chain disruptions and high energy prices). Again, southern Europe was on average more heavily affected. However, as discussed below, the ensuing economic recovery was faster and more broad-based than after the 2009 recession.

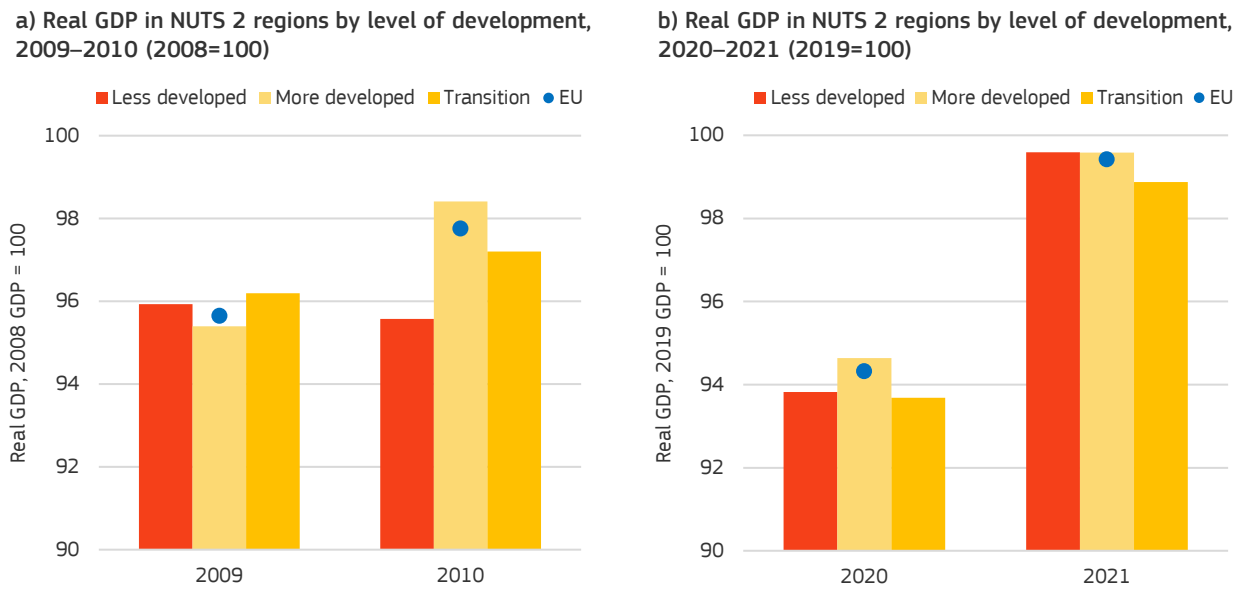
3. The short-term impact on economic cohesion of the COVID-19 pandemic

The COVID-19 outbreak had a severe impact on the EU economy and society, but GDP rebounded strongly in 2021 after a massive downturn in 2020. GDP fell in all but three EU regions. The unprecedented, bold and co-ordinated economic policy actions taken, including through Cohesion Policy, mitigated the economic and social impact of the pandemic. GDP at EU level already exceeded the pre-pandemic level by the last quarter of 2021, whereas it took seven years for it to exceed the pre-recession level after 2009. The regional data also indicate a more broad-based recovery in 2021, with less developed, transition and more developed regions all rebounding (Figure 1.12).

Southern Europe, however, was more heavily affected by the 2020 recession, with GDP falling by 10 %. Despite a stronger rebound, GDP in 2021 was still 5 % below the pre-COVID peak. North-western and, more especially, eastern regions have fared significantly better than southern ones in terms of GDP in the wake of the two crises. However, this has not prevented GDP in the EU as a whole falling behind that of the US and other advanced economies (Figure 1.13).

It is too early to be able to fully assess the longer-term impact of the COVID-19 outbreak on economic cohesion, but so far less developed regions have recovered more quickly than from the 2009 recession. The data available confirm the substantial size of the shock in 2020. Overall, the fall in GDP was much larger than during the recession of 2009. As already highlighted in the 8th Cohesion Report[31], some regions were hit more than others and – within them – some workers and sectors (such as tourism, cultural activities, and industries affected by supply chain disruptions) more than others. However, the ensuing economic recovery was more broad-based and faster than in 2010, when GDP continued to fall in around a quarter of EU regions (Figure 1.14). In 2021, this was the case in only four regions[32]. In 2010, the decline was largest in less developed and transition

Figure 1.12 Real GDP in NUTS 2 regions by level of development, 2009–2010 (2008=100) and 2020–2021 (2019=100)

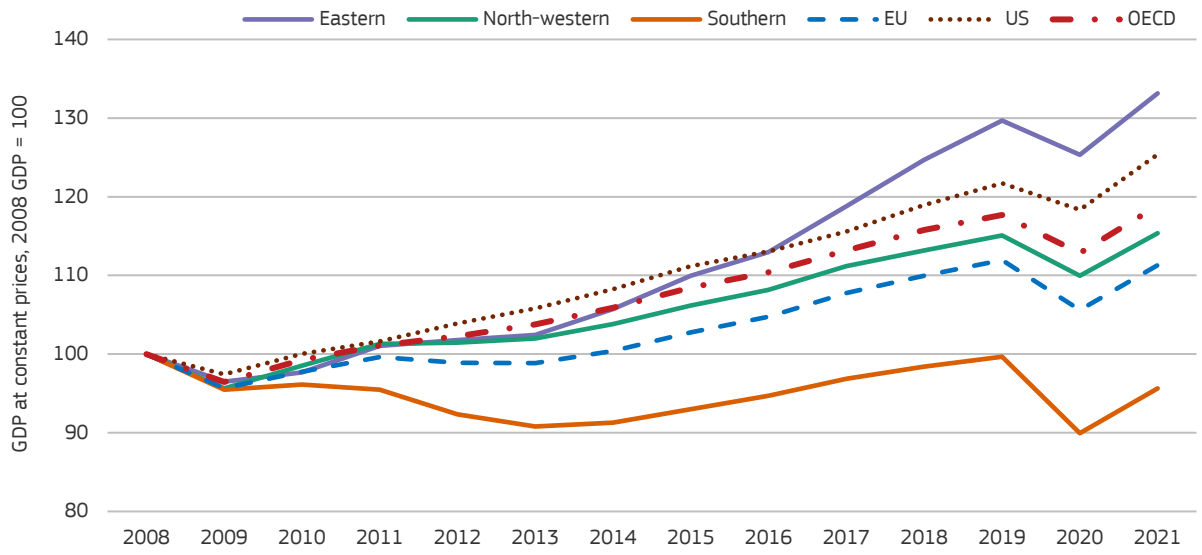


Source: Eurostat and Ardeco.

31 European Commission (2022).

32 There is even a slightly negative correlation between regional growth rates in 2020 and 2021, meaning that regions experiencing a deeper fall in GDP in 2020 were, on average, also the ones that experienced a stronger rebound in 2021 (Figure 1.16).

Figure 1.13 GDP at constant prices in the EU, US and OECD, 2008 GDP=100



Source: Ameco.

regions. In 2021, the regions where GDP fell by most in 2020 were, on average, the ones where the rebound was strongest[33].

Despite the broad-based recovery, there are again very large differences in growth rates across regions (last panel in Map 1.3). These may reflect differences in the structure of economies, with sectors more heavily affected by restrictions and supply chain disruptions taking longer to recover. Despite the strong rebound, the impact of the crisis on economic cohesion was severe and will need to be monitored in the future together with the effect on overall growth in the EU.

The pandemic reduced employment in all regions, but this was largely offset by a strong rebound in 2021. The reduction in the number employed in more developed regions was similar (1–2 %) in both 2009 and 2020 (Figure 1.15 and Figure 1.16). However, eastern, southern and less developed regions still had 5 % fewer people in employment one year after the global recession. This was not the case in 2021 and 2022. Employment in the regions most affected began to recover sooner and it had already reached its pre-crisis peak in 2021 in nearly all of them. Thanks to job-retention schemes and other policy initiatives, the negative impact of the pandemic on employment was much smaller too than in 2009[34]. Indeed, the rapid economic recovery led to labour shortages reaching or even exceeding pre-pandemic levels in several Member States by the end of the year[35]. This is in stark contrast with the employment dynamics after the 2009 recession, where employment continued to decline in eastern and southern Europe two years after the recession.

Both the 2009 recession and the 2020 pandemic hit household income in southern EU regions in particular (Figure 1.17). Unlike GDP and employment, household income did not decline markedly in the two periods in the EU as whole, suggesting that automatic stabilisers and discretionary measures played an important role in cushioning the impact[36]. However, there are large differences across the EU. Southern regions experienced a significant decline in household disposable income in the two years following the global recession (2010 and 2011). In the rest of the EU, by contrast, it was

33 This is suggested by the slightly negative correlation between regional growth rates in 2020 and 2021.

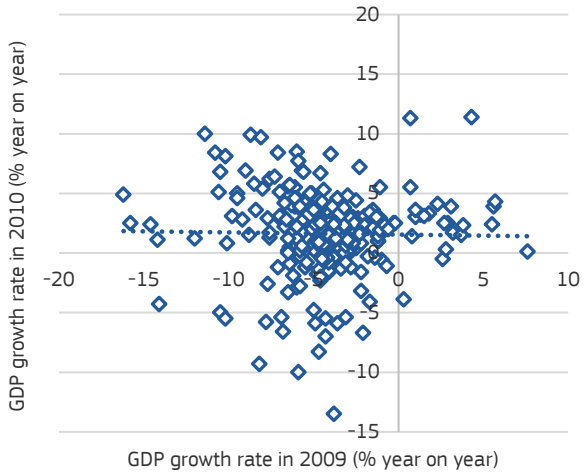
34 Giupponi et al. (2022).

35 European Commission (2022) and Chapter 2 of this report.

36 Bökemeier and Wolski (2022).

Figure 1.14 Real GDP growth rate in 2009 and 2010, 2020 and 2021, NUTS 2 level, year on year % change

a) Real GDP growth rate in 2009 and 2010



b) Real GDP growth rate in 2020 and 2021

Note: data for Polish regions are not yet available and not included.

Source: Eurostat.

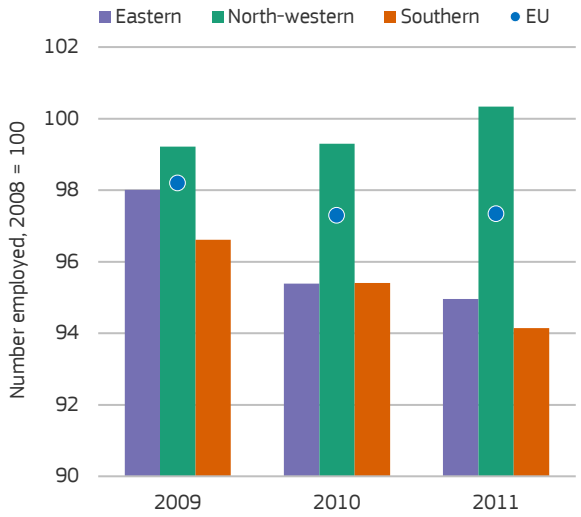
above the pre-recession level. In 2020, the year of the COVID-19 outbreak, household income continued to grow during the recession in eastern and north-western regions. Southern regions, on the other hand, were hit particularly hard, with a larger decline in household income than in 2009, reflecting the much larger impact on GDP (5 % in 2009 against 10 % in 2020). The post-pandemic recovery in household income in the southern EU, however, was stronger in 2021, whereas in 2010 income continued to decline. Nevertheless, in 2022 it declined again, largely because of high inflation and a slower adjustment of wages than in the rest of the EU.

The post-pandemic rebound in investment was exceptionally strong, especially in less developed and southern European regions. The fall in investment in 2020, though large (around 5 %), was less than half of that in 2009 (11 %) (Figure 1.18). This contrasts with the contraction in GDP, which was larger in 2020. The difference was even larger in the year following the recession. Investment remained some 11 % below the pre-recession level in 2010, whereas it rebounded to nearly reach the pre-recession level in 2021. Significantly, less developed and transition regions performed, on average, better than more developed regions after the pandemic, while the opposite was the case after 2009. The difference in the two periods partly reflects the exceptional nature of the 2009 recession, when the decline in investment was deeper and more persistent than in previous ones (Figure 1.19) and the rebound much slower than in the US and other advanced economies (Figure 1.20).

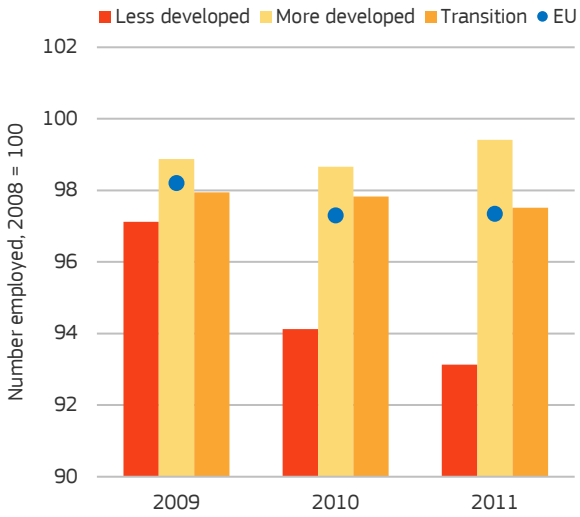
Both recessions had a substantial adverse impact on fiscal balances in the short term, but the COVID-19 pandemic was followed by a more modest increase in public debt over the subsequent three years (Figure 1.21). During the period 2009–2011, public debt relative to GDP went up by 17 pp in the EU (15 pp in the eastern EU, 13 in the north-western EU, and 24 in the southern EU). By contrast, the increase between 2020 and 2022 was a much smaller 6 pp (6 pp in the eastern EU, 7 in the north-western EU, and 8 in the southern EU). In both periods the US and Japan adopted a more expansionary fiscal stance, resulting in larger and more protracted fiscal deficits (Figure 1.22), which ultimately led to an increase in public debt relative to GDP of 51 pp and 78 pp, respectively, between 2008 and 2022 (Figure 1.23). This contrasts with a more restrained 20 pp increase in the EU over the same period, though in the southern EU the increase was 49 pp (as against 12 in the eastern EU and 18 in the north-western EU). Although

Figure 1.15 Number employed, by geographical area and level of development 2009, 2010 and 2011, 2008=100

a) Number employed by geographical area



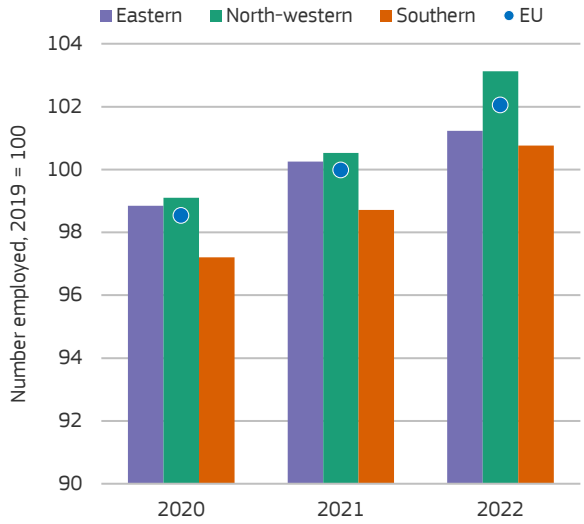
b) Number employed by level of development



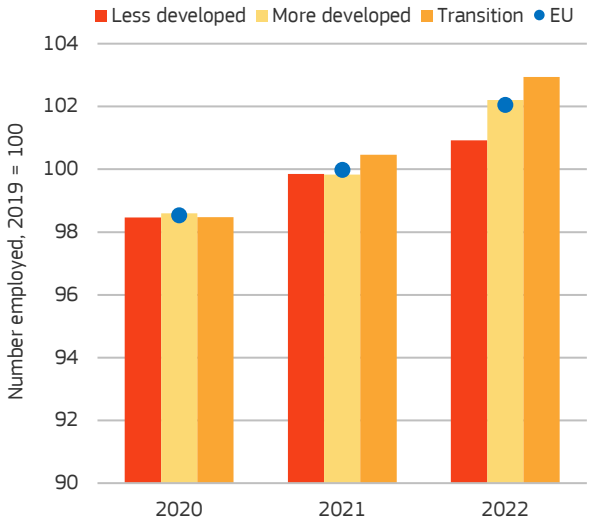
Source: Eurostat and Ardeco.

Figure 1.16 Number employed, by geographical area and level of development, 2020, 2021 and 2022, 2019=100

a) Number employed by geographical area



b) Number employed by level of development



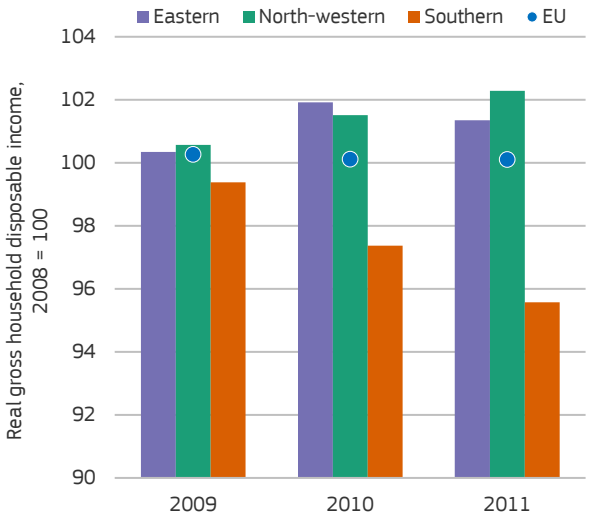
Source: Eurostat and Ardeco.

the increase in the southern EU was much the same as in the US, it was not associated with the same economic performance. Following the 2010 recovery, several EU Member States front-loaded fiscal consolidation measures in an attempt to curtail budget deficits. This yielded mixed results, as GDP often failed to rebound as forecast[37]. However, in the wake of the 2020 COVID-19-induced recession, the EU introduced the NextGenerationEU scheme, making available financial aid of some EUR 750 billion to Member States severely affected by the crisis to support cash-strapped national

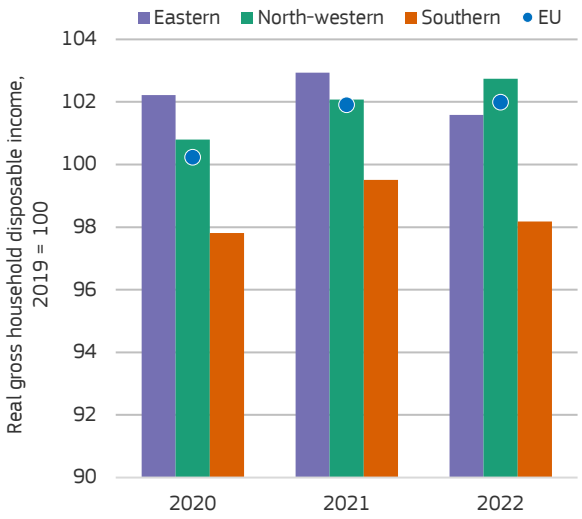
37 Blanchard and Leigh (2013).

Figure 1.17 Real gross household disposable income by geographical area, 2009–2011 (2008=100) and 2020–2022 (2019=100)

a) Real gross household disposable income by geographical area, 2009–2011 (2008=100)



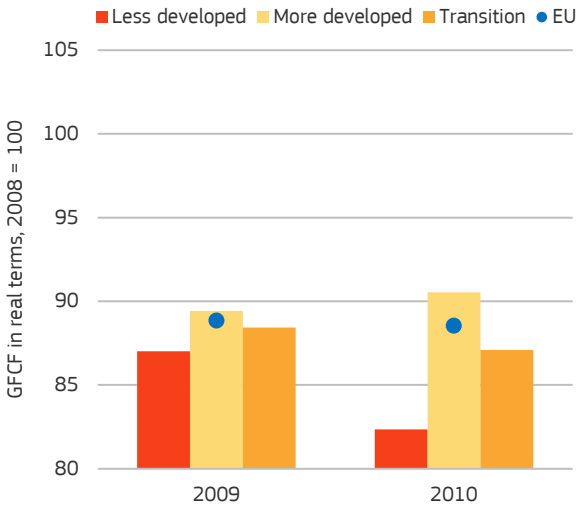
b) Real gross household disposable income by geographical area, 2020–2022 (2019=100)



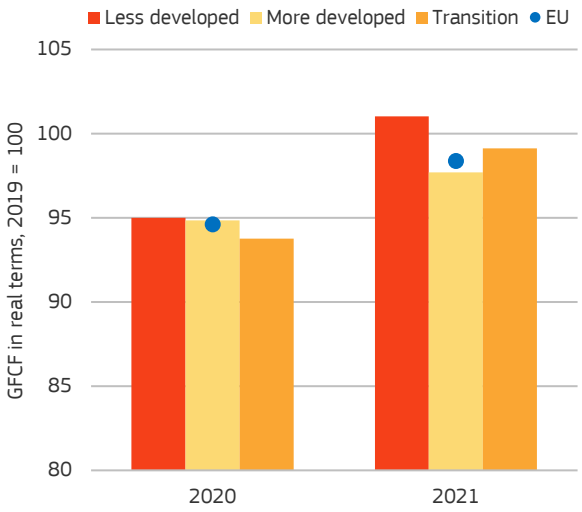
Note: Income is deflated by the harmonised consumer price index; data for MT and BG are missing.
Source: Ameco.

Figure 1.18 Gross fixed capital formation, in real terms, by level of development, 2009–2010 (2008=100) and 2020–2021 (2019=100)

a) Gross fixed capital formation, in real terms, by level of development, 2009–2010 (2008=100)



b) Gross fixed capital formation, in real terms, by level of development, 2020–2021 (2019=100)

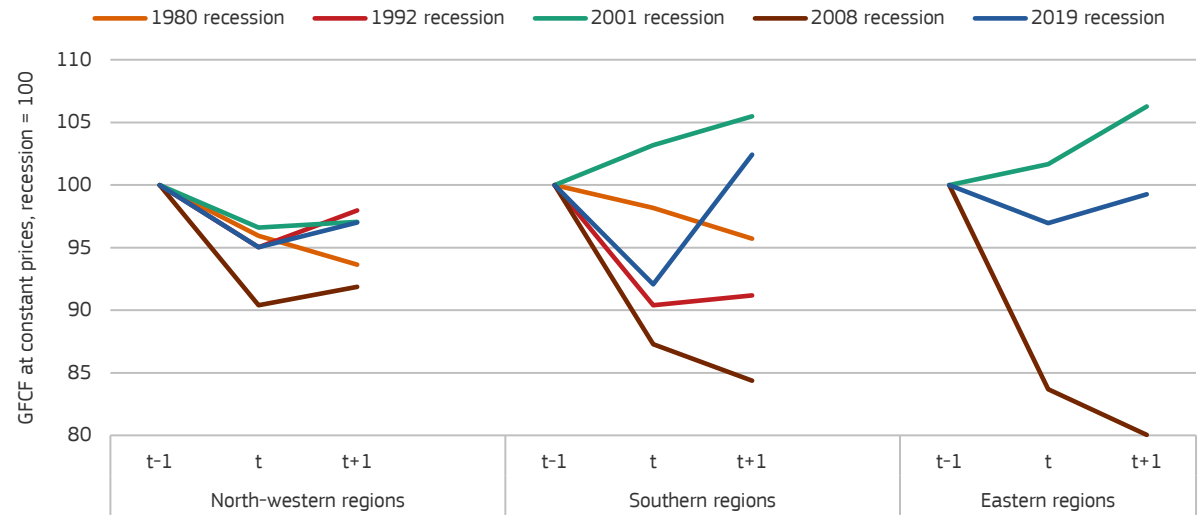


Source: Eurostat, Ameco and Ardeco.

budgets and to stimulate positive expectations for the economy. This collective response appears, so far, to have not only spurred a stronger recovery and mitigated any widening of disparities than after previous recessions but also restrained the increase in public debt.

In sum, the immediate impact of the two recessions was deep and broadly similar as regards the macro-economic effects. But the recovery of GDP, employment, household income and investment was stronger and more regionally balanced after the pandemic. The main proximate reason for this

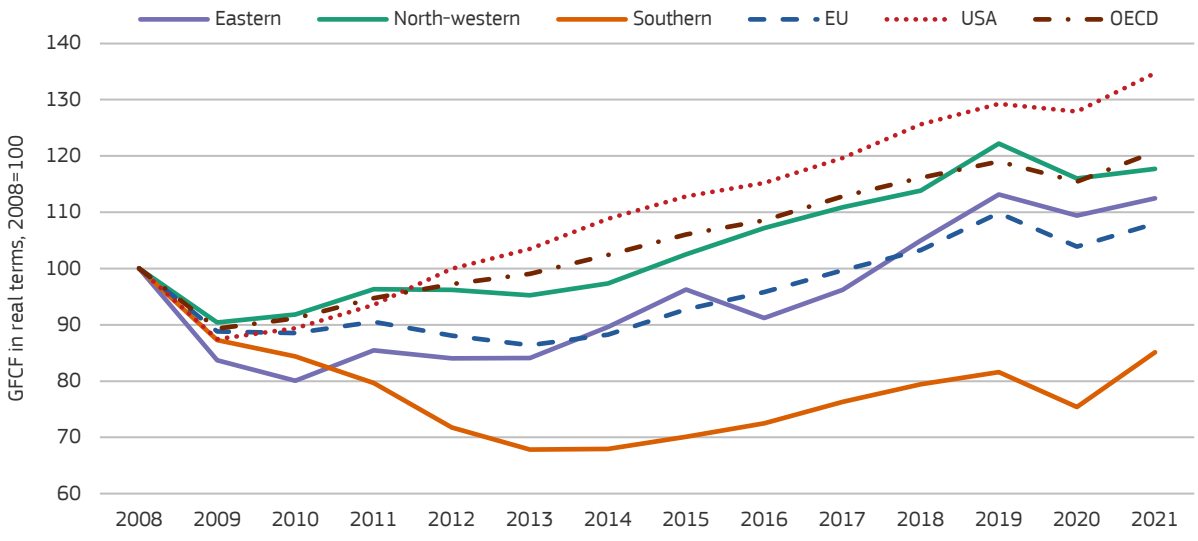
Figure 1.19 Gross fixed capital formation in the EU after the five major recessions since 1980, in real terms, by geographical area, year of recession=100



Source: Eurostat, Ameco and Ardeco.

is that the performance of eastern, and more especially southern, regions was more similar to that of north-western ones. This, in turn, is partly due to the different nature of the two shocks. The 2009 recession stemmed from a global financial crisis, with a severe impact on the banking sector hampering the credit channel in the midst of a major de-leveraging process from both the private and the public sector. This, in turn, exerted a prolonged drag on real economic activity, investment, prices and household income. This was the case throughout the EU, especially as compared with the more robust recovery in the US, and especially in EU regions most exposed to the twin de-leveraging process. By contrast, the 2020 recession was triggered by a different kind of external shock, the spread of a pandemic. The restrictions and disruptions to supply chains that ensued proved more transitory than the 2009 financial crisis. In line with the different nature of the two shocks, the price dynamics during

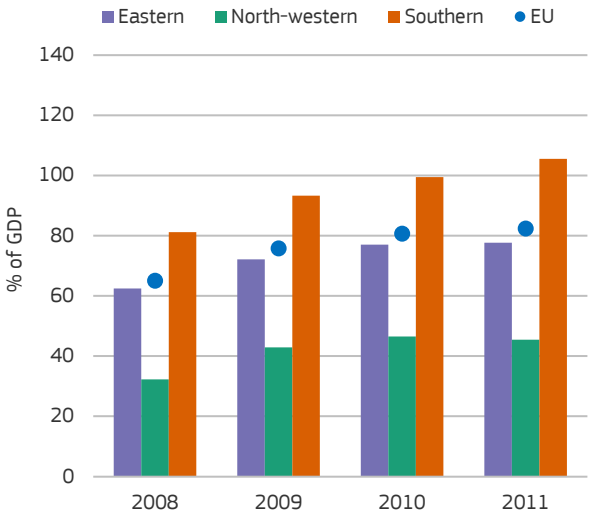
Figure 1.20 Gross fixed capital formation, in real terms, by geographical area, 2008=100



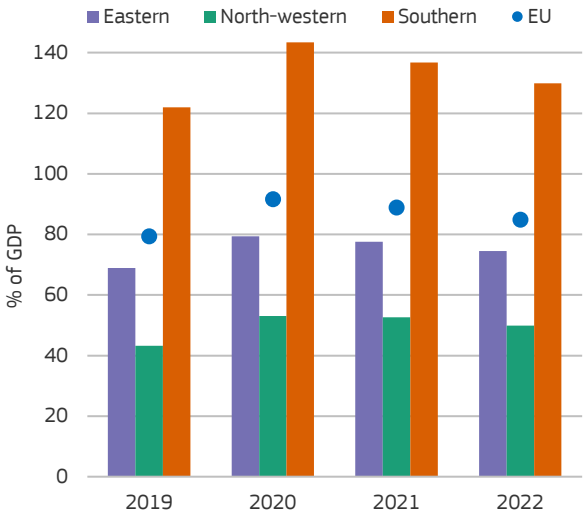
Source: Eurostat, Ameco and Ardeco.

Figure 1.21 General Government consolidated gross debt, by geographical area, 2008–2011 and 2019–2022

a) General Government consolidated gross debt, by geographical area, 2008–2011



b) General Government consolidated gross debt, by geographical area, 2019–2022



Source: Ameco.

the recovery phase were also different. In addition, novel and swift policy action – the rapid deployment of Cohesion Policy, new instruments such as SURE (Support to Mitigate Unemployment Risks in an Emergency) and the NextGenerationEU recovery fund – helped to prevent a protracted reduction in investment. Together, they made available up to EUR 750 billion in financial support to Member States severely affected by the 2020 recession.

The longer-term prospects for economic cohesion, however, remain hard to predict. The additional shocks that have occurred since the COVID-19 pandemic pose potentially longer-term challenges to the EU growth model. It is too early to fully assess the regional dimension of these shocks, partly because of a lack of regional statistics in many of the areas affected. Several regions, economic sectors and categories of workers have suffered significantly and the current situation remains fragile and volatile, with a risky and uncertain economic outlook. But there are also opportunities. For instance, regional economic disparities between the EU-27 and current candidate countries point to a large potential for upward convergence in the future; see Maps 1.5 and 1.6 comparing the 2004 enlargement with the current relative position of candidate countries vis-à-vis EU regions.

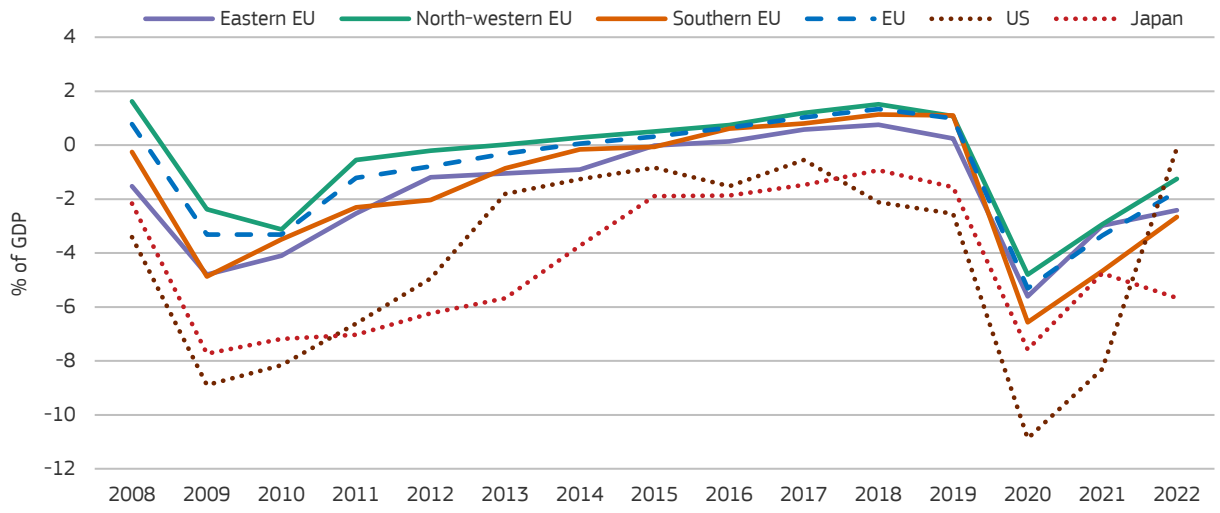
4. The geography of growth, stagnation and discontent: high-growth paths and development traps in Europe

Over the past two decades many regions have experienced a prolonged period of economic stagnation leading to growing popular discontent. The regions concerned seem to have fallen into a development trap, a state of sub-par performance of GDP, productivity and employment[38]. Such a state is empirically correlated with an increase in political discontent and a decline in support for democratic values and the EU[39]. Regional development traps are not just an economic concern. The sub-par economic performance and lack of job opportunities have social costs and give rise to political resentment towards what is increasingly regarded as a system that leaves many people behind.

38 European Commission (2022).

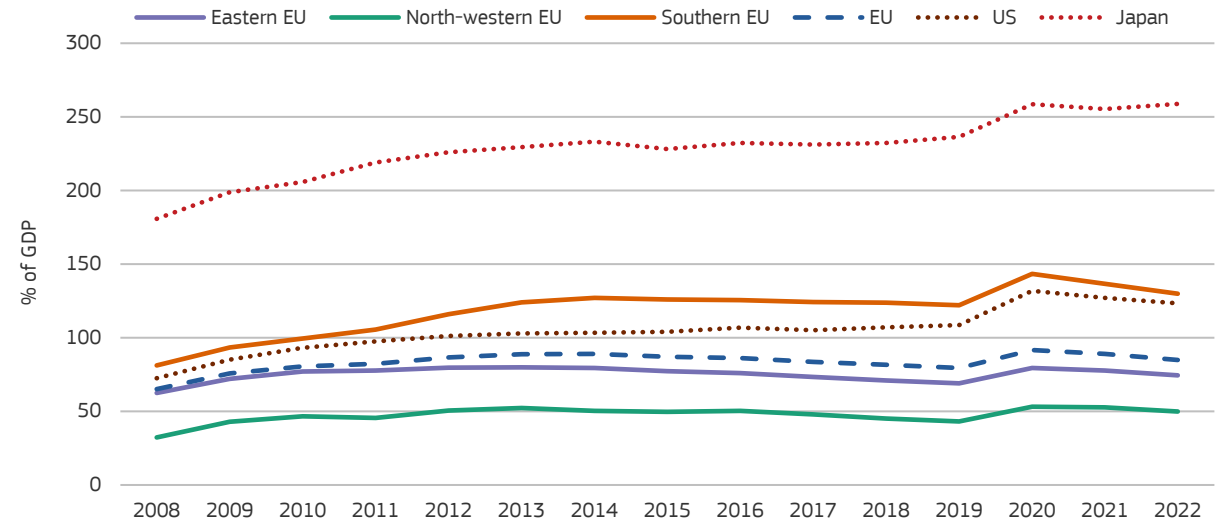
39 Dijkstra et al. (2020, 2023b).

Figure 1.22 General Government net lending (+) or net borrowing (-), excluding interest payments, 2008–2022



Source: Ameco.

Figure 1.23 General Government consolidated gross debt

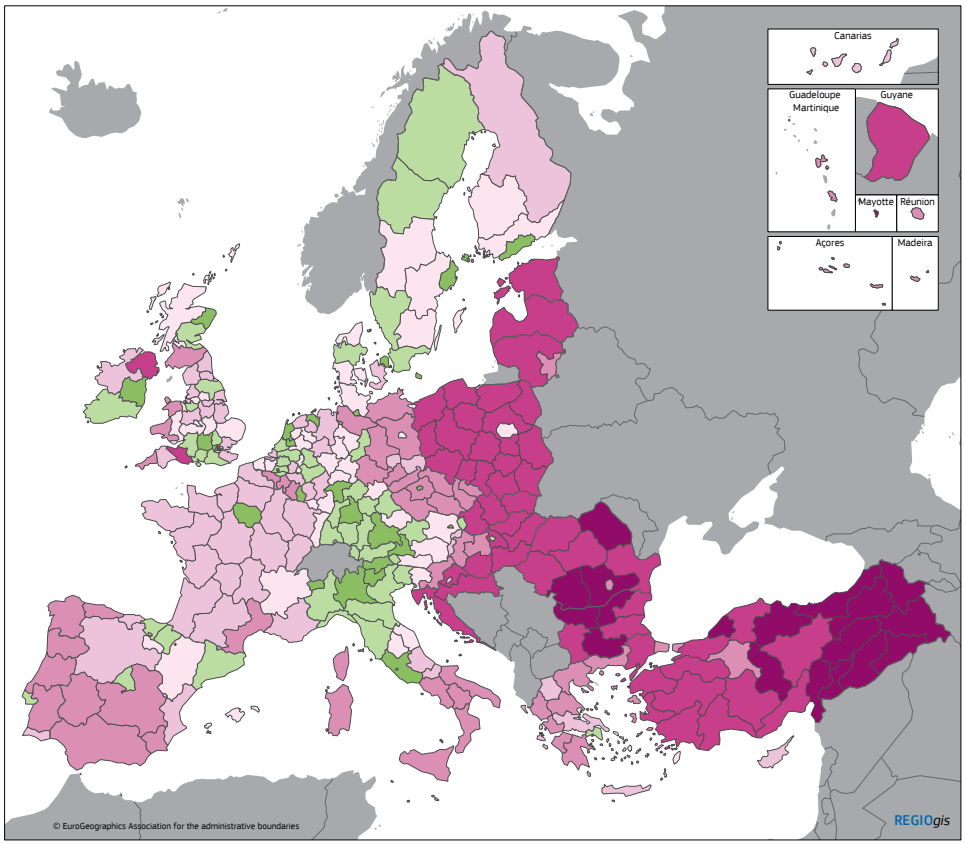


Source: Ameco.

On the positive side, though many regions have been persistently trapped, several have succeeded in moving from a low-growth to a high-growth development path. This has generally coincided with a shift of specialisation towards more complex economic activities linked to local strengths and characteristics, often through integrating into global value chains (see Chapter 5). This section builds on the concept of a development trap presented in the 8th Cohesion Report[40] and extends it in three ways. First, it develops a high-growth path index to identify the best regional performers. Second, it presents a novel approach to determining the characteristics of regions stuck in a development trap and the ways of escaping from it[41]. Third, it sets out evidence linking the risk, intensity,

40 European Commission (2022).

41 Balland et al. (2019).



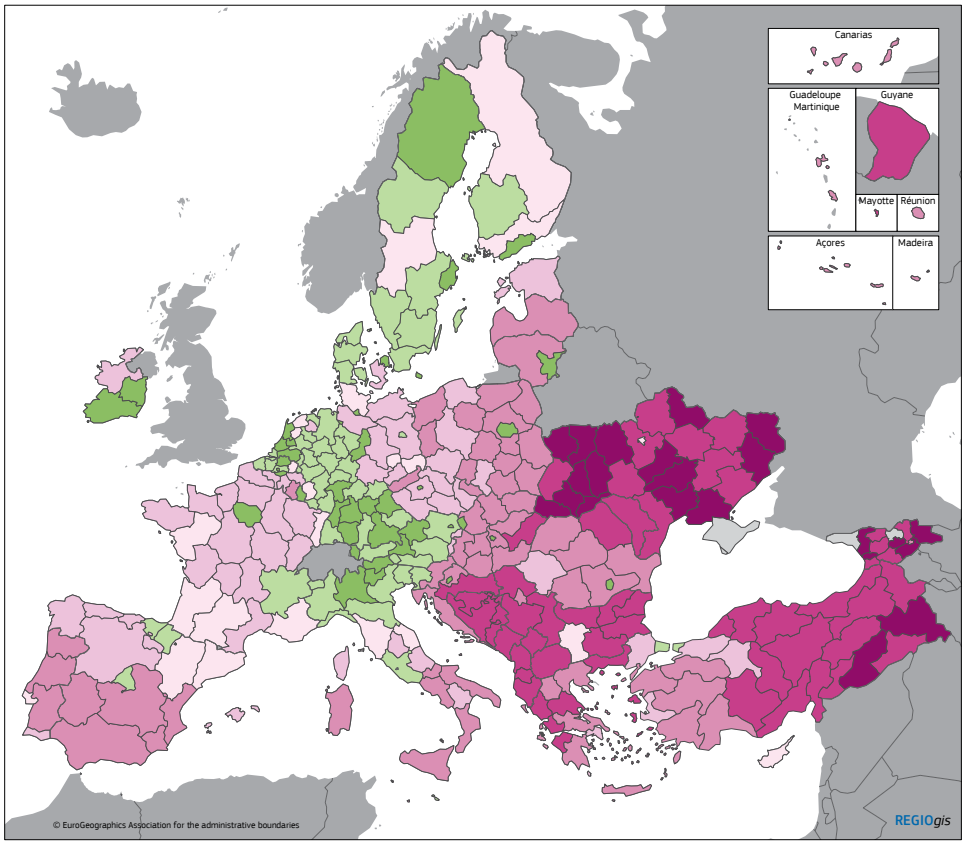
Map 1.5 GDP per head in PPS in the EU-15 and candidate countries in 2004, % EU-15

Index, EU-15 = 100

- <= 25
- 25 – 50
- 50 – 75
- 75 – 90
- 90 – 100
- 100 – 125
- > 125

Source: Eurostat [nama_10r_2gdp, nama_10r_3popgdp], JRC (ARDECO) and DG REGIO calculations.

0 500 km



Map 1.6 GDP per head in PPS in the EU-27 and candidate countries in 2021, % EU-27

Index, EU-27 = 100

- <= 25
- 25 – 50
- 50 – 75
- 75 – 90
- 90 – 100
- 100 – 125
- > 125
- no data

Source: Eurostat, World Bank, national statistical institutes and DG REGIO calculations.

0 500 km

Box 1.4 Regional cohesion and Russia's war of aggression against Ukraine

Russia's war of aggression against Ukraine sent shockwaves throughout the EU. Some of the EU's poorer regions are likely to be more affected. This box discusses three reasons: the concentration in richer regions of the economic contribution of working-age refugees; the vulnerability of poorer, rural areas to the sharp increase in energy and food prices; and the rise in geopolitical uncertainty, which has pushed up military spending particularly in poorer countries in eastern Europe.

The integration of refugees will probably raise average growth in the EU, but not regional cohesion. Immigration tends to benefit host regions that successfully integrate refugees in local labour markets. Under the Temporary Protections Directive, Ukrainian refugees can choose in which EU country to work, and most choose countries with an existing Ukrainian diaspora and dynamic labour markets: Germany, Poland and Czechia. Working-age Ukrainians added on average 2.5 % to the labour force aged 20–65 in eastern Europe, 1 % in western and northern Europe, and 0.5 % in southern Europe[1]. Taking into account that language barriers inhibit their integration into labour markets – surveys point to employment rates of about one third – Ukrainian refugees are likely to contribute on average about 0.5 % to the GDP of eastern countries in the short term, and somewhat less in the rest of the EU. The longer these refugees stay, and the better the policies facilitating their integration, the more likely their labour market participation is to rise. For example, as of August 2022, half of the working-age refugees had found employment in Poland, which currently hosts close to a million Ukrainian refugees, who can benefit from a particularly large existing diaspora and relatively low language barriers.

Even though eastern countries' living standards tend to lie below the EU average, it is mostly the richer regions that are likely to benefit from their integration into local labour markets. Refugees tend to settle in the dynamic regions with better employment prospects within those countries, such as Prague or Warsaw, whose GDP per capita already substantially exceeds the EU average.

The energy and food price shocks triggered by the war have lowered wealth throughout the EU, but poorer, rural areas were more affected. Prices for energy and food have declined from their peaks, but have had a significant impact on real disposable income. Since rural regions within the EU tend to be poorer than urban ones, households living in rural areas tend to spend relatively more on transport, and those that are poorer spend relatively more on energy and food. For example, households in rural areas in Bulgaria spend 35 % of their consumption on food, those in Bulgarian cities 23 %.

Finally, eastern countries bordering Russia, Ukraine or Belarus have raised their military spending more than other Member States since Russia's invasion of Crimea. With a GDP per head about half that of countries in the north and west, these countries raised their military spending by 0.7 % of GDP between 2014 and 2022, twice as much as those in the west and north. This increase risks crowding out spending that could have been used to advance regional cohesion. Being more intertwined with the Russian economy before the war, these economies are more affected by the sanctions imposed on Russia. The war has been a major disruption to the implementation of cohesion programmes, notably Interreg programmes. External border regions, in Finland and the Baltic States, as well as some Polish border regions, have lost their cross-border co-operation partners. Previous exchanges and cross-border flows have been replaced by closed borders and no co-operation. The Commission introduced changes allowing for the integration of these regions into other co-operation programmes, but the negative border effect is stronger than ever and they must be further supported to look for other co-operation and development opportunities.

1 All figures referenced in this box stem from Eurostat as well as various reports from the International Organization for Migration (https://dtm.iom.int/reports?search=ukraine).

and length of regional development traps to the rise of political discontent in the EU[42].

4.1 Regions on high-growth trajectories

The picture of convergence shown by the indicators above gives an overall view of macro-regional developments, but it does not lend itself to identifying specific features and success stories at a more detailed level. To shed light on these, the methodology used to determine the regions stuck in a development trap also enables us to calculate an economic development index (EDI) for regions that have persistently outperformed others[43]. A large number of EU regions, defined here at the NUTS 3 level, have been on a high-growth trajectory (EDI above 0.5 in Map 1.7) over the past two decades. As expected, these are disproportionally located in eastern Europe, reflecting higher growth during the catching-up phase noted above (beta convergence). However, regional success stories are not limited to this broad area of the EU. Indeed, most EU Member States have at least one NUTS 3 region on a high-growth path over the period 2001–2021 (EDI higher than 0.5). This is true not only of most capital city regions, but also of some regions in centre-north Portugal, north-western Spain, coastal France and, to a lesser extent, Italy and Greece, as well as some more developed regions in Germany, Belgium, the Netherlands and Sweden. Overall, this confirms that economic performance has varied substantially across the EU and within countries[44].

4.2 Regions in a development trap

A novel approach to determining the characteristics of regions in a development trap has shed light on possible links with a new typology of economic complexity traps[45]. In addition to the standard characteristics of regions in a development trap[46], self-reinforcing dynamics could limit the capacity of regions to innovate and develop new growth paths[47]. Regions might become trapped in low-complexity activities because of a lack of capability to develop highly complex products[48]. An analysis of the structural evolution of development traps over a long period of time has provided systematic empirical evidence on how many regions in the EU fail to overcome a 'low-complexity' structure, on the extent to which these are high- or low-income regions, and the kinds of traps they have fallen into. The definition of 'evolutionary traps' centres around the structural inability of regions to develop new activities, because their capabilities prevent them from moving into new and more complex activities that could increase their prosperity. Based on this, it identifies regions that once performed well but have become trapped, as well as those that have managed to escape from being so and how[49].

The characteristics of regions in a development trap are highly varied in terms of development levels, but the limited capacity of a region to educate people and retain them is a common feature across all levels of development. The reasons for falling into a development trap differ between

42 Dijkstra et al. (2023b).

43 Using the methodology to measure the likelihood of being in a development trap developed by Iammarino et al. (2020), high-growth paths are identified when regions have outperformed their peers in terms of GDP, productivity and employment growth (when the likelihood of so doing is greater than 50 %). The conventional development trap indicator denotes when a region's growth of GDP per head, productivity and employment is lower than that of the EU, its country, or the region itself over the previous five years. A region scores 1 for each time its growth is higher than the three benchmarks. The score between 0 and 9 is then rescaled to 0 and 1. To identify regions on high-growth paths, the inverse of the average yearly development trap score of each region is taken over the period 2001–2021. This ensures consistency and symmetry with the analysis based on the development trap indicator, while pointing to regions outperforming their peers.

44 In eastern Member States, economic performance has been strong in capital regions but also across the majority of other regions. In southern Europe, regions outperforming their peers are mostly located in Spain and Portugal – cases of catching up again because they were relatively poor regions – but there are positive examples also in Greece and Italy. Coastal regions in France have also generally performed much better than central ones (except for the capital city region). In the rest of Europe, there is a broadly balanced presence of regions in terms of their economic performance.

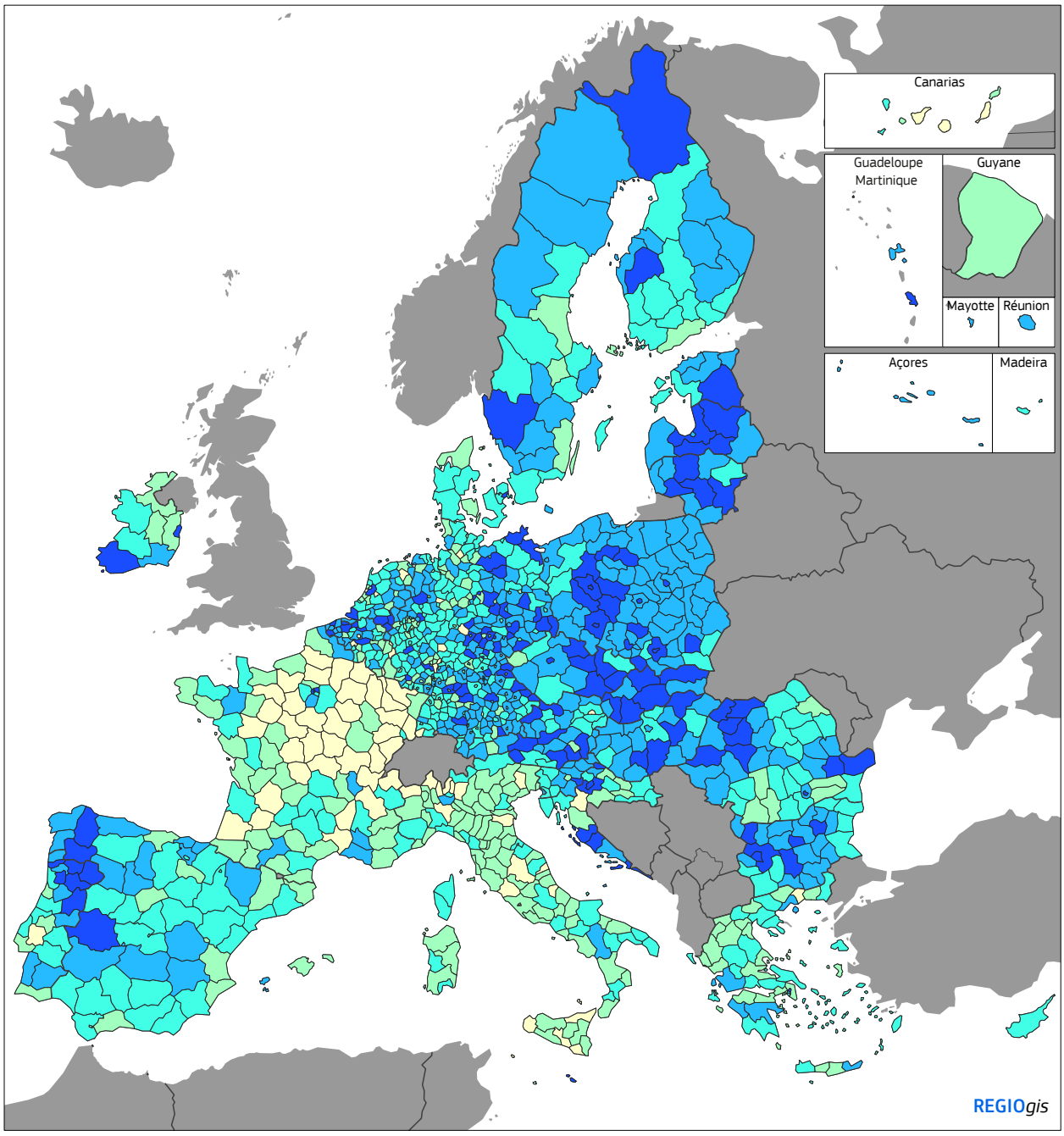
45 Balland et al. (2019).

46 Iammarino et al. (2022).

47 Arthur (1994).

48 Pinheiro et al. (2022).

49 Balland et al. (forthcoming).



Map 1.7 Economic development index at NUTS 3 level, 2001–2021

Likelihood of being in a high-growth trajectory

- < 0.3
- 0.3 – 0.4
- 0.4 – 0.5
- 0.5 – 0.6
- > 0.6
- no data

This index measures if a region's growth is higher than that of the EU, of its country, or of the region itself during the previous five years. It considers growth of GDP per head, productivity, and employment per head over a five-year period.
A region scores 1 for each time its growth is higher. This score between 0 and 9 is then rescaled to 0 and 1.
Source: DG REGIO calculations based on JRC and Eurostat data.

0 500 km

Table 1.3 Socio-economic characteristics of 'development-trapped' and other regions, average 2003–2021, by level of GDP per head, 2003

	Development trapped?	GDP/head (PPS) in 2003, index EU-27 = 100			
		< 75 %	75 - 100 %	>= 100 %	All
% of industry in GVA	Yes	21.5	14.8	18.8	18.1
	No	26.3	18.1	20.9	21.0
R&D expenditure as % of GDP	Yes	0.4	1.2	2.0	1.8
	No	0.9	1.5	2.5	2.1
% of population 25–64 with tertiary education	Yes	12.1	20.2	27.0	23.9
	No	20.9	27.7	30.9	27.2
Institutional quality index	Yes	-1.6	-0.5	0.3	-0.1
	No	-0.8	0.1	0.6	0.1
% of population (2021) by GDP/head level		23.3	22.5	54.2	100.0
% of population (2021) in trapped regions		2.4	7.3	18.6	28.4

Note: Socio-economic characteristics are average values of all available reference years in period 2003–2021.
Source: Eurostat [rd_e_gerdreg, lfst_r_lfsd2pop], JRC (ARDECO), University of Gothenburg, DG REGIO calculations.

regions depending on the initial level of development, geographical features, the macro-economic environment, the global economic context and structural characteristics. However, there are a number of common traits in terms of the quality of institutions, innovation capacity and importance of manufacturing that vary between trapped and non-trapped regions to differing degrees depending on the level of development. As indicated in the previous section, geographical characteristics, sectoral specialisation, productivity and investment dynamics affect beta or 'club' convergence. However, one common feature of persistently trapped regions at all levels of economic development is lack of human capital (Table 1.3).

This suggests that having in place the conditions and opportunities for investing, attracting and retaining people with tertiary education is a consistent feature of regions that have managed not to fall into a development trap for a large number of years and can reduce the likelihood of becoming trapped (see Chapter 6)[50]. Past performance is no guarantee of future performance. And not all regions can have a large share of tertiary-educated workers, but – at any level of development – a people-centred differentiated place-based approach in line with the potential and characteristics of the region may reduce the likelihood of experiencing a persistent period of stagnation (see Chapter 5).

4.3 Regions in a development trap and the geography of discontent

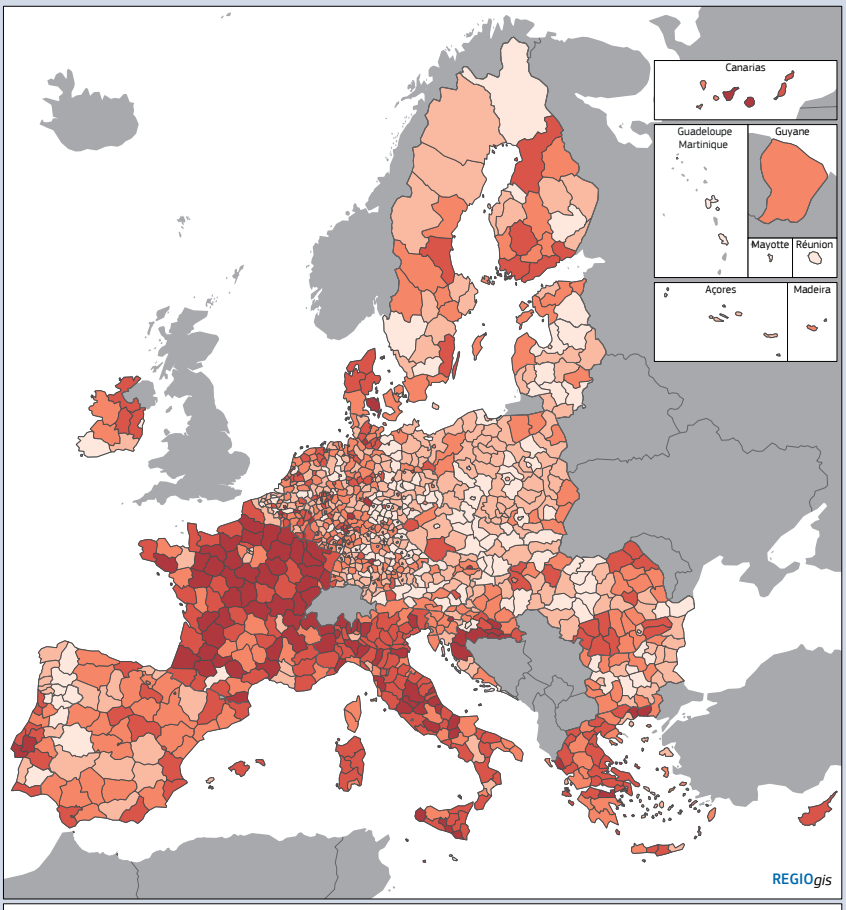
Regional development traps are not just an economic matter. Sub-par economic performance and lack of employment opportunities give rise to social costs and can cause political resentment towards what is increasingly regarded as a system that leaves people behind, leading to a growing geography of discontent[51]. An econometric analysis of the link between the risk, intensity and length of regional development traps and the rise of discontent in the EU, proxied by the support for Eurosceptic parties in national elections between 2014 and 2022, found a strong connection between being stuck in a development trap and support for

50 This is also the case for regions in a 'talent development trap', a composite indicator related to the development trap but in the demographic domain. European Commission (2023) shows that 46 regions in the EU with over 70 million inhabitants are in a talent development trap. These regions had an accelerating decline of their working-age population, and a low and unchanging number of people with tertiary education between 2015 and 2020. It also identifies a second group of 36 regions (with nearly 60 million inhabitants) that are at risk of falling into a talent development trap in the future, because they are strongly affected by the outward movement of people aged 15–39. This group accounts for 13 % of the EU population.

51 See Dijkstra et al. (2021 and 2023), who show that political discontent with the EU in Member States and regions is linked to an important extent to economic and industrial decline and being in a development trap.

Box 1.5 The geography of EU discontent and the regional development trap

In recent years, popular discontent has been brewing in many parts of the world, including in many countries in Europe[1]. This rising wave of dissatisfaction with a 'system' that many feel no longer benefits them is manifested in different ways, from declining levels of participation in elections to low levels of engagement in civil society. The dissatisfaction can also be seen in a growing tendency to support more extreme, often populist, options at the ballot box; and in increasing signs of distress and outright revolt by those disaffected by the system[2]. In the EU, this disaffection is reflected in the rise of Euroscepticism[3]. Since the 2008 financial crisis, the share of votes in national legislative elections for 'hard' Eurosceptic[4] parties has risen from under 5 % to 14 % in 2022, and for all Eurosceptic parties from 7 % to 27 %.



Map 1.8 Development trap index 1 at NUTS-3 level, 2001–2018

Likelihood of being in a development trap

- < 0.4
- 0.4 – 0.5
- 0.5 – 0.6
- 0.6 – 0.7
- > 0.7

This index measures if a region's growth is lower than that of the EU, of its country or of the same region during the previous 5 years. It considers growth in GDP per head, productivity and employment over a five-year period.
A region scores 1 for each time its growth is lower.
This score between 0 and 9 is then rescaled to 0–1.
Source: DG REGIO calculations based on JRC and Eurostat data.

0 500 km

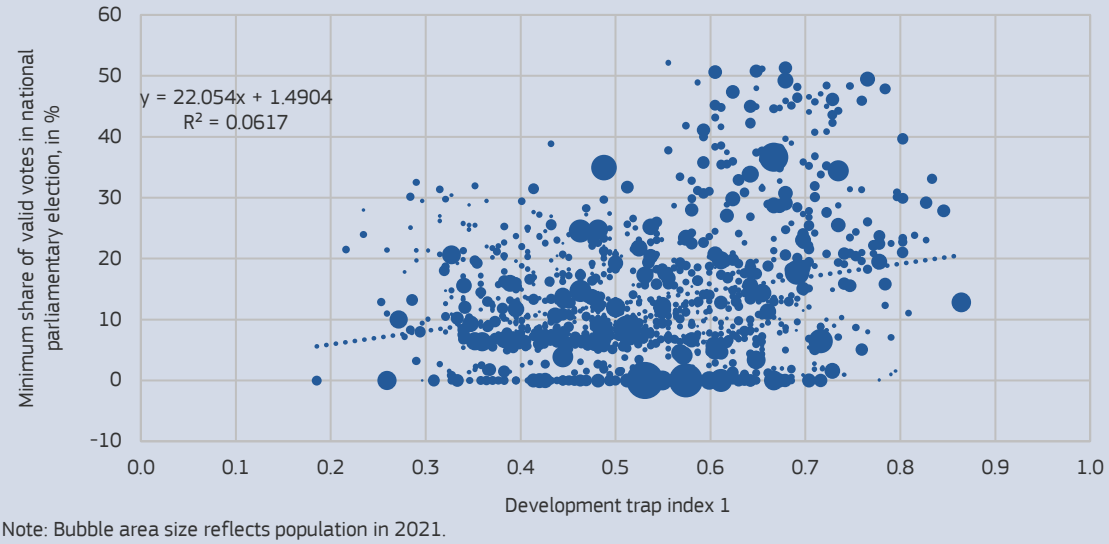
1 Greven (2016); Zakaria (2016); Hawkins et al. (2019); Hopkin (2020).

2 Rodríguez-Pose (2018); Kitschelt (2022).

3 Torreblanca and Leonard (2013); Dijkstra et al. (2020).

4 Eurosceptic parties are defined based on the Chapel Hill Expert Survey.

Figure 1.24 Correlation between being development trapped and the hard Eurosceptic vote for NUTS 3 regions, 2018–2022



Note: Bubble area size reflects population in 2021.
Source: Dijkstra et al. (2023b).

The rise of Euroscepticism is not an isolated phenomenon. It is instead part of a broader recent increase in the popularity of anti-system, or populist, parties[5]. Explanations can be classified as cultural or economic, or both[6]. People living in places in decline frequently feel trapped in regions they think no longer matter and where they perceive they have no future[7]. They feel ignored, neglected and marginalised by a distant and aloof elite[8], and are ill at ease with a changing world that threatens their identity and security.

A study[9] finds that much of the rise in discontent is concentrated in places that have been in a development trap[10]. The classic example of a region in a development trap is one that initially experienced a spurt in growth allowing it to attain middle-income levels, but subsequently got stuck without managing to reach high income levels[11]. However, many regions in Europe have stagnated – and even declined – at all levels of development. The risk of becoming stuck in a development trap is higher in middle-income regions, but can occur in all regions. The same study finds that falling into a development trap is a major factor in understanding why Eurosceptic voting in national elections has been on the rise across EU regions. People living in regions in a development trap are far more likely to be tempted by Eurosceptic political parties and to support them in elections. The authors also show that factors such as the risk, intensity and length of time spent in a development trap significantly increase the share of the Eurosceptic vote.

5 Hopkin (2020).

6 Noury and Roland (2020); Schmid (2022).

7 Rodríguez-Pose (2018 and 2020); Lenzi and Perucca (2021).

8 McKay et al. (2021).

9 Dijkstra et al. (2023).

10 The methodology to calculate the development trap is the same as that used in European Commission (2022).

11 Kharas and Kohli (2011).

Eurosceptic parties[52]. It also found that the longer the period of stagnation, the stronger the support for parties opposing European integration. Since development traps can occur at different levels of development, but appear to be a particular risk for transition regions, they may require policy responses that go beyond support for less developed regions. Assisting all regions that are development-trapped to become more dynamic should help to reduce regional inequalities and counter the threat of rising discontent in EU societies.

5. Economic cohesion and competitiveness to harness the benefits the Single Market

The productivity dynamics examined above are reflected in a broader measure of sub-national performance, the RCI. This is a composite indicator designed to capture the 11 main dimensions of competitiveness of EU NUTS 2 regions: institutions; macro-economic stability; infrastructure; health; basic education; higher education; training and lifelong learning; labour-market efficiency; market size; technological readiness; business sophistication; and innovation[53]. The 2022 RCI shows a polycentric pattern, with strong performance of regions with large urban areas, which benefit from agglomeration economies, better connectivity and higher levels of human capital. The index is above the EU average in all regions in Austria, the Benelux countries, Germany and the Nordic Member States. (Map 1.9, left panel). By contrast, all eastern regions, except most capital city ones, score below the EU average. Southern regions also score below the average, except for Cataluña, Madrid and País Vasco in Spain, Lombardia in Italy and Lisboa in Portugal. Ireland and, especially, France have a mix of regions above and below the EU average.

Less developed regions, however, have improved markedly over time. In the six years since the indicator was first developed in 2016, there has been a clear process of catching up in eastern regions combined with an improvement in southern ones, as they recovered from the economic and financial crisis (Map 1.9, right panel).

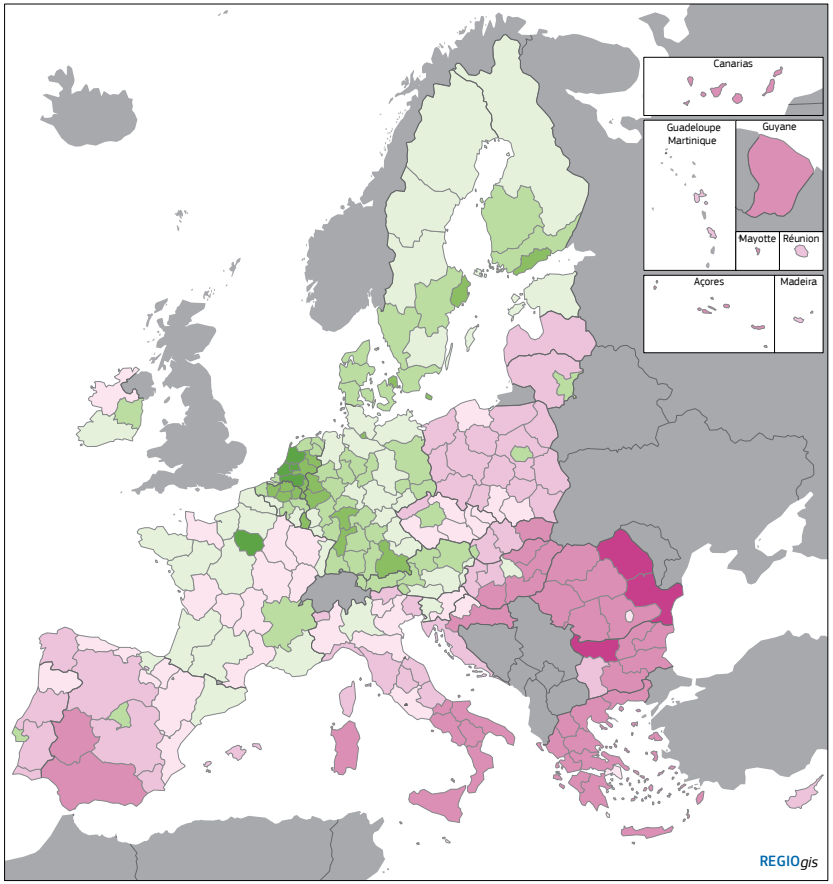
Between 2019 and 2022, the RCI improved by 10 index points or more in the capital city region in Lithuania (+20 points), Norte in Portugal (+14), the capital city region in Poland (+13), the Portuguese outermost region of Madeira (+13), and Illes Baleares in Spain and Śląskie in Poland (both +10).

Within Member States, capital city regions tend to be the most competitive ones. The gap between the capital city region and the others is particularly wide in France, Spain, Portugal and many of the eastern EU Member States. This can be a reason for concern as it increases pressure on resources in the capital city region while possibly leaving them under-utilised elsewhere. In three countries, however, the Netherlands, Italy and Germany, the capital city region is not the most competitive. In the Netherlands, Utrecht remains the best-performing region (at 151, the EU average being 100), followed by Zuid-Holland which includes Rotterdam and The Hague (at 142). In Italy, Lombardia, which includes Milan, continues to be the best-performing Italian region (at 103), while in Germany this remains Oberbayern, which includes Munich (at 130), and several other regions also outperform Berlin and Brandenburg.

52 Dijkstra et al. (2023b).

53 See Dijkstra et al. (2023a).

Map 1.9 RCI: latest values (2022) and change since the first edition in 2016



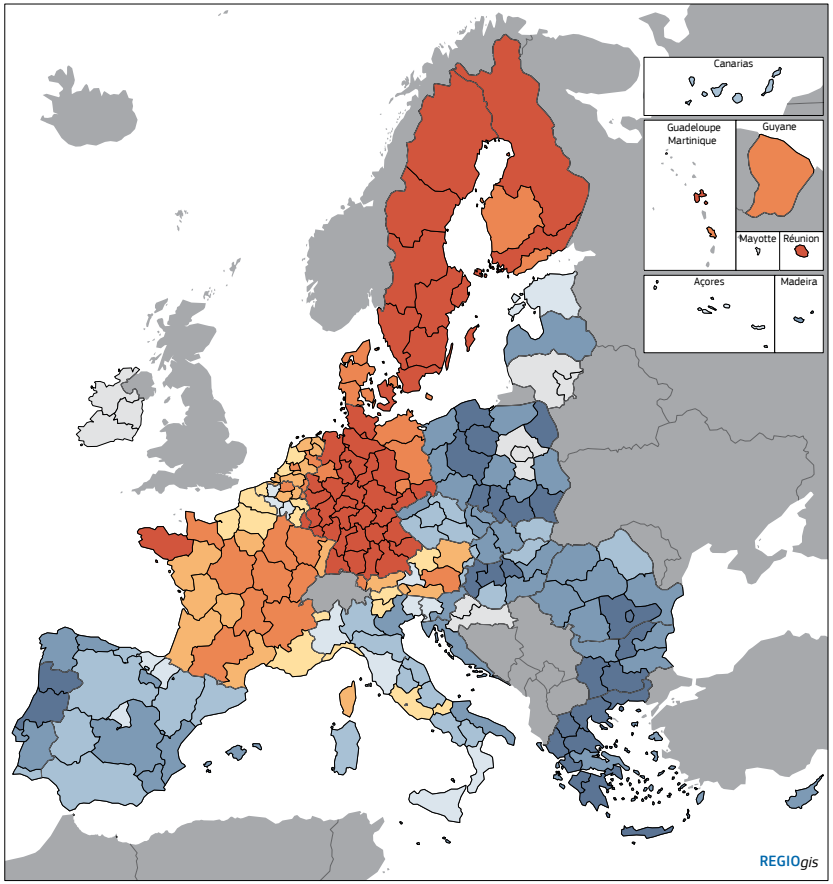
2022 edition

Index

<= 50	100 – 110
50 – 75	110 – 125
75 – 90	125 – 140
90 – 100	> 140

Revised, May 2023.
EU-27 = 100

0 500 km



Change between 2016 edition and 2022 edition

Change in index

<= -10.0	0.1 – 2.5	no data / data not comparable
-9.9 – -5.0	2.6 – 5.0	
-4.9 – -2.5	5.1 – 10.0	
-2.4 – 0.0	> 10.0	

Revised, May 2023.
Data for some regions cannot be compared due to changes in the NUTS classification (RCI 2.0, 2022: PL91 and PL92).

0 500 km

Box 1.6 Competitiveness, the EU Single Market and Cohesion Policy

The Single Market is a cornerstone of EU integration and competitiveness and goes hand in hand with Cohesion Policy. Removing barriers to the free movement of goods, services, capital and workers has promoted a better allocation of resources across the EU and fostered the exchange of ideas and innovation. However, market forces alone do not ensure that everyone benefits from economic integration. In fact, this report highlights significant territorial disparities linked to the different levels of development of countries and regions, their specific geographical features and their economic structure. These disparities, though tending to diminish, translate into different levels of competitiveness – as captured, for instance, by the RCI – which in turn may lead to fragmentation within the Single Market. Left alone, the free mobility of labour and capital in the context of uneven levels of competitiveness risks damaging cohesion. Cohesion Policy, along with other policies, notably State-aid rules, helps to create a level playing field essential for the Single Market to function fairly, while supporting less developed regions to develop.

By investing in infrastructure, innovation, education and other key areas, Cohesion Policy helps less developed regions directly and all other regions indirectly to reap the benefits of the Single Market. The latter occurs because of spill-over and scale effects linked to the policy and the Single Market[1]. A more competitive and integrated Single Market gives businesses access to a larger customer base and enables economies of scale to be realised. The proper functioning of the Single Market, however, requires that producers and consumers throughout Europe have equal access to it, so that it can ensure the effective matching of supply and demand and the efficient allocation of resources across the EU as a whole, in the long as well as the short term. But access cannot be taken for granted – thus need to support investment where access is limited, especially in the less competitive and less developed regions.

1 Crucitti et al. (2023).

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2

SOCIAL COHESION

- EU labour markets have shown resilience in the face of the COVID-19 pandemic and Russian aggression towards Ukraine. With both national government and EU support, employment in most regions rebounded from the reduction in 2020 in just one year. In 2022, the employment rate of those aged 20 to 64 in the EU reached a record high of nearly 75 %.

- Nevertheless, challenges persist and need to be addressed. Despite a reduction in regional disparities, labour markets remain more robust and social conditions better in north-western EU regions than in southern and eastern ones.

- Increased labour market participation of under-represented groups played a key role in reducing employment disparities and tackling labour shortages. The employment rate of women in the EU increased from 61 % in 2013 to 69 % in 2022, helped by improved access to childcare and long-term care and more flexible working arrangements. Nevertheless, the employment gap between men and women still averaged 11 pp in 2022 in the EU and 15 pp in southern Member States.

- Labour and skill shortages pose potential challenges to cohesion. Recent communications from the Commission highlight the need to tackle these shortages. This has become crucial to ensuring that all individuals are equipped with the right skills to take up opportunities and tackle the challenges the green and digital transitions bring about in such a way that no-one is left behind.

- There has been a continuing increase in education levels across all regions, with the tertiary rate in the EU for those aged 25 to 64 reaching 34 % in 2022. But regional disparities persist, notably because of a concentration of graduates in large cities, and rates remain higher in more developed and transition regions (36–38 %) than in less developed ones (26 %).

- The at-risk-of-poverty-or-social-exclusion rate declined from 35 % to 28 % in less developed regions between 2013 and 2019, while it remained unchanged at 19 % in more developed regions. Some 95 million Europeans were still affected in 2022 and achieving the 2030 goal of reducing the number by at least 15 million may prove difficult if stagnation persists.

Chapter 2
Social cohesion

1. Introduction

This chapter examines progress towards a more social EU. It focuses on cohesion across the main areas covered by the European Pillar of Social Rights action plan, namely employment, skill development, and poverty reduction (Box 2.1). A separate section considers gender equality and equal opportunities and attitudes towards migrants and other minorities.

The analysis indicates that while the EU is advancing towards a more inclusive and fairer society, in some areas progress has stalled. Labour markets have shown resilience and regional disparities in employment have narrowed. Increased labour market participation of under-represented groups has been important in furthering convergence and reducing labour shortages. There has been a general increase in education levels and participation in adult education and training, especially in less developed regions. However, disparities persist, notably because of a marked concentration of graduates in large cities. A tendency for the at-risk-of-poverty-or-social-exclusion (AROPE) rate to decline till 2019 was evident especially in eastern EU regions and rural areas in the southern EU. Nevertheless, some 95 million Europeans remain AROPE, including 20 million children and people in disadvantaged situations, such as people with disabilities.

Any analysis of labour market and social developments in the EU needs to start from one dimension of change in particular, the shrinking population of working age, which is projected to be some 7 % smaller by 2040, a reduction of 15 million. This has a potential macro-economic impact and affects regions and cities differentially. It emphasises the importance of increases in labour productivity for growth, closely tied to education attainment levels and the skills needed by the labour market. In addition, while capital accumulation was a major driver for growth up to the 1990s, now ideas or innovation that lead to new services and products have become more important. Education and training together with creativity are pivotal in this evolving landscape, especially with regard to the skills needed to support workers and businesses in the context of the green and digital transitions.

Labour shortages linked to a limited supply of certain skills, poor working conditions and human resource management, the ageing of the workforce and gender segregation, together with skill shortages and mismatches, continue to hold back growth, competitiveness and cohesion.

2. Impact of COVID-19 and post-COVID years on social situation in the EU

EU labour markets remained resilient in the aftermath of the COVID-19 pandemic, despite the uncertainty created by the Russian war of aggression against Ukraine and significant inflationary pressures. Overall, more people than ever are employed in the EU, and fewer people are unemployed or looking to work longer hours.

The upward trend in employment from 2013 to 2019 resumed after a dip (of 1 pp) in 2020 when the COVID-19 pandemic hit. The employment rate of those aged 20 to 64 reached 74.6 % in 2022, 1.9 pp higher than in 2019[1], while overall unemployment of those aged 15 to 74 went down to 6.2 % in 2022 from 7.2 % in 2020. The response of regional labour markets during the pandemic and the subsequent recovery saw narrowing differences in employment rates between

1 In 2021, due to the introduction of new legislation, there was a break in the EU labour force survey (LFS) time series, which involved, among other revisions, a change in the definition of employment. Selected series of main indicators were retroactively corrected for the break. However, regional series were not included in these adjustments. For this report, regional employment rates from 2008 to 2020 are extrapolated to be consistent with the country-level break-corrected time series.

Box 2.1 European Pillar of Social Rights and its action plan

The European Pillar of Social Rights was proclaimed by the European Parliament, the Council and the European Commission at the Social Summit for fair jobs and growth in Gothenburg on 17 November 2017. Then the President-elect of the European Commission, Ursula von der Leyen, committed to the Pillar in her speech before the European Parliament in Strasbourg in July 2019 and in her political guidelines for the mandate of the next European Commission, announcing further action to implement the associated principles and rights.

The Pillar sets out key principles and rights to support fair and well functioning labour markets and welfare systems. It supports the convergence towards better working and living conditions among participating Member States. 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 for employment;
- fair working conditions, namely the right to secure and adaptable employment, fair wages, information on working conditions and protection in case 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 access to childcare and support for children's education, unemployment benefits and access to activation measures, minimum-income support, old-age pensions, affordable healthcare, support for people with disabilities, affordable long-term care, housing and assistance for the homeless and access to essential services.

The Pillar reaffirms rights already present in the EU but complements them by taking account of new realities arising from societal, technological and economic developments. As such, it does not affect principles and rights already contained in the binding provisions of EU legislation. 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. On 4 March 2021, the European Commission adopted the European Pillar of Social Rights action plan[1], and proposed three headline targets for the EU to reach by 2030, welcomed by EU leaders at the Porto Social Summit in May 2021 and at the European Council of June 2021:

1. at least 78 % of the population aged 20 to 64 to be in employment, supported by halving the gender employment gap;
2. at least 60 % of all adults aged 25 to 64 to participate in training every year; and
3. a reduction of at least 15 million in the number of people identified as AROPE, including at least 5 million children.

Member States have set national targets for each of the targets, and progress towards both the EU-level and national targets is monitored through the European Semester.

The action plan establishes principles and rights to foster a fairer and more just society within the EU. It encompasses initiatives to combat poverty and social exclusion, which include increasing the adequacy and coverage of minimum wage protection, support for social benefits, policies aiming at labour market activation, active inclusion for minimum income recipients, adequate social protection, long-term care and pensions, the child guarantee and investment in education and training.

The action plan also includes a proposal for a revised social scoreboard, to track progress towards the Pillar principles more comprehensively. The yearly joint employment report[2] provides regional breakdowns (at NUTS 2 level) of the social scoreboard headline indicators for which data are available.

1 European Commission (2021b).

2 European Commission (2023h).

more and less developed regions and between north-western and eastern and southern Member States. Given the exogenous nature of the shock and with support from national and EU measures, it took just one year, after the decline in 2020, for the employment rate in nearly all regions to return to, or surpass, the 2019 level. By contrast, during the previous economic crisis, reductions in employment, which began in 2009, persisted until 2013, and the employment rate returned to pre-crisis levels only by 2015–2017 and only by 2019 in southern countries.

After a small fall (of 0.8 pp) in 2020, the proportion of women in employment continued to expand, helped by improved access to childcare, more flexible working arrangements and increasing education levels. Despite this, progress in closing the gender employment gap has slowed down in recent years in most regions (except those in eastern countries) and in the EU as a whole still stood at 11 pp in 2022. The employment rate of migrants (i.e. those born outside the EU), after a significant fall (of 2.5 pp) in 2020, increased faster than for other groups between 2020 and 2022 (by 4.0 pp), confirming their adaptability to changing economic conditions and their contribution to meeting labour shortages in particular sectors and regions.

The positive trend in tertiary education continued across all regions during the pandemic. The proportion of people aged 25 to 64 with tertiary education in the EU even increased in 2020 (by 1.2 pp), reaching 34.3 % in 2022. By contrast, adult participation in education and training (in the previous four weeks) decreased (by 1.7 pp) when COVID-19 hit, but rebounded the following year, especially in less developed regions and eastern Member States. Almost 12 % of those aged 25–64 participated in education and training (in the four weeks preceding the survey) in the EU in 2022, 1.1 pp more than in 2019[2].

After two decades of low inflation, the COVID-19 pandemic was followed by a surge inflation as reduced supply chains struggled to keep up with increasing demand and as the Russian war in Ukraine in early 2022 reduced energy and food supplies[3]. As a result, inflationary pressures accentuated concerns about the effects on lower-income households that spend a larger share of their income on energy, food and transport, on which price increases were especially large[4]. Accordingly, the proportion of households reporting financial distress increased from 12.5 % in December 2021 to 15.8 % in December 2022[5].

The proportion of the population experiencing severe material and social deprivation (see Box 2.4 for the definition) increased marginally in the EU from 6.3 % in 2021 to 6.7 % in 2022, but by more (by 1.2 pp) in Latvia, Estonia, Romania, Germany and France. There were also large increases (from 6.8 % in 2019 to 8.3 % in 2022) in those reporting an inability to afford a decent meal (with meat, chicken, fish or a vegetarian equivalent) every second day and an inability to keep their home adequately warm (from 6.9 % to 9.3 %) – an indicator of energy poverty reversing the reduction between 2016 and 2019.

Overall, perhaps partly as a result of the policy responses at EU and Member State level, the AROPE rate, which declined consistently between 2016 and 2019 in most types of regions, has remained unchanged since 2019. Also in 2022, relative poverty and income inequality, as measured by the ratio of the income of the top 20 % of households to that of the bottom 20 %, remained unchanged[6].

2 Note that the EU target of achieving at least 60 % of adults participating in training each year by 2030 is based on a different indicator, covering the last 12 months rather than just the previous four weeks.

3 European Commission (2023a) and Fulvimari et al. (2023).

4 OECD (2023).

5 European Commission (2023a). The financial distress indicator is based on the business and consumer survey and is composed of the share of adults reporting the need to draw on savings and the share of adults reporting the need to run into debt.

6 Eurostat's flash estimate for 2022. The EU-SILC (EU statistics on income and living conditions) AROPE and at-risk-of-poverty (AROP) rates for year N are based on the accrual income from the previous year, N-1. Eurostat's flash estimates complement EU-SILC indicators with estimates for the latest income changes and are based on modelling and micro-simulation techniques that consider the interaction between labour market developments, economic and monetary policies, and the implementation of social reforms for income year N.

3. Labour market developments

The EU is well on track to meeting its headline target of at least 78 % of people aged 20–64 being in employment by 2030[7] (Box 2.2). Overall, the rate increased by around 8 pp from the end of the recession in 2013 to 74.6 % in 2022[8]. Notably, in the Netherlands, Sweden, Estonia, Czechia, Germany, Malta, Hungary and Denmark, the rate was 80 % or more, with increases of 15 pp or more in Malta and Hungary. In Greece, Croatia, Spain and Romania, countries with less robust labour markets, the increase was also large (over 10 pp). In Italy, the increase was more modest (5 pp) to 65 % in 2022, the lowest in the EU. At the same time, the unemployment rate in the EU fell from 11.4 % in 2013 to 6.2 % in 2022.

Despite these positive trends, regional disparities persist, especially among some population groups[9]. Untapped labour potential includes young people not in employment, education or training ('NEETs') (11.7 % of those aged 15 to 29 in 2022), the long-term unemployed (2.4 %), large numbers of women (the labour market participation rate of women as a whole being 74 %, almost 11 pp less than for men), and people with disabilities (with a participation rate of just 55.8 %).

3.1 Narrowing disparities in EU labour markets continue

The response of regional labour markets during the COVID-19 pandemic and the subsequent recovery was marked by some convergence of less developed regions. Between 2019 and 2020, employment rates declined more in more developed regions than in transition and less developed ones (by 1.5 pp as against 0.8 pp and 0.6 pp). The regional variations reflect the severity of the measures implemented to restrict economic activity, which varied between countries, and the nature of these measures – such as to preserve jobs as against supporting those losing their jobs. The economy was disrupted in each region differently, and losses in some sectors (such as wholesaling and retailing; arts, entertainment, and recreation activities) in transition and less developed regions were offset to some extent by an expansion in ICT. Subsequently, over the two years of post-COVID recovery, employment increased faster than in the pre-crisis period in all three types of region (by around 1.5 pp a year on average).

Southern Member States, as a group, suffered the biggest fall in the employment rate (by 1.9 pp) in 2020, almost twice as much as in north-western ones (1.0 pp), while in eastern ones the reduction was negligible (0.2 pp). However, the rate also rebounded more quickly in southern Member States (Table 2.1, upper part).

In part, perhaps because of national and EU support measures and due to the exogenous nature of the pandemic, developments since 2020 contrast with those experienced during the earlier financial and economic crisis. From 2009, employment rates declined over a five-year period, with the largest falls in less developed regions. It took six to eight years for rates to return to pre-crisis levels (Figure 2.1). The biggest fall was in southern countries (of 7 pp), with the rate recovering to the pre-crisis level only after 10 years (Figure 2.2).

The developments since 2013 have seen a reduction in disparities between less developed regions and others, the difference in the employment rate narrowing from 15 pp to 10 pp in 2022. The gap between north-western countries and southern ones narrowed by the same amount, while between the former and eastern countries, the gap was reduced from 10 pp to only 2 pp.

Narrowing disparities are also evident across NUTS 2 regions. In several regions in Poland (5), Hungary (5), Portugal (3), Greece (Attiki), Bulgaria (Severoiztochen) and Romania (Bucureşti-Ilfov), the employment rate increased by 15 pp or more between 2013 and 2022, to over 78 % in some cases. Nevertheless, marked regional disparities

7 European Commission (2023h). Progress towards the target is measured through the Joint Employment Report and the Employment Committee monitoring tools.

8 The reference year for time series comparison in further analysis of the labour market is limited to 2013, marking the end of the previous recession. 2013 represents the lows, not the start, as depicted in Figure 2.1 and Figure 2.2.

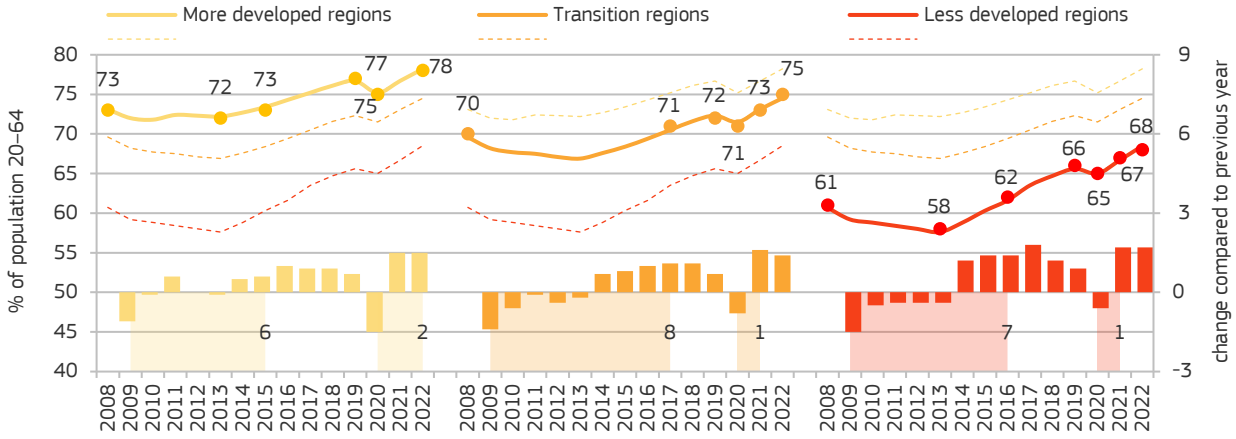
9 European Commission (2022a).

Table 2.1 Employment and unemployment rates and changes by level of development and by geographical area, 2008–2022

	2022	Change 2013–2022	Average annual change							
			2008–2013		2013–2019	2019–2020		2020–2022	
	%	pp	pp	years to return to 2008	pp	pp	years to return to 2019	pp	
Employment rates, 20–64									
EU-27	74.6	+7.8	-0.4	7	+1.0	-1.0	1	+1.5	
More developed regions	78.2	+6.0	-0.2	6	+0.8	-1.5	2	+1.5	
Transition regions	74.5	+7.6	-0.5	8	+0.9	-0.8	1	+1.5	
Less developed regions	68.5	+10.9	-0.6	7	+1.3	-0.6	1	+1.7	
North-western EU	78.2	+4.8	+0.1	2	+0.5	-1.0	1	+1.3	
Southern EU	67.9	+9.2	-1.4	10	+1.2	-1.9	1	+2.0	
Eastern EU	75.8	+12.2	-0.1	5	+1.5	-0.2	1	+1.6	
Unemployment rates, 15–74									
EU-27	6.2	-5.4	+0.8	10	-0.8	+0.4	2	-0.5	
More developed regions	5.1	-3.2	+0.5	9	-0.5	+0.9	2	-0.4	
Transition regions	6.9	-6.0	+0.9	10	-0.8	+0.2	2	-0.6	
Less developed regions	8.0	-7.8	+1.3	10	-1.2	+0.2	1	-0.4	
North-western EU	5.1	-2.4	+0.1	7	-0.4	+0.7	2	-0.4	
Southern EU	10.2	-9.1	+2.1	still higher	-1.2	+0.2	1	-0.9	
Eastern EU	4.2	-5.9	+0.7	7	-1.0	+0.7	3	-0.2	

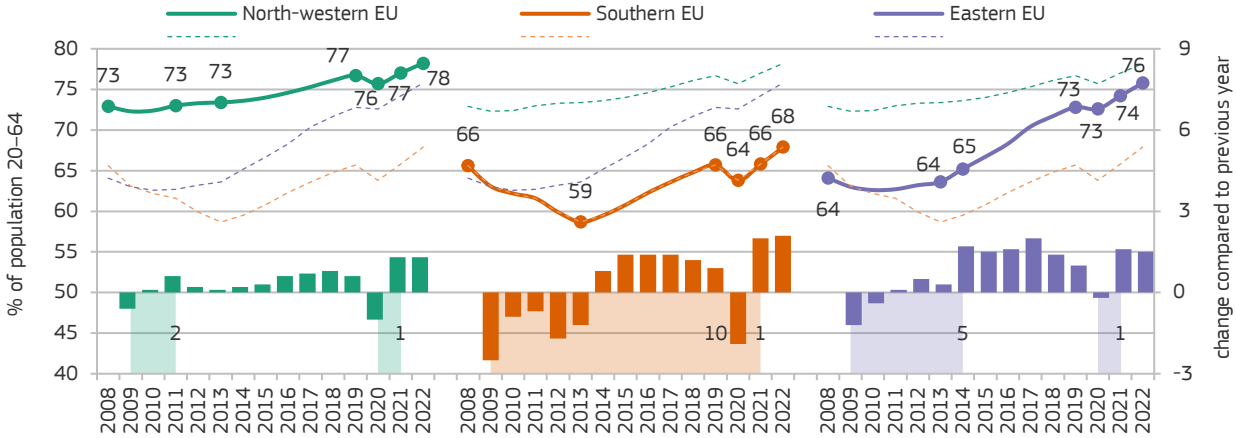
Note: Total change 2013–2022 in second column. Average changes to compare different length periods (5, 6, 1, 2) in other columns.
Source: Eurostat [lfst_r_lfsd2pwc], DG REGIO calculations (employment 2008–2020 extrapolated to be consistent with country-level break-corrected data).

Figure 2.1 Employment rates and changes by level of development, 2008–2022



How to read the chart: In 2008, the employment rate in less developed regions was 61 % (red line). As a result of the economic recession, it started to decline in 2009 (red bars - RHS), hitting a low of 58 % in 2013 and surpassed the 2009 level in 2016, reaching 62 % - after 7 years. By contrast, as a result of COVID-19, the rate fell to 65 % in 2020, and returned to the 2019 level of 67 % in 2021 – just one year later. It continued to rise in 2022, reaching 68 %.
Source: Eurostat [lfst_r_lfsd2pwc] and DG REGIO calculations (employment 2008-2020 extrapolated to be consistent with country-level break-corrected data).

Figure 2.2 Employment rates and changes by geographical area, 2008–2022

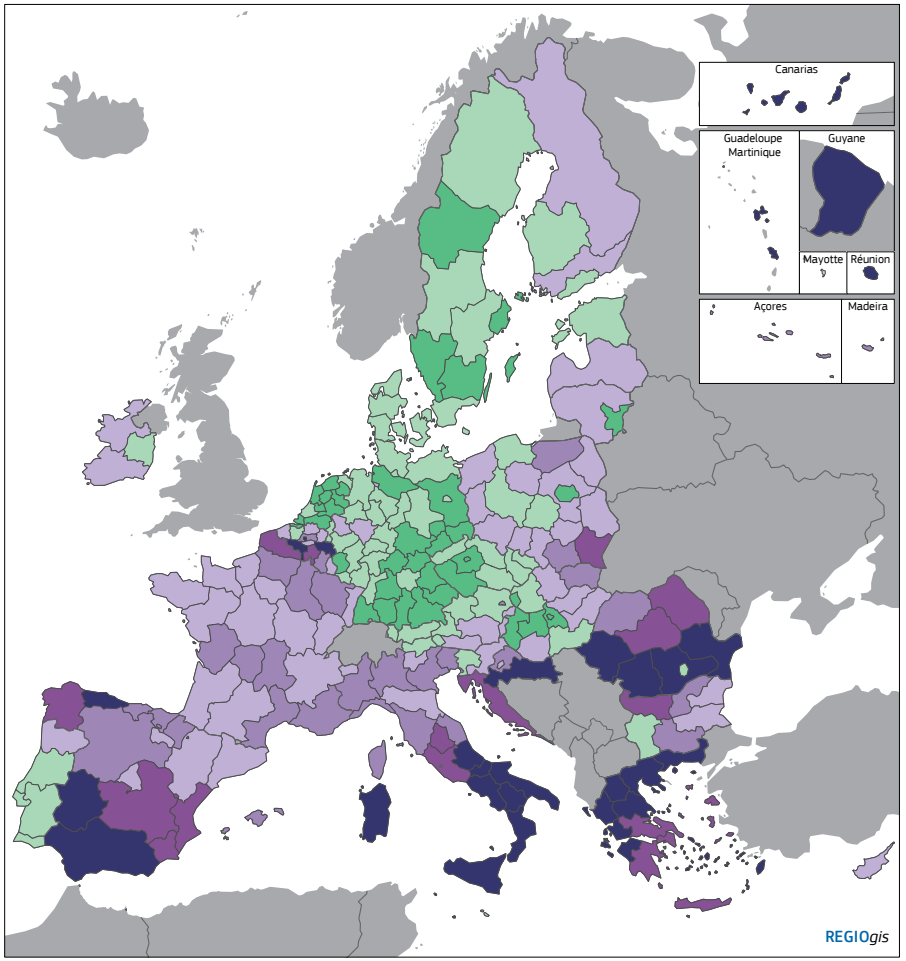


How to read the chart: In 2008, the employment rate in southern EU countries was 66 % (brown line). As a result of the economic recession, it started to decline in 2009 (brown bars - RHS), hitting a low of 59 % in 2013 and surpassed the 2009 level only in 2019, reaching 66 %. As a result of COVID-19, the rate fell to 64 % in 2020 and returned to the 2019 level of 66 % in 2021 – just one year later. It continued to rise in 2022, reaching 68 %
Source: Eurostat [lfst_r_lfsd2pwc] and DG REGIO calculations (employment 2008-2020 extrapolated to be consistent with country-level break-corrected data).

remain within Member States. In many regions in Greece (8), Romania (4), Italy (8), Spain (6), the outermost regions in France, Belgium (3) and Croatia (Panonska Hrvatska), the rate was still below 66 % in 2022 (Map 2.1 and Map 2.2). Some of the lowest employment rates in the EU are in the outermost regions with some having rates below 50 %.

3.2 Unemployment at record lows in many regions

Mirroring employment developments, the decline in overall unemployment, youth unemployment and NEETs resumed in 2021 and 2022 after increasing in 2020. The overall unemployment rate of those aged 20 to 64 fell to 6.2 % in 2022 0.4 pp lower than in 2019 and a substantial 5.4 pp lower than in 2013 (Table 2.1, lower part). After the recession in 2009, unemployment took until 2017–2018 to



Map 2.1 Employment rate (20–64), 2022

% of population aged 20–64

- < 66
- 66 – 70
- 70 – 74
- 74 – 78
- 78 – 82
- >= 82
- no data

EU-27 = 74.6
The employment rate target is 78 % by 2030.
Source: Eurostat (lfsd_r_lfe2emprt).

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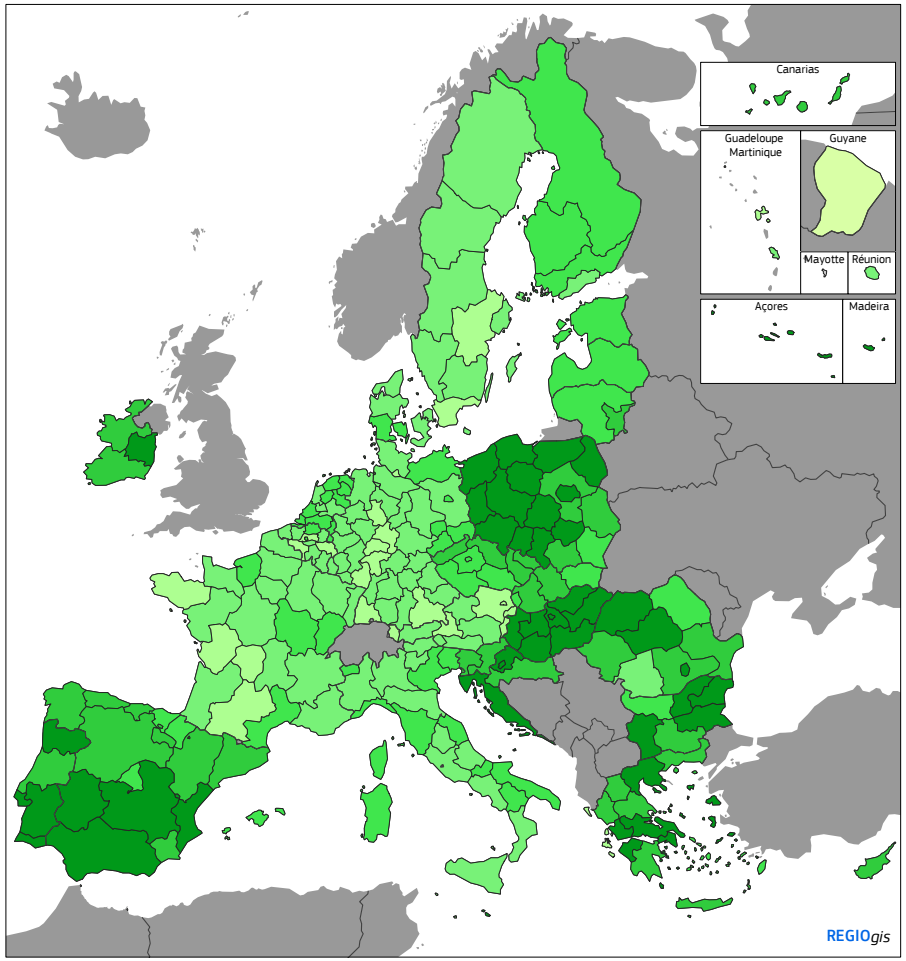


Map 2.2 Changes in employment rate (20–64), 2013–2022

percentage point change

- < 0
- 0 – 3
- 3 – 6
- 6 – 9
- 9 – 12
- >= 12
- no data

EU-27 = + 7.8
Based on 2013 values adjusted to be consistent with national main indicators (corrected for break in series in 2021).
Source: Eurostat [lfst_r_lfe2emprt] and DG REGIO estimates.

0 500 km

return to pre-recession levels in north-western and eastern Member States and it was still above its 2008 level in southern ones in 2022.

The youth unemployment rate for those aged 15 to 24 declined from 25.7 % in 2013 to 14.4 % in 2022, while the NEET rate for those aged 15 to 29 fell from 16.1 % to 11.7 %. Regional disparities diminished between 2013 and 2022, primarily because of larger reductions than elsewhere in less developed regions and in southern countries. While, however, the youth unemployment rate remains lower in more developed regions than in others, it was still the case till 2022 that 5–6 % of young people aged 15–24 (the youth unemployment ratio in Table 2.2) were unemployed, the same as in other types of regions (Table 2.2). Youth unemployment remains particularly high in the outermost regions[10].

Reductions in unemployment are evident across almost all NUTS 2 regions. In a number of regions, many in Greece and Spain, both the overall and youth unemployment rates declined by more than 10 pp between 2013 and 2022. Nevertheless, many of these regions, as well as some (the outermost ones) in France[11] and Italy, still have both overall and youth unemployment rates that are more than double the EU average (Map 2.3 and Map 2.4).

The downward trend in labour market slack[12] has also resumed after the increase in 2020. In 2022, the rate of slack in the EU fell to 12 % of the extended labour force, 2.6 pp lower than in 2019 and 7.3 pp lower than in 2013.

3.3 Labour market challenges include skill shortages

The unemployment rate fell to record lows in the EU in 2022, while the number of job vacancies reached record highs. In north-western Member States, job vacancy rates have been consistently high in the recent past in 'professional, scientific and technical activities; administrative and support service activities' (5.5 %), 'construction' (5 %) and 'ICT' (4.7 %). Rates have also been higher in these sectors than others in eastern countries (2.3 %, 2.4 % and 2.1 %, respectively) and they have been increasing in southern countries. There is a consistent pattern of high job vacancies, along with a substantial wage premium, in the 'ICT' sector in all three groups of regions, suggesting a shortage of supply of the relevant skills. The high job vacancy rate in the 'professionals' and 'construction' sectors might imply a need to adjust wages to attract and retain workers (Figure 2.3).

Although there are signs of some cooling down, with job vacancy rates declining in north-western and eastern countries[13], skill shortages and a mismatch between available jobs and available workers have become a major issue for labour markets across EU regions. This might intensify with ongoing demographic trends (see Chapter 6), and the effects of the green and digital transitions[14] (see Chapters 4 and 5) on selected occupations and across all skills levels[15]. The 2023 demography toolbox[16] (Box 2.2) outlines a comprehensive approach that empowers all generations to realise their talents and personal aspirations, also with a view to filling labour shortages. This Communication on Skills and Talent Mobility enhance the EU's

10 Youth unemployment reached levels as high as 55.4 % in Mayotte in 2020, and 43.9 % in Canarias, 41.9 % in La Reunion, 38.7 % in Martinique and 37.8 % in Guadeloupe (all 2022). Source: Eurostat.

11 Mayotte has one of the highest unemployment rates in the EU (27.8 % in 2020, the latest year for which there are data).

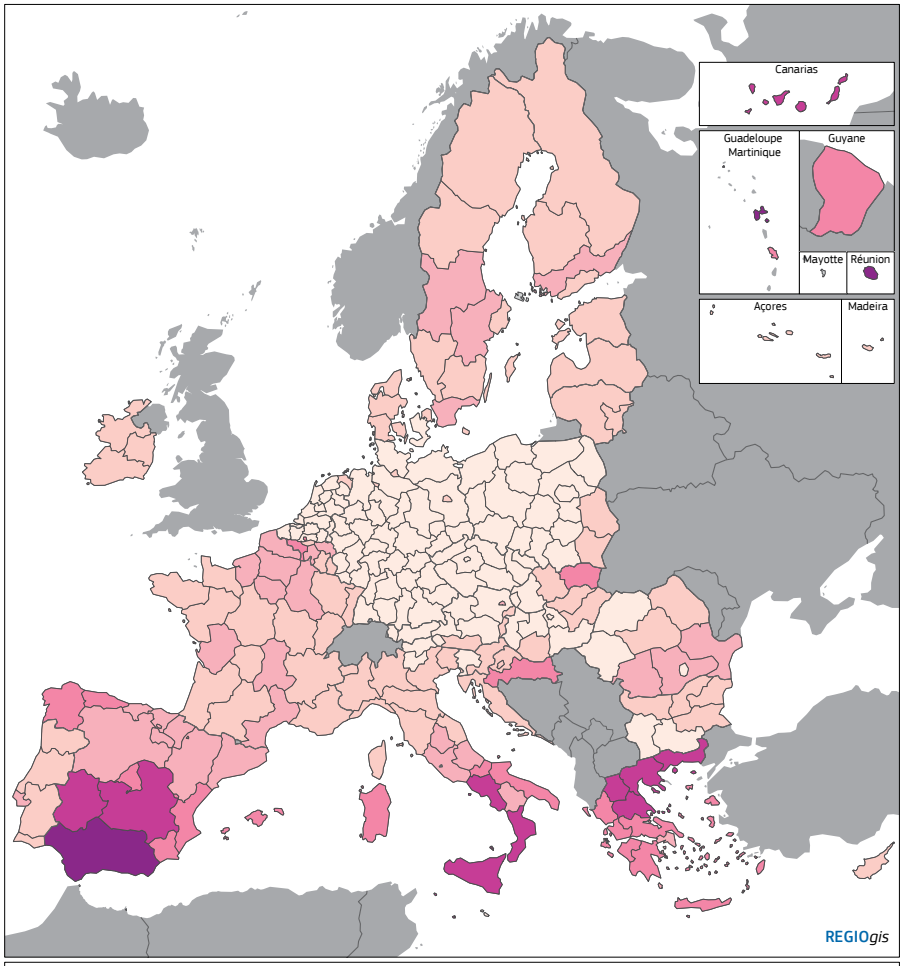
12 Eurostat refers to four groups of individuals as labour market slack: unemployed people according to the International Labour Organization definition, those actively seeking a job but not immediately available for work, those available for work but not seeking it, and under-employed part-time workers. The extended labour force includes the labour force (unemployed and employed) and the potential additional labour force (the two categories outside the labour force, i.e. those available but not seeking, and those seeking but not available). Eurostat (2023).

13 European Commission (2023b). The share of recent job starters fell significantly in summer 2022 and remained unchanged to the first half of 2023, implying that employers were less active in recruiting new personnel.

14 European Commission (2023b). Growing demand for skilled workers and occupational mismatches could affect the efficient functioning of the labour market and lead to simultaneous increases in vacancies and unemployment.

15 European Commission (2023a).

16 European Commission (2023c).

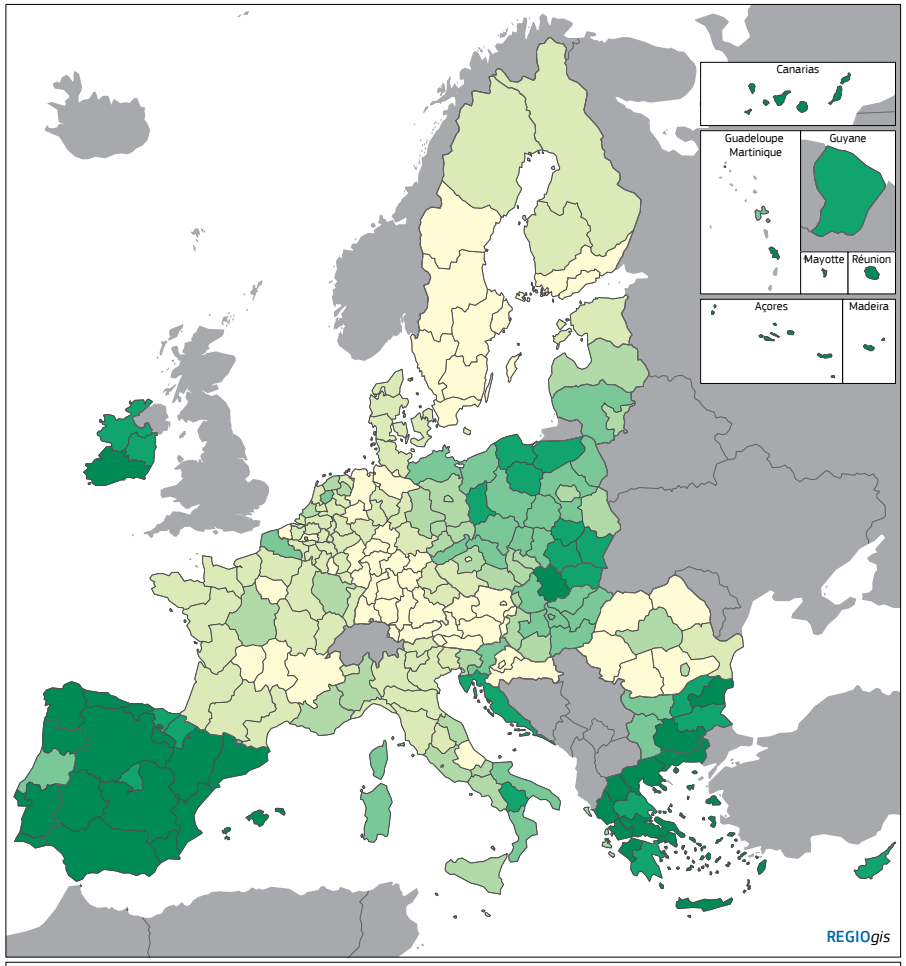


Map 2.3 Unemployment rate (15–74), 2022

% of labour force
- <= 4
- 4 – 7
- 7 – 10
- 10 –14
- 14 – 18
- > 18
- no data

EU-27 = 6.2
Source: Eurostat (lfst_r_lfu3rt).

0 500 km



Map 2.4 Change in unemployment rate (15–74), 2013–2022

percentage point change
- <= -10
- -10 – -8
- -8 – -6
- -6 – -4
- -4 – -2
- > -2
- no data

EU-27 = -5.4
Darker shades mean a larger decrease in unemployment rate.
Source: DG REGIO based on Eurostat data (lfst_r_lfu3rt).

0 500 km

Box 2.2 Demography toolbox, and addressing labour shortages

In October 2023, the Commission put forward a Communication outlining a comprehensive set of policy tools available at the EU level to support Member States in managing demographic change and its impacts. The toolbox encompasses notably regulatory instruments, policy frameworks, and funding, which can be combined with national and regional policies. It stresses that gender equality, non-discrimination and inter-generational fairness must be at the heart of policy choices.

The toolbox draws on the practices and experience of Member States and sets out a comprehensive approach with four pillars:

1) better reconciling family aspirations and paid work, notably by ensuring access to high-quality childcare and work-life balance, with a view to fostering gender equality.

2) supporting and empowering younger generations to thrive, develop their skills, and facilitate their access to the labour market and to affordable housing;

3) empowering older generations and sustaining their welfare, through reforms combined with appropriate labour market and workplace policies;

4) where necessary, helping to fill labour shortages through managed legal migration in full complementarity to harnessing talents from within the Union.

The toolbox acknowledges the need to consider the territorial aspect of demographic shifts, particularly in regions facing population decline and a 'brain drain' of young workers.

The fourth pillar of the toolbox highlights the fact that demographic change, if unaddressed, could increase labour shortages, leading to economic bottlenecks. The EU is already experiencing record labour shortages, particularly in ICT, construction, care, and transport. As 'baby boomers' retire by the mid-2030s, shortages in both high- and low-skilled jobs are expected to increase unless countered by increased labour force participation and wage adjustments. However, without productivity increases, higher labour costs could affect the competitiveness of EU firms in global markets.

The toolbox emphasises that to fill skill gaps, legal migration from non-EU countries is crucial, especially for skills that are critical to the green and digital transitions. Despite its large labour market, the EU has relatively low inward labour migration, especially of high-skilled workers, compared with other destinations, such as the US.

attractiveness to talent across occupations where skill shortages may exist and boost intra-EU mobility[17]. The annual sustainable growth survey for 2024 also stresses that skill shortages, namely in healthcare and long-term care, STEM[18] (particularly ICT, see Maps 2.5 and 2.6), green and certain service occupations, are major bottlenecks for innovation and competitiveness and, so, for sustainable growth.

As regards the future of work, major trends, specifically in platform and tele- working and artificial intelligence (AI)[19], are likely to affect labour markets in all regions. They both offer opportunities (access to flexible employment, participation in the labour market irrespective of location) and pose risks (exacerbating existing regional disparities in the necessary infrastructure). In this regard, the challenge is to respond to current regional labour and skills shortages and anticipate future ones, making use of reliable intelligence on skills, including that provided by public services.

17 European Commission (2023d).

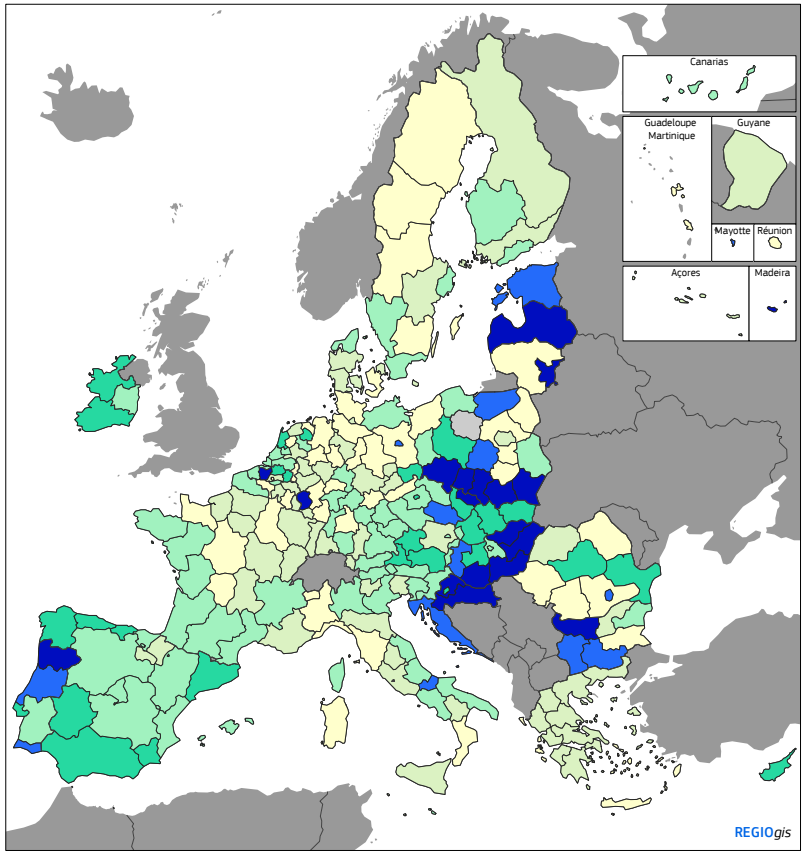
18 Science, technology, engineering, and mathematics.

19 European Commission (2021c). The European Commission has been working on several initiatives on the future of work. The proposed directive on platform work aims to classify digital platform workers more meaningfully and establish the first set of EU rules governing the use of AI in the workplace. The Commission is examining the implications of teleworking and the right to disconnect within the broader digitalisation of the workplace and is currently assessing the next steps in light of the European Parliament's legislative resolution on these issues. The EU's approach to AI centres on excellence and trust, with a focus on enhancing research and industrial capacity while ensuring safety and fundamental rights.

Table 2.2 The labour market situation of young people by level of development and by geographical area EU regions, 2013 and 2022

	Employment rate, 15–24			Unemployment rate, 15–24			Unemployment ratio, 15–24			NEET 15–29		
	2013	2022	2013–2022	2013	2022	2013–2022	2013	2022	2013–2022	2013	2022	2013–2022
	% of pop		pp	% of labour force		pp	% of pop		pp	% of pop		pp
EU-27	29.6	34.8	5.2	24.7	14.4	-10.3	9.7	5.9	-3.8	16.1	11.7	-4.4
More developed	37.5	42.1	4.6	17.3	11.5	-5.8	7.8	5.5	-2.3	11.9	9.2	-2.7
Transition	28.4	34.3	5.9	27.8	16.2	-11.6	10.9	6.6	-4.3	15.7	11.4	-4.3
Less developed	19.3	21.9	2.6	37.3	21.7	-15.6	11.5	6.1	-5.4	22.5	16.3	-6.2
North-western EU	40.2	45.8	5.6	15.5	11.2	-4.3	7.4	5.8	-1.6	10.8	9.1	-1.7
Southern EU	16.7	21.4	4.7	47.5	26.2	-21.3	15.1	7.6	-7.5	24.0	15.4	-8.6
Eastern EU	23.2	25.4	2.2	26.6	13.7	-12.9	8.4	4.0	-4.4	17.5	12.9	-4.6

Note: 2021 break in LFS series.
Source: Eurostat [lfst_r_lfsd2pwc, edat_lfse_22], DG REGIO calculations.



Map 2.5 Employment in ICT, excess growth 2013–2020

Excess growth - percentage point difference

- lower than employment growth in the region
- 0 – 10
- 10 – 20
- 20 – 35
- 35 – 50
- >= 50
- no data

EU-27 = 14
Excess growth is calculated as difference between sector's growth and total employment growth (excluding agriculture) in the region. If total employment growth (excluding agriculture) is less than 0, excess growth is set to sector's growth.
Source: Eurostat [nama_10r_3empers] and DG REGIO estimates.

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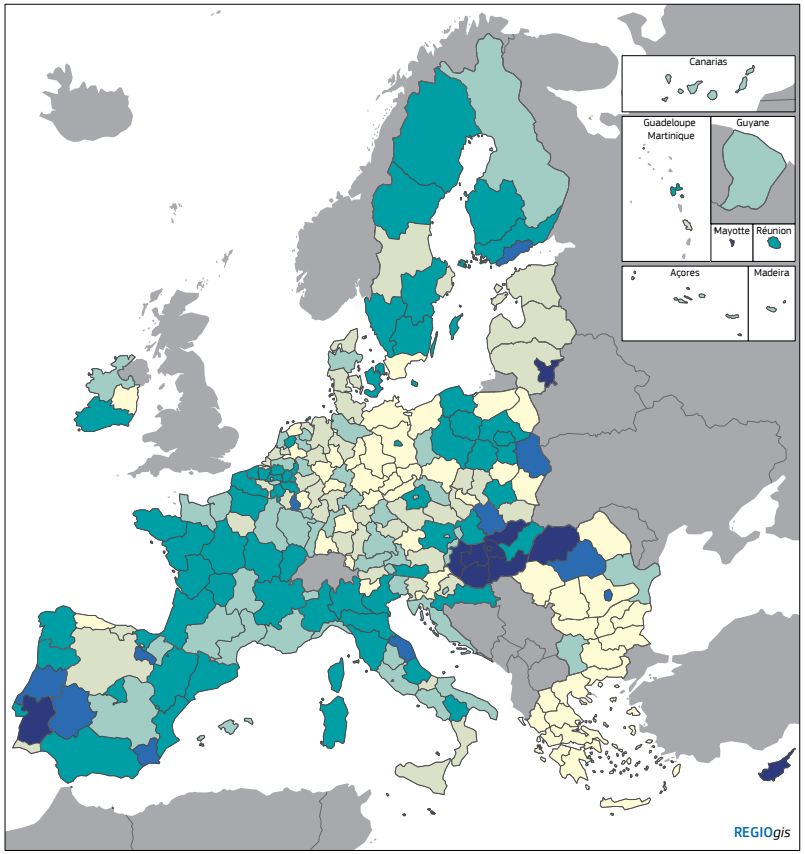


Map 2.6 Employment in professional, scientific, technical, administrative and support service activities, 2013–2020

Excess growth - percentage point difference

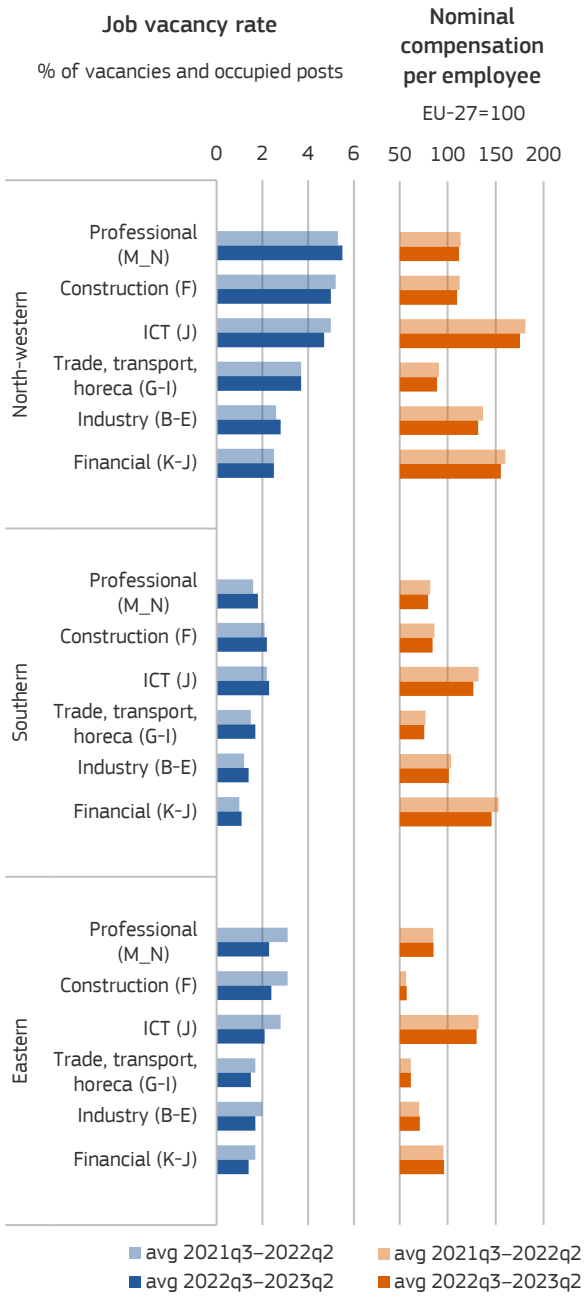
- lower than employment growth in the region
- 0 – 5
- 5 – 10
- 10 – 17.5
- 17.5 – 25
- >= 50
- no data

EU-27 = 8
Excess growth is calculated as difference between sector's growth and total employment growth (excluding agriculture) in the region. If total employment growth (excluding agriculture) is less than 0, excess growth is set to sector's growth.
Source: Eurostat [nama_10r_3empers] and DG REGIO estimates.

0 500 km

How to read the maps: Two sectors – information and communication (J), and professional, scientific & technical activities and administrative & support service activities (M_N) – registered double-digit employment growth in the EU (22 % and 15 %) between 2013 and 2020.
Excess growth is the difference between growth in the selected sector (J or M_N) and total employment growth (excluding agriculture, which broadly declined). For instance, in southern regions of Poland employment growth in sector (J) was 50 % higher than total employment growth in these regions. In all regions of Greece, employment growth in sector (M_N) was either negative or lower than total employment growth in these regions.
In cases where total employment growth (excluding agriculture) is negative, the excess growth is set to growth in the selected sector (J, M_N).

Figure 2.3 Job vacancy rates and nominal compensation per employee by geographical area, average 2021q3–2022q2 and average 2022q3–2023q2



Note: hotels= hotels, restaruants and catering.
Source: Eurostat [jvs_q_nace2, namq_10_a10, namq_10_a10_e] and DG REGIO calculations.

4. Empowering through education and skills

The importance of investing in human capital to ensure that skills are available to meet expanding needs, especially those arising from the green and digital transitions, will increase in the coming years. Tertiary education, by providing the high-level skills required, together with vocational education and training (VET) will play a pivotal role in this[20]. The aim of policy should be to ease the integration of young graduates into the labour market, facilitate mobility, maintaining high-quality standards, and promote lifelong learning.[21] In addition, there is an equally important need to upskill and reskill workers in line with the opportunities the twin transitions bring. Digital skills, extensively present in policy initiatives, are particularly relevant here (see Chapter 5). Equally a shrinking population of young people highlights the importance of strengthening skills in regions with net outward migration and/or with a small and declining share of tertiary-educated people (see Chapter 6).

4.1 Tertiary education and VET are complementary across EU regions

A skilled workforce is key to economic development and prosperity. Both tertiary education and VET play a major role in 'smart specialisation' strategies by helping to retain and attract talent, generating absorptive capacity in the societies and economies in which they are located, and helping to build sustainable and more equitable communities[22]. University education can boost upward social mobility and improve employment prospects. While there is an upward trend in high skills endowment in the EU, disparities between regions have widened. Tertiary education rates for those aged 25 to 64 remain higher in more developed regions and transition regions (38 % and 36 %, respectively, in 2022) than in less developed ones (26 %, and in north-western Member States (39 %) than in southern and eastern ones (Table 2.3, left columns). Tertiary education rates exceeded 50 %

20 The term 'tertiary education' refers to international standard classification of education (ISCED) tertiary education (levels 5–8). The term 'vocational education and training' refers to vocational upper-secondary and post-secondary non-tertiary education (vocational ISCED levels 3 and 4).

21 European Union (2020).

22 Hazelkorn and Edwards (2019).

Table 2.3 Tertiary and vocational education and training (VET) attainment rates by level of development and by geographical area, 2013, 2021 and 2022

	Tertiary education attainment, 25–64				Upper-secondary and post-secondary non-tertiary VET attainment, 25–64		
	2013	2022	2013–2022	2021–2022	2021	2022	2021–2022
	%		pp		%		pp
EU-27	27.1	34.3	+7.2	+0.7	35.3	35.3	+0.0
More developed regions	30.7	38.4	+7.7	+0.6	33.0	32.5	-0.5
Transition regions	29.0	35.8	+6.8	+0.4	34.8	35.3	+0.5
Less developed regions	19.7	25.7	+6.0	+0.7	39.8	40.3	+0.5
North-western EU	31.3	38.8	+7.5	+0.7	37.7	37.2	-0.5
Southern EU	24.1	30.5	+6.4	+0.4	21.0	20.8	-0.2
Eastern EU	22.9	29.8	+6.9	+0.6	48.8	50.2	+1.4

Note: No data on vocational education until 2021. 2021 break in LFS series.
Source: Eurostat [edat_lfs_9915], DG REGIO calculations.

in nearly 20 EU regions in half the Member States in 2022. However, over 80 % of regions in Italy, Romania, Czechia, Portugal and Bulgaria had rates below 30 % (Map 2.7). These regions lacking a qualified labour force capable of enhancing productivity, when coupled with a declining working-age population, are prone to fall into a talent development trap (see Section 3 in Chapter 6).

Differences within Member States are pronounced. The concentration of universities in capital city regions in all countries attracts students, while the high demand for highly qualified workers, with an added wage premium[23], attracts the tertiary-educated and makes it easy 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. The difference in the share of the tertiary-educated between the capital city regions and others is pronounced in the countries noted above, but also in Hungary, France and Portugal (over 30 pp, Figure 2.4)[24].

It is important to recognise that VET provides skills that complement those resulting from tertiary education. The significance of VET is growing in eastern Member States and in rural areas. The VET attainment rates exceeded 50 % in around 50 EU regions concentrated in just eight Member States. In contrast to tertiary education, capital city regions consistently have the smallest proportion of people with VET qualifications. The difference between these regions and others is especially pronounced in Romania, Germany and Czechia (more than 30 pp, Figure 2.5).

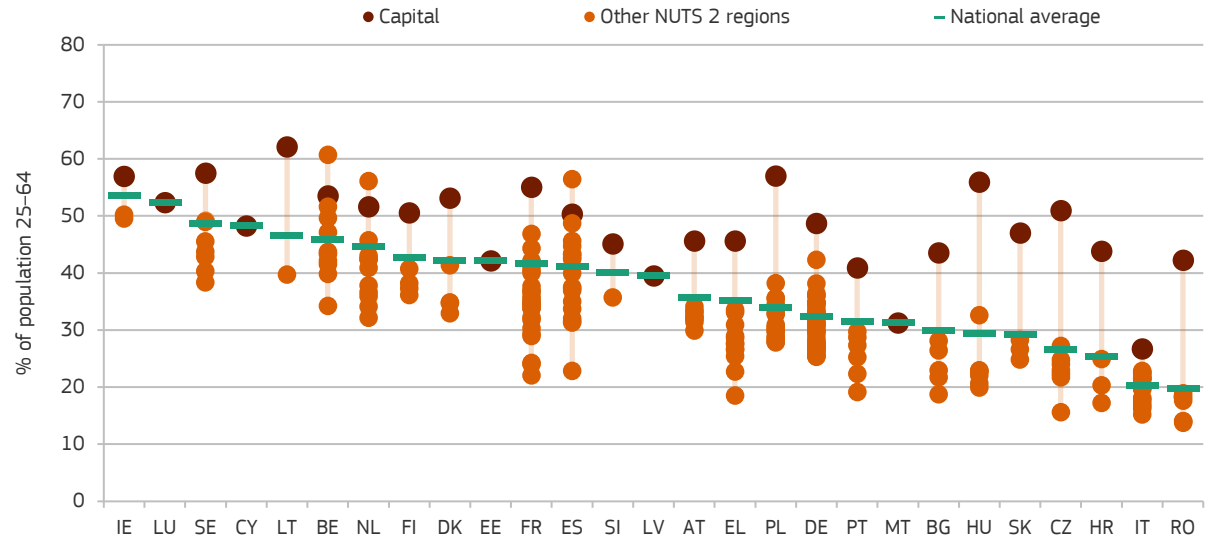
VET provides the technical and practical skills crucial for emerging activities, such as assembling renewable energy-infrastructure, renovating buildings for energy efficiency and digital connectivity, and manufacturing and repairing electric vehicles[25]. Equipped with such skills, young people aged 20 to 34 with VET qualifications achieve rates of employment comparable to those with tertiary qualifications in many EU regions. In 43 regions, employment rates for those with VET qualifications were higher than those with tertiary education, over 5 pp higher in many regions in Greece, Czechia and Spain, reflecting their economic structure.

23 European Commission (2023b).

24 Differences are particularly marked between outermost regions and the capital region. In France 55 % of the population of Ile de France has tertiary education in 2022 compared with 22 % in French Guiana, 24 % in La Reunion and 24.2 % in Guadeloupe. Similar differences can be found between Lisbon and Azores or Madeira.

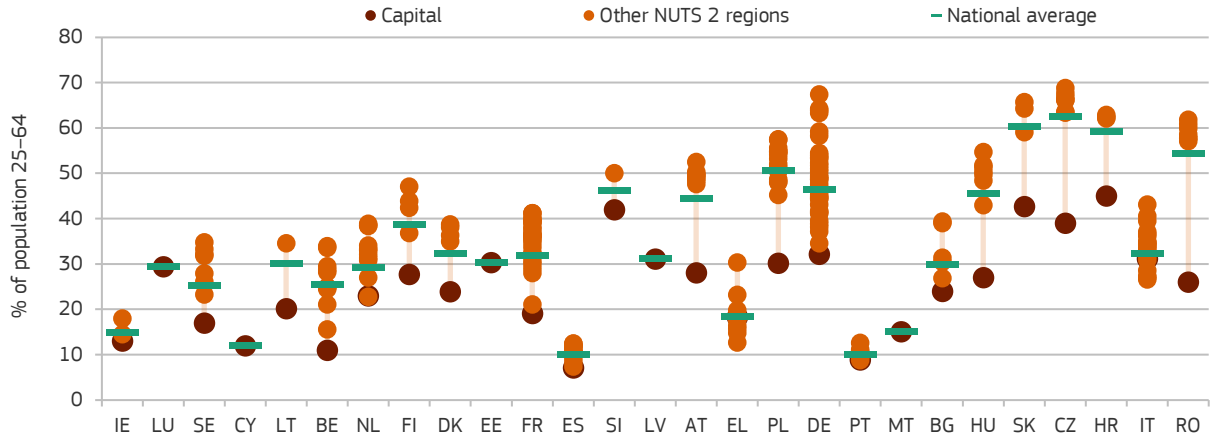
25 European Labour Authority (2023); European Commission (2023a); Cedefop (2021).

Figure 2.4 Regional variations in tertiary education rates, 2022



Note: Countries are ranked by national averages in tertiary education.
Source: Eurostat [edat_lfse_04] and DG REGIO calculations.

Figure 2.5 Regional variations in VET attainment rates, 2022



Note: Countries are ranked by national averages in tertiary education.
How to read the chart: The capital city regions of HR, CZ, SK and SI, have more than 40 % of those aged 25-64 with VET qualification and over 85 % with either tertiary or vocational upper secondary education. By contrast, the share of those with VET qualifications is less than 20 % in capital city regions in CY, MT and PT, and there are a smaller proportion with tertiary or VET qualifications than in other EU capital city regions.
Source: Eurostat [edat_lfse_04] and DG REGIO calculations.

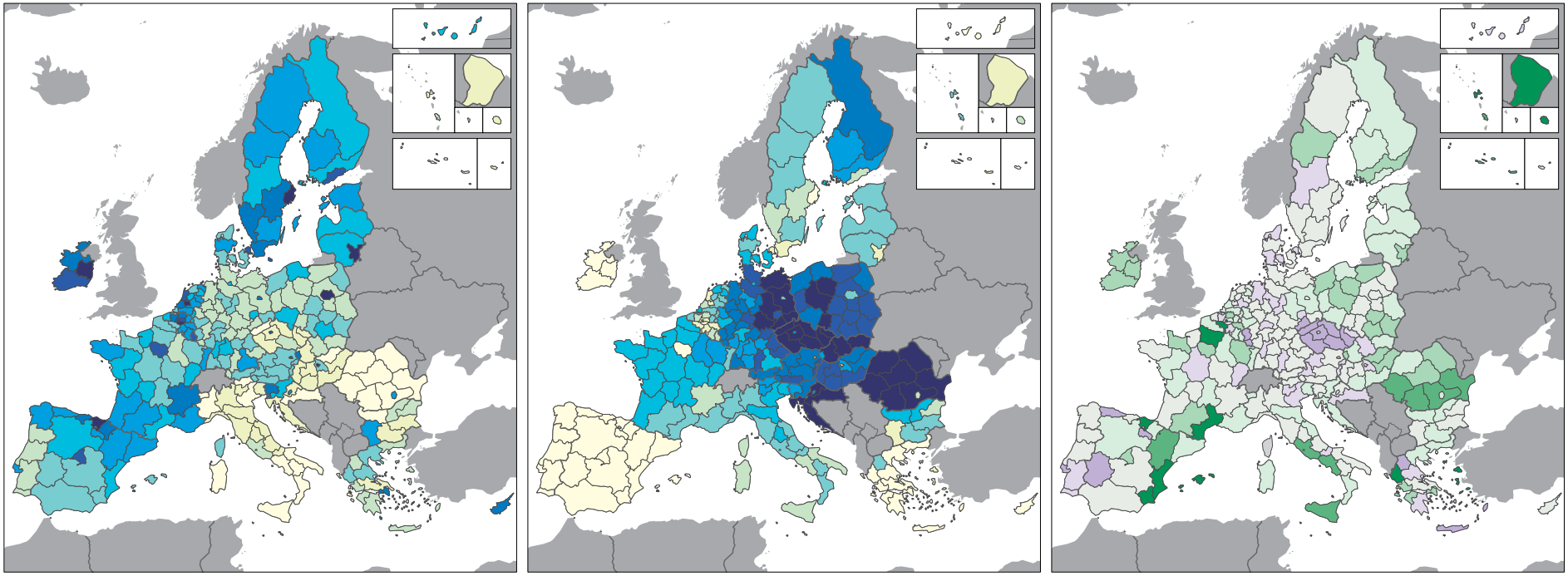
4.2 Higher adult participation in education and training in more developed regions

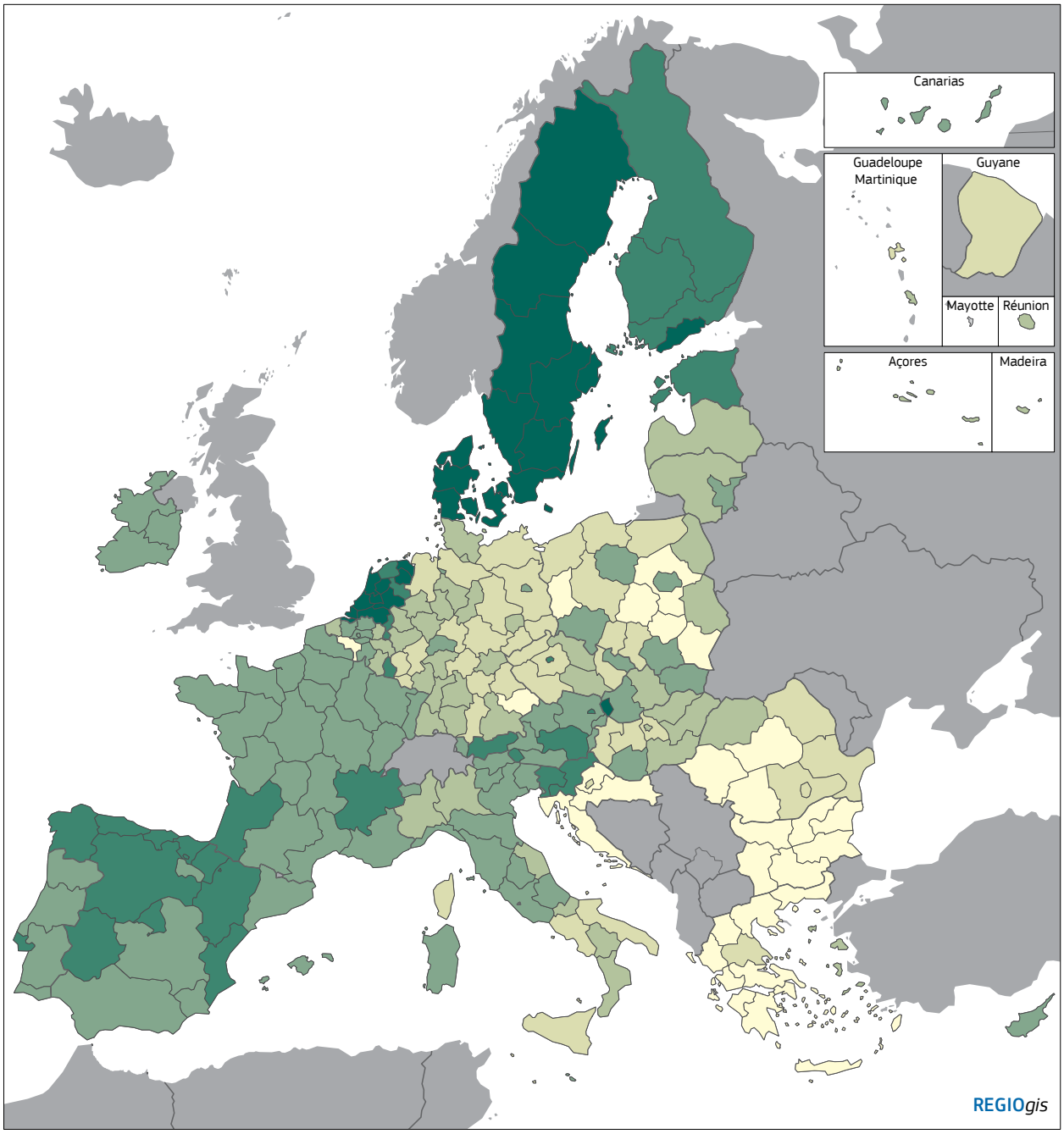
It is clear that, throughout people's working lives, upskilling and reskilling will be increasingly necessary to enable them to take advantage of emerging opportunities. They will be equally important for ensuring regional competitiveness as the green and digital transitions proceed.

After several years of slow increases, adult participation in education and training (those aged 25 to 64 participating in the four weeks preceding the LFS) declined sharply (by 1.7 pp) in 2020 because of the COVID-19 measures. It quickly rebounded the following year as labour markets recovered, especially in eastern countries.

In more developed regions, participation declined by 1.6 pp in 2020 but increased by 14 % in 2022, to 1 pp above its level in 2019. In transition regions,

Map 2.7 Regional indicators of educational attainment, 2022





Map 2.8 Participation of adults (25–64) in education and training in the past four weeks, 2022

% of population aged 25-64 years

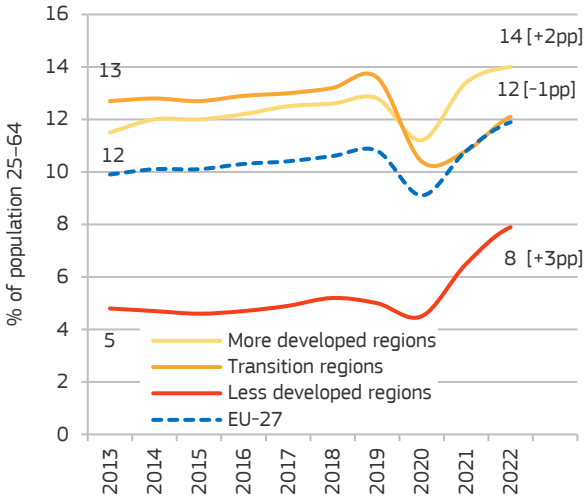
- < 5
- 5 – 7.5
- 7.5 – 10
- 10 – 15
- 15 – 25
- > 25
- no data

EU-27 = 11.9
Source: Eurostat (trng_lfse_04).

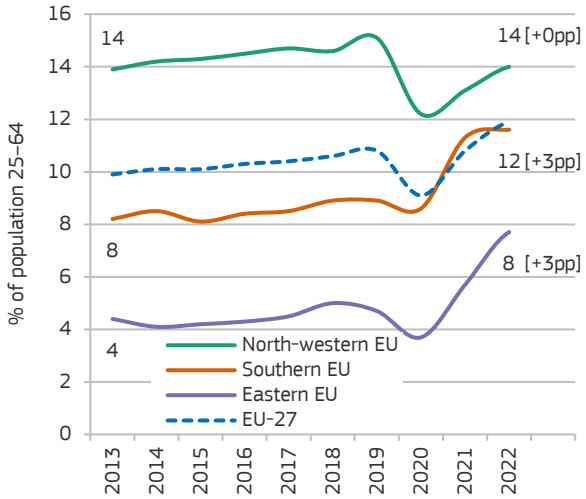
0 500 km

Figure 2.6 Participation of adults (25-64) in education and training in the past 4 weeks by level of development and by geographical area, 2013–2022

a) Adult participation by level of development



b) Adult participation by geographical area



Note: 2021 break in LFS series.
Source: Eurostat [trng_lfse_04] and DG REGIO calculations.

it fell by 3.2 pp in 2020 and while it rebounded to 12 %, it was almost 2 pp lower than before the pandemic. Conversely, in less developed regions, where there was not much reduction in 2020, participation increased to 8 % in 2022, some 2.5 pp above its 2019 level (Figure 2.6 and Map 2.8).

Despite the increase in participation in 2022, targeted, region-specific investments are needed to address particular needs and challenges, especially in less developed regions, and especially in eastern and southern countries. Meeting the 2030 skills target[26], proposed in the European Pillar of Social Rights action plan, of 60 % of adults participating in training every year[27] also requires significant progress across all regions, which is likely to need more affordable education and training, flexible learning opportunities, the development of a culture of lifelong learning, and the recognition of the benefits by both employers and employees (Box 2.3).

4.3 Access to childcare and education is improving, though with regional differences

The EU has recently revised the Barcelona targets[28] of having at least 45 % of children below the age of 3, and the EU-level target of at least 96 % of children aged 3 to compulsory primary school age, enrolled in early childhood education and care (ECEC) by 2030. In 2021, 57.4 % of children under 3 in the EU were in ECEC and 92.5 % of those between 3 and primary school age. As regards the latter, France, Belgium, Denmark, Ireland, Sweden and Spain, and most of their regions, have already met the 95 % target. The participation rate remained low in 2021 (below 85 %) in all regions in Greece, Croatia, Romania and Bulgaria and it has been declining in the latter two. It is also on average much lower in less developed regions (87.0 %) than in transition (94.9 %) or more developed (93.2 %) ones (Map 2.9)[29].

26 The target is set based on adult participation in learning activities in the past 12 months.

27 European Commission (2021b).

28 European Union (2022b).

29 European Commission (2023a).

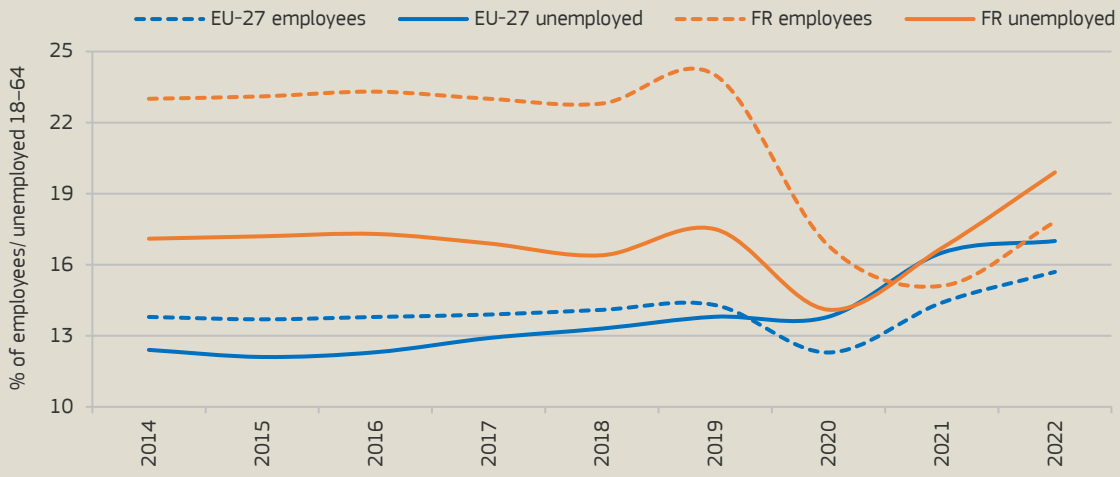
Reducing early school-leavers (those aged 18 to 24 with at most lower-secondary education and not involved in further education or training) should help to improve labour market outcomes and eliminate pockets of socio-economic deprivation. The proportion of early school-leavers in the EU declined from 11.8 % in 2013 to 9.6 % in 2022, gradually approaching the EU target of 9 % or less by 2030. This decline was more pronounced in less developed regions (by 2.9 pp to 12.0 %) and transition regions (by 2.2 pp to 9.1 %) than in more developed ones (by 1.3 pp to 9.8 %) (Map 2.10).

Box 2.3 Initiatives for skills under the European skills agenda

The European skills agenda[1] aims to strengthen sustainable competitiveness, social fairness, and resilience in the EU. It covers several initiatives that are linked to the European Pillar of Social Rights and its action plan with the goal of having 60 % of people participating in training each year by 2030. The 'pact for skills' programme[2] is designed to support public and private organisations in upskilling and reskilling their workforce, so they can thrive through the green and digital transitions. The implementation of individual learning accounts (ILAs)[3] (at a more advanced stage in France, Belgium, Croatia, Lithuania and Greece) along with the expansion of micro-credentials[4] will play a significant role in achieving the EU-level 2030 goal. The 'year of skills 2023' gave a fresh impetus to lifelong learning, promoting innovation and competitiveness, participation and empowering people and companies to play an active role in the green and digital transition, while addressing current and anticipated skills and labour shortages.

As an example, the impact of an ILA implemented in France (the CPF compte personnel de formation, designed to support all employees and job-seekers in acquiring new skills), benefits in particular job-seekers whose participation in training over the preceding four weeks recovered from a low of 14 % in 2020 to an unprecedented high of 20 % two years later, the increase being spread across most French regions (Figure 2.7).

Figure 2.7 Participation of employees and the unemployed in education and training in the past four weeks for the EU-27 and France, 2014–2022



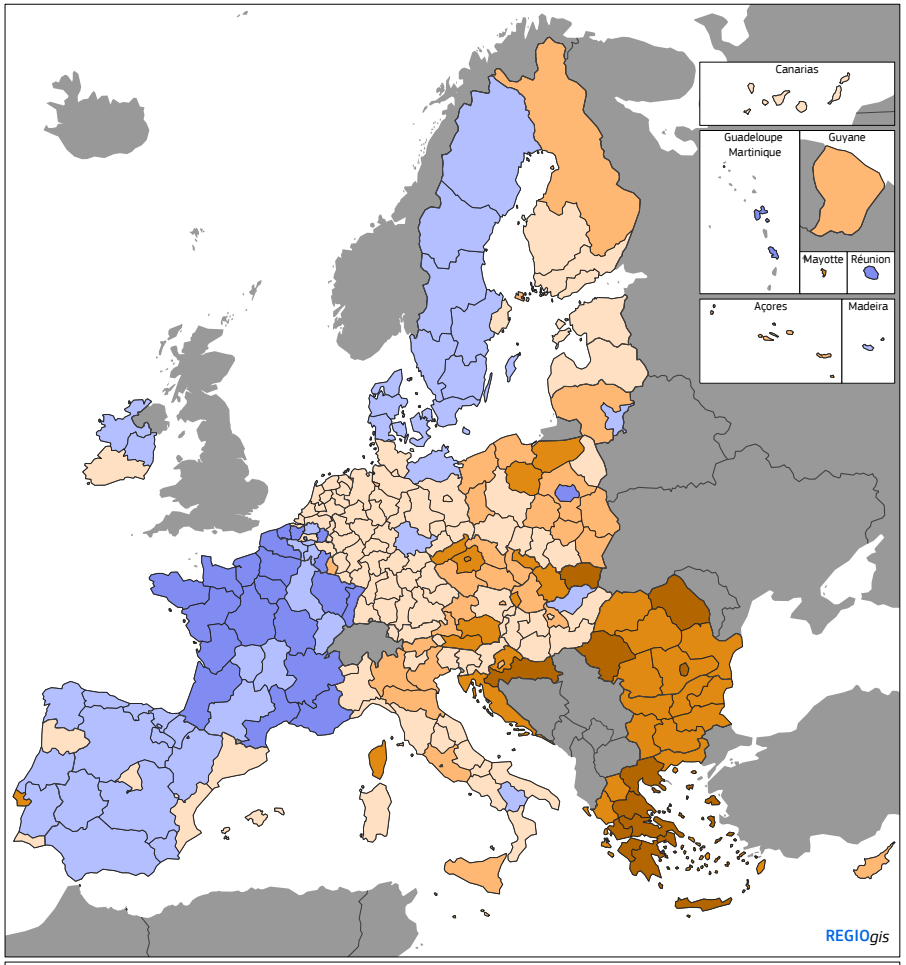
Note: Break in LFS series in 2021.
Source: Eurostat [trng_lfs_03].

1 European Commission (2020a).

2 https://pact-for-skills.ec.europa.eu/index_en.

3 European Commission (2021a).

4 European Union (2022a).



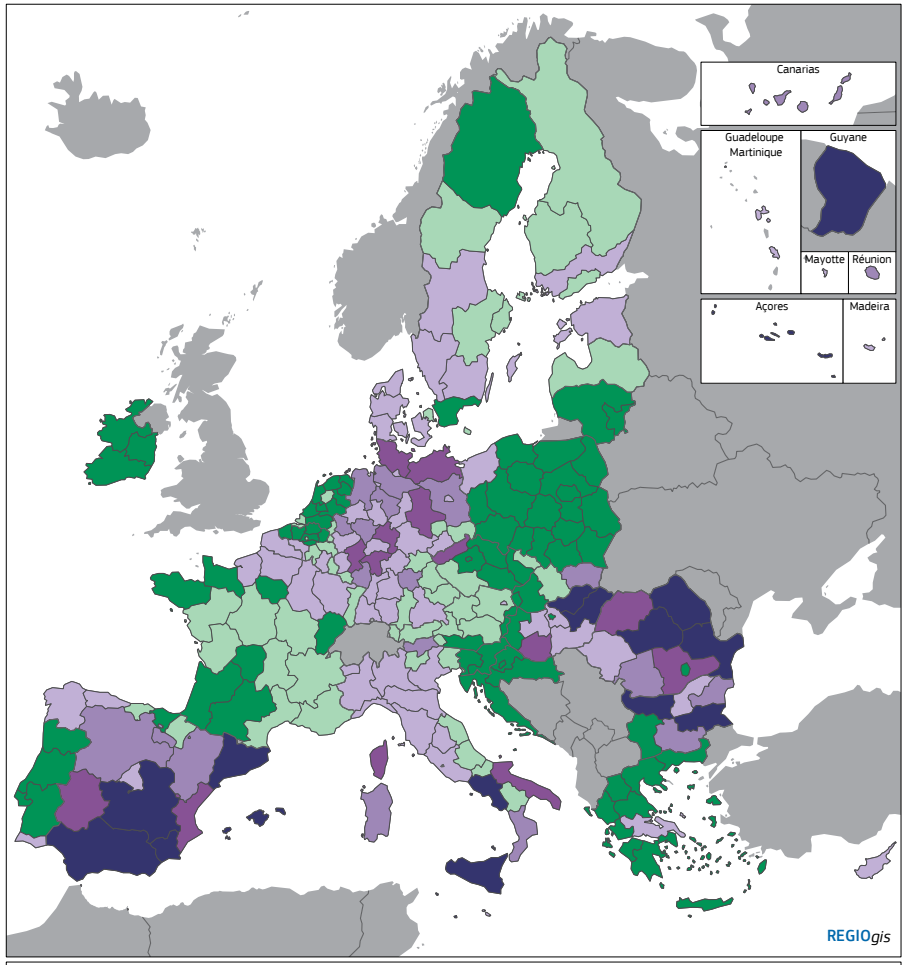
Map 2.9 Participation rates in early childhood education, 2021

% of children from age 3 to the starting age of compulsory education at primary level

- < 75
- 75 – 85
- 85 – 90
- 90 – 95
- 95 – 100
- = 100
- no data

EU-27 = 92.5
Participation in ECEC rate target: 96 % in 2030.
EL 2019, DE NUTS 1, NL NUTS 0.
Source: Eurostat [educ_uoe_enra22] and DG REGIO estimates.

0 500 km



Map 2.10 Early leavers from education and training, average 2020–2022

% of population aged 18–24

- < 7
- 7 – 9
- 9 – 12
- 12 – 14
- 14 – 16
- > 16

EU-27 = 9.8
Early leavers are people aged 18 to 24 who have completed at most lower-secondary education and are not involved in further education or training.
The target is less than 9 % by 2030.
Source: Eurostat (edat_lfse_16) and DG REGIO estimates.

0 500 km

Access to primary school for children varies considerably across regions. The proportion of the population living within a 15-minute walk of a primary school is above 80 % in a number of regions in the south and east of Spain, south and north-west of Italy, the Netherlands, and north of France. It also tends to be higher in capital city regions than in others. The smallest proportion (below 20 %) are in southern and eastern regions in Germany, Croatia, Latvia and Lithuania (see Section 4 in Chapter 3).

5. Reducing poverty and social exclusion

Increasing employment opportunities through improving skills and productivity tends to lead to higher wages and increased household income, so reducing the number of people AROPE. At the same time, there needs to be support by a tax-benefit system that alleviates the risk of poverty and exclusion for those unable to work and ensures access to essential services.

The AROPE rate is a multi-faceted concept, encompassing three distinct components relative monetary poverty, severe material or social deprivation, and living in a quasi-jobless household. The rate covers all those falling into any of these categories (Box 2.4).

The AROPE rate declined from 2016 to 2019 (by 2.6 pp) but remained unchanged at 21.6 % from then until 2022 (the latest year for which data are available), when around 95 million people were affected. Certain groups are particularly disadvantaged, such as those with low education, for whom the AROPE rate was 34.5 % in 2022, as opposed to 19.8 % for those with upper-secondary education and 10.5 % for those with tertiary qualifications30.

Box 2.4 AROPE and the 'new' severe material and social deprivation indicator

Individuals identified as being AROPE are those who meet at least one of the following criteria.

- Being at risk of poverty (or relative monetary poverty) – defined as living in a household with equivalised disposable income in the previous year below 60 % of the national median income.
- Being severely materially or socially deprived – defined as unable to afford at least seven of 13 specified items.
- Living in a household with very low work intensity (or being in a quasi-jobless household) – defined as people aged from 0 to 64 living in households where adults* worked less than 20 % of their total combined working potential during the previous 12 months.

In 2021, the AROPE indicator was modified when a new EU 2030 target was set to better measure deprivation, based on a revised list of items, and to better account for social exclusion.

The revised list of deprivation items covers the following.

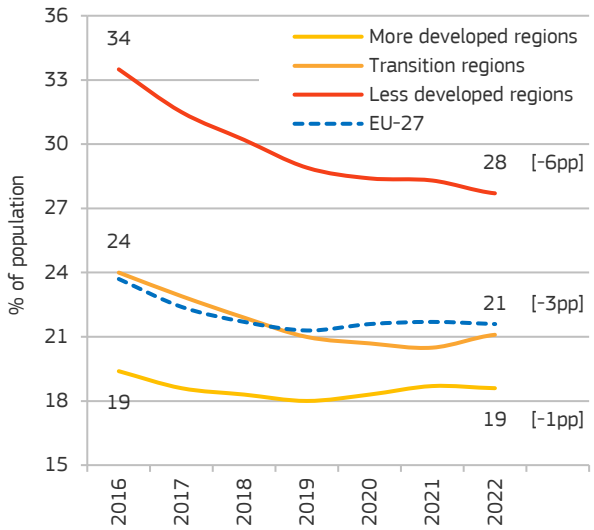
- At household level: the capacity to face unexpected expenses; to afford one week of annual holiday away from home; to meet payment arrears (on mortgage or rental payments, utility bills, hire purchase instalments or other loan payments); to have a meal with meat, chicken, fish or vegetarian equivalent every second day; to keep the home adequately warm; to access a car/van for personal use; and to replace worn-out furniture.
- At individual level: the ability to afford an internet connection; to replace worn-out clothes by new ones; to have two pairs of properly fitting shoes (including a pair of all-weather ones); to spend a small amount of money each week on themselves; to have regular leisure activities; and to get together with friends/family for a drink/meal at least once a month.

* Note: Those aged 18–64, but excluding students aged 18–24 and people who are retired according to their self-defined current economic status or who receive any pension (except survivor's pension), as well as people in the age bracket 60–64 who are inactive and living in a household where the main income is pensions.

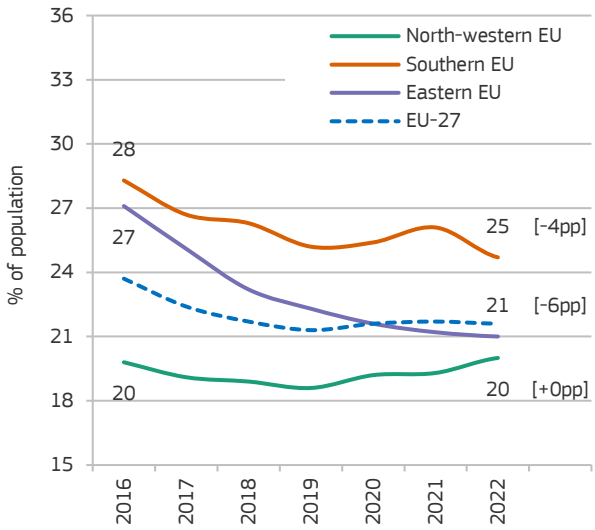
30 European Commission (2023a).

Figure 2.8 AROPE rates by level of development and by geographical area, 2016–2022

a) AROPE rates by level of development



b) AROPE rates by geographical area

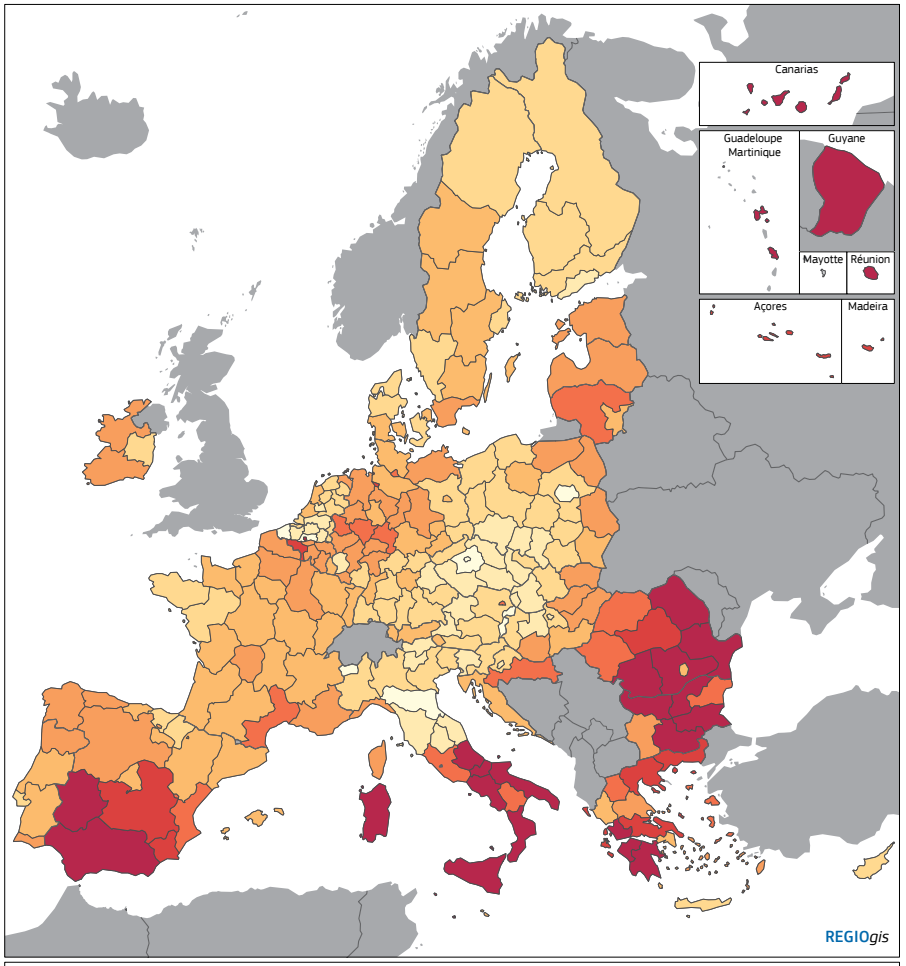


Note: The charts are for illustrative purposes, and data have been smoothed by DG REGIO. They need to be interpreted with caution. First, there are no regional data available for BE, AT and DE before 2021 and for FR before 2022. Secondly there is a break in the series for DE, DK, FR, IE, LU, north-western EU and EU-27 in 2020.
Source: Eurostat [ilc_peps13n] and DG REGIO calculations.

Table 2.4 AROPE rates by category of regions and by level of development and degree of urbanisation, 2016 and 2022

	2016	2022	2016–2022	Gap to EU in 2022
	% of population		pp	pp
EU-27	23.7	21.6	-2.1	
More developed regions	19.4	18.6	-0.8	-3.0
Transition regions	24.0	21.1	-2.9	-0.5
Less developed regions	33.5	27.7	-5.8	6.1
North-western EU	19.8	20.0	+0.2	-1.6
Southern EU	28.3	24.7	-3.5	3.1
Eastern EU	27.1	21.0	-6.1	-0.6
North-western EU – Cities	21.7	23.2	+1.5	1.6
North-western EU – Town and suburbs	17.8	19.2	+1.4	-2.4
North-western EU – Rural areas	16.8	15.9	-0.9	-5.7
Southern EU – Cities	27.3	23.6	-3.7	2.0
Southern EU – Town and suburbs	26.9	25.0	-1.9	3.4
Southern EU – Rural areas	31.6	26.7	-4.9	5.1
Eastern EU – Cities	20.1	14.6	-5.4	-7.0
Eastern EU – Town and suburbs	24.2	19.3	-4.9	-2.3
Eastern EU – Rural areas	34.5	27.9	-6.5	6.3

Note: 2020 break in EU-SILC series.
Source: Eurostat [ilc_peps13n], DG REGIO calculations.



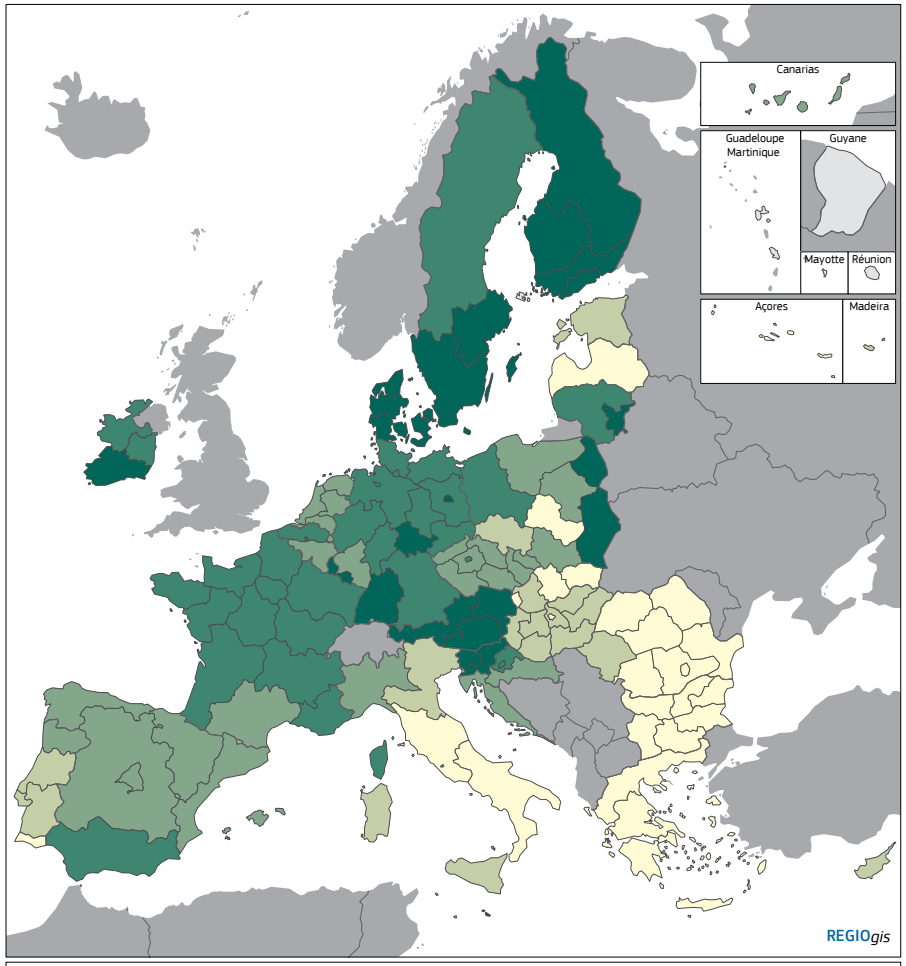
Map 2.11 Population at risk of poverty or social exclusion, 2022 (%)

% of population

- < 10
- 10 – 14
- 14 – 18
- 18 – 22
- 22 – 26
- 26 – 30
- 30 – 34
- > 34
- no data

EU-27 = 21.7
Source: Eurostat (ilc_peps11n and ilc_peps01n).

0 500 km



Map 2.12 Population satisfied with efforts to reduce poverty, 2022

% of population aged 15+

- < 25
- 25 – 35
- 35 – 45
- 45 – 55
- > 55
- no data

Percentages are based on all respondents excluding don't know and refused to answer.
Question: Are you satisfied or dissatisfied with efforts to deal with the poor?
Source: Gallup World Poll (WP131).

0 500 km

Equally, the rate was relatively high for people with disabilities (28.8 %), though 2 pp lower than in 2016; and for people born outside the EU, it was more that double than for native-born people. The rate was also higher for children (24.7 %) than for adults, and higher for young people aged 18–24 (26.5 %) than for older age groups.

While the AROPE rate has not risen in the recent past despite surging energy and food prices and declining real wages, the lack of progress since 2019 is a cause for concern. Achieving the 2030 goal of reducing poverty by at least 15 million people may face difficulties if effective measures are not taken to safeguard standards of living, particularly of the most vulnerable households.

5.1 The risk of poverty and social exclusion in the EU is lower than a decade ago in all regions, but continues to be higher in eastern and southern rural areas

Progress in reducing the AROPE rate was evident across most types of regions in the EU between 2016 and 2019 but remained unchanged from then until 2022[31]. The difference in the rate between more developed and less developed regions narrowed, from 14 pp in 2016 to 9 pp in 2022, because of a significant reduction in the latter, the rate remaining unchanged in the former. There was a marked reduction in eastern countries, particularly after 2020, while in southern countries, the rate was much the same in 2022 as in 2019 (Figure 2.8 and Table 2.4).

The reduction in the AROPE rate between 2016 and 2022 occurred mostly in eastern countries and rural areas in the south (by 5 pp to 7 pp) (Table 2.4). Nevertheless, the highest rates persist in rural eastern and southern regions. Marked differences are evident between parts of the EU, with a large share of the population being at risk (above 30 %) in many regions of Italy, Spain, Greece, Romania and Bulgaria. There are also marked regional variations within those five countries, notably between northern and southern regions in Spain and Italy, between parts of Belgium and between the outermost regions and mainland regions in Portugal (Map 2.11).

There are equally regional differences in satisfaction with government efforts to combat poverty (Map 2.12). According to the Gallup world poll in 2022, the proportion reporting being satisfied ranged from over 70 % of respondents in Luxembourg, Malta and some regions in Denmark to less than 10 % in some regions of Bulgaria and Greece.

Table 2.5 Food poverty by geographical area and by level of development, 2019 and 2022

	Inability to afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day		
	2019	2022	2019–2022
	%		pp
EU-27	6.7	8.3	+1.5
North-western EU	5.2	8.2	+3.0
Southern EU	7.1	6.5	-0.6
Eastern EU	9.5	10.6	+1.2
Highly developed countries	5.9	7.7	+1.8
Moderately developed countries	5.2	5.9	+0.7
Less developed countries	10.3	11.2	+1.0

Source: Eurostat [ilc_mdes03], DG REGIO calculations.

31 The result must be interpreted with caution. First, there are no regional data available for BE, AT and DE before 2021 and for FR before 2022. Second, there was a break in series in DE, DK, FR, IE, LU, north-western EU and EU-27.

The regions with the highest AROPE rates have high rates for the different elements as well (Map 2.13).

- Most people included in the AROPE rate are AROP, 16.5 % of the total population in the EU in 2022. There are high AROP rates (of over 30 %) in numerous regions in Italy and Spain, the outermost regions of France as well as in parts of Romania and Bulgaria.

- Some 6.7 % of people in the EU experienced severe material and social deprivation in 2022, but as many as 30 % in many regions in Romania, Greece and Bulgaria.

- A slightly larger share, 8.3 %, lived in households with very low work intensity, this rising to over 18 % in a number of regions in Spain and Italy and in Brussels in Belgium.

5.2 Reducing material and social deprivation is jeopardised by recent events

This section focuses on the different aspects of material and social deprivation (Box 2.4). These failed to show any improvement in the EU over the period 2019 to 2022 and in some cases showed a worsening, with the lack of reduction in the AROP rate resulting in no reduction in the overall AROPE rate.

As a result of inflation and the failure of earnings to keep up with price increases, many people in eastern Member States, in particular, experienced an increase in material and social deprivation, especially among disadvantaged and/or vulnerable groups[32]. In 2022, around 30 % of people in the EU were unable to afford an annual holiday away from home, much the same as in 2019, though for the other social deprivation items[33] there was some reduction in the number of people affected.

There was, however, an increase in the proportion of people experiencing several aspects of material deprivation. The proportion affected by food poverty (the inability to afford a meal with meat, chicken, fish or the vegetarian equivalent every second day), increased from 6.7 % in 2019 to 8.3 % in 2022 (Table 2.5), including an increase from 17.5 % to 19.7 % for people AROP. The increase was especially large in Romania (8 pp), whereas there was a significant reduction in Bulgaria (by 6 pp). Nevertheless, over 20 % of the population in all regions in Bulgaria, as well as northern regions in Romania, reported experiencing food poverty in 2021, while the proportions were also large (16 % or more) in Slovakia, most of Hungary, southern Italy and parts of Germany (Map 2.14).

5.3 Energy poverty is an increasing challenge

Taking the necessary measures to ensure the green transition is fair and inclusive and leaves no one behind is at the core of the European Green Deal[34]. As part of this, it is important to prevent and address energy poverty, the risk of which has risen because of the higher prices of energy, resulting from increased demand in the recovery from the COVID-19 pandemic and restrictions on supply following the Russian war of aggression against Ukraine.

Energy poverty is a multi-dimensional phenomenon that results from a mix of low levels of income, expenditure on energy and other factors related to energy efficiency, such as poor building efficiency-standards (see Chapter 4). To determine accurately the incidence and extent of energy poverty is challenging, and the population identified as being affected differs according to whether subjective assessment or expenditure-based methods are used[35].

32 Menyhert (2022).

33 For instance: having regular leisure activities, spending a small amount of money each week on oneself, getting together with friends or family for a drink or meal at least once a month.

34 On 16 June 2022 Member States unanimously adopted the Council Recommendation on ensuring a fair transition towards climate neutrality (2022/C 243/04). The Recommendation invites Member States to adopt measures that address the employment and social aspects of climate, energy and environmental policies. The Commission proposal was accompanied by a Staff Working Document (https://ec.europa.eu/social/BlobServlet?docId=25029&langId=en) that provides an overview and discussion of the available analytical evidence underpinning the recommended policy interventions, building on the analysis presented in relevant impact assessment reports accompanying the 2030 climate target plan and the various initiatives of the 'Fit for 55' package.

35 Menyhert (2023).

Table 2.6 Energy poverty by geographical area and by level of development, 2021 and 2022

	Inability to keep home adequately warm			Arrears on utility bills		
	2021	2022	2021–2022	2019	2022	2019–2022
	%		pp	%		pp
EU-27	6.8	9.3	+2.4	6.1	6.9	+0.8
North-western EU	3.9	7.3	+3.4	3.7	4.9	+1.3
Southern EU	11.9	13.4	+1.6	7.6	8.9	+1.3
Eastern EU	6.8	8.3	+1.6	9.5	8.6	-0.9
Highly developed countries	6.2	9.0	+2.8	4.2	5.6	+1.3
Moderately developed countries	8.1	9.0	+1.0	5.0	4.2	-0.8
Less developed countries	8.7	10.4	+1.7	13.1	12.6	-0.5

Source: Eurostat ilc_mdes01, ilc_mdes07], DG REGIO calculations.

The proportion of people unable to afford to keep the home adequately warm (one of the maindicators of energy poverty) increased from 6.8 % in 2021 to 9.3 % in 2022 (and to 20 % for those AROPE), reversing the reduction over the preceding six years (Table 2.6). The biggest increases were in Romania, France, Ireland, Germany and Spain (over 3 pp). In 2021[36], over 20 % of people in Cyprus, Lithuania, Bulgaria and southern regions of Greece reported being unable to keep their homes warm, while the proportions were almost as large (over 16 %) in southern Spain and parts of Portugal (Map 2.14)[37].

Although there was also an increase in the proportion of people in arrears on utility bills (covering heating, electricity, gas, water, etc.) in the EU, it was smaller (up from 6.2 % in 2019 to 6.8 % in 2022) than the increase in the share of people unable to afford to keep the home adequately warm. However, there were wide regional differences, over 20 % of people in 2021 reporting being in arrears in Greece and northern Bulgaria (Map 2.14).

The proportion of people being overburdened by housing costs (those for whom these represent over 40 % of household disposable income) has also increased since 2020, though with marked differences between cities and rural areas. In 2022, 11.3 % of people in the EU population living in cities had housing costs of over 40 % of income as opposed to 6.7 % in rural areas.

5.4 Access to healthcare and long-term care varies widely across EU regions

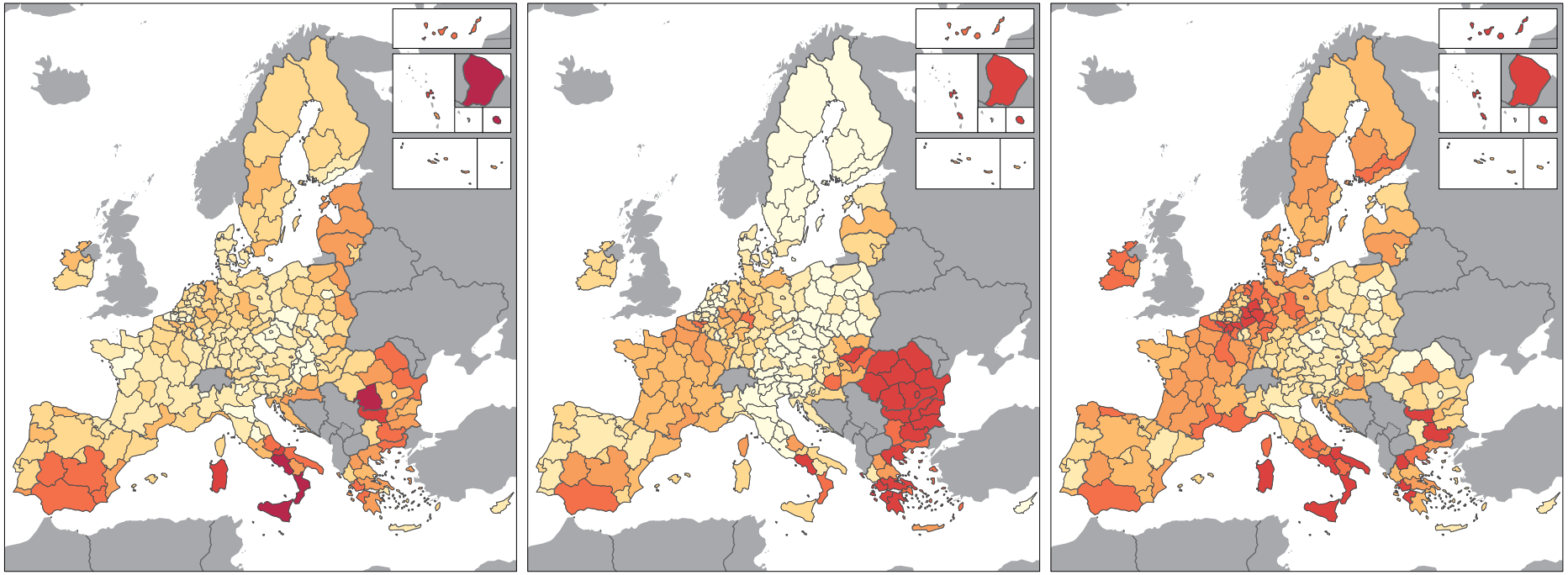
Access to healthcare in the EU, which improved between 2013 and 2019, worsened slightly between 2019 and 2022, while health inequalities grew[38]. The proportion of people in the EU reporting an unmet need for medical examination, whether because of the costs involved, transport difficulties or being on a waiting list, was 2.2 % in 2022, up 0.5 pp from 2019. The figure was above 6 % in all regions of Finland and Greece as well as in Estonia and the east of Romania, though for different reasons. By contrast, the proportion was below 0.5 % in the Flemish part of Belgium, Yugoiztochen and Yugozapaden in Bulgaria, and Nyugat-Dunántúl in Hungary. It was also very small in Germany, the Netherlands, Czechia, Malta and Cyprus, where no regional breakdown is available. Significant differences are evident in Italy, where only 0.5 % of people reported unmet needs in the North-East, but 2.5 % in Isole (the islands) and 2.8 % in Sud (other parts of the south).

36 The EU-SILC microdata were not available for 2022.

37 It should be noted that the EU-SILC does not include a question on inability to keep houses adequately cool in the summer, which would be another element of energy poverty.

38 European Commission (2023f).

Map 2.13 Regional indicators of poverty and social exclusion, 2022



Population at risk of poverty

% of population
- < 10
- 10 – 14
- 14 – 18
- 18 – 22
- 22 – 26
- 26 – 30
- 30 – 34
- >= 34
- no data

EU-27 = 16.5
Source: Eurostat (ilc_li41 and ilc_li02).

Severe material and social deprivation

% of population
- < 3
- 3 – 5
- 5 – 7
- 7 – 9
- 9 – 11
- 11 – 13
- >= 13
- no data

EU-27 = 6.7
Source: Eurostat (ilc_mdsd18 and ilc_mdsd11).

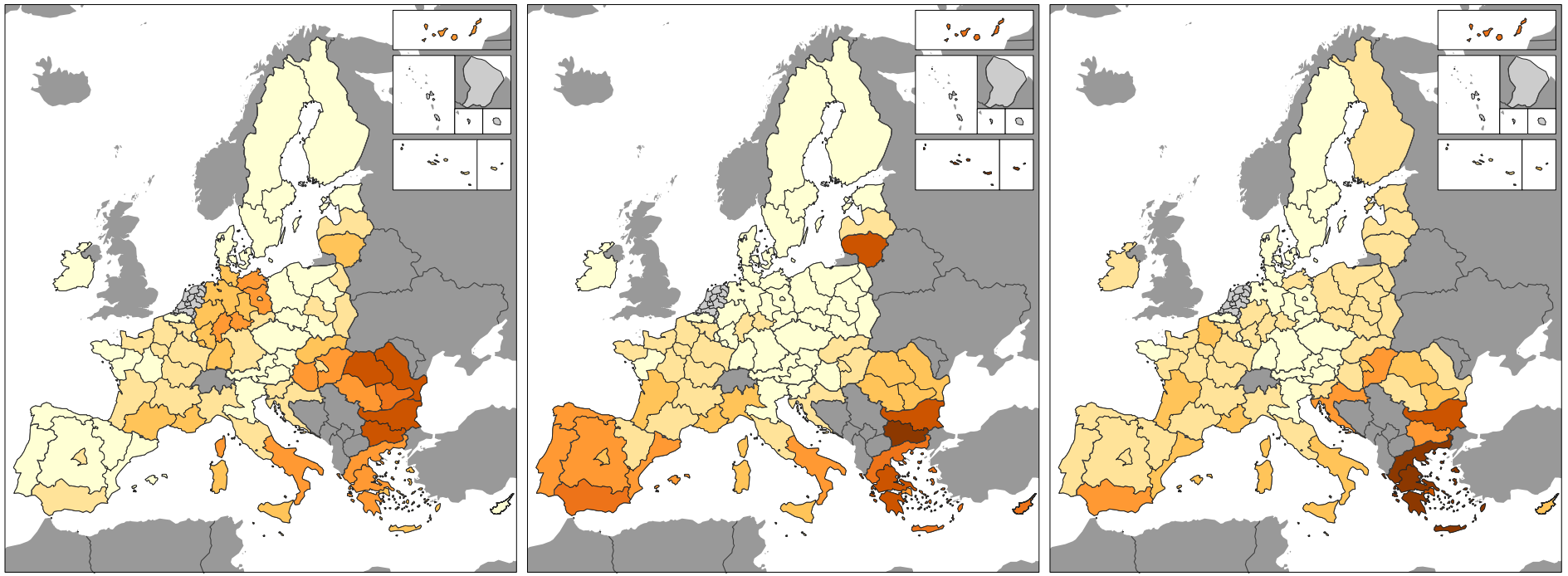
Population in households with very low work intensity

% of population aged less than 65
- < 3
- 3 – 5
- 5 – 7
- 7 – 9
- 9 – 11
- 11 – 13
- >= 13
- no data

EU-27 = 8.3
Source: Eurostat (ilc_lvhl21n and lvhl11n).
People aged less than 65 living in households where adults worked less than 20 % of their total combined work-time potential during the previous 12 months.

0 1 000 km

Map 2.14 Food, heating and utilities poverty, 2021



Food poverty

Heating poverty

Arrears on utility bills

% of population

- < 4
- 4 – 8
- 8 – 12
- 12 – 16
- 16 – 20
- 20 – 24
- > 24
- no data

EU-27 = 7.3
Inability to afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day.

EU-27 = 6.9
Inability to keep home adequately warm.

EU-27 = 6.4
Source: DG EMPL estimates based on Eurostat (EU-SILC microdata) SK: 2020.

0 1,000 km

In 2021, the number of hospital beds per 100 000 people declined slightly in the EU to 524.8, continuing the trend of previous years[39]. The highest concentration of hospitals beds per inhabitant was in Bulgaria, Germany, Romania and Austria. Significant differences within Member States are evident between small regions with the capital and surrounding regions, as in Hungary (992 beds per 100 000 inhabitants in the Budapest region and 220 in the Pest region), Belgium (702 in the Région de Bruxelles-Capitale and 228 in Brabant Wallon), Czechia (845 in Praha and 487 in Stredny Chechy) and Romania (1 048 in Bucuresti and 535 in Sud-Muntenia). In comparison with 2019, before the outbreak of the COVID-19 pandemic, the number of hospital beds per inhabitant increased in 77 of the 181 NUTS 2 regions for which data are available, and declined in the remaining 104 regions.

The COVID-19 pandemic highlighted healthcare workforce shortages, an ongoing challenge in the EU. In 2021, the EU averaged 4.1 doctors and 7.8 nurses per 1 000 people, with significant variation between countries. For example, doctor numbers range from 2.9 (Luxembourg) to 5.4 (Austria) per 1 000, and nurse numbers from 0.9 (Romania) to 18.9 (Finland) per 1 000. Disparities persist at the NUTS 2 level, particularly in regions facing rapid ageing and depopulation, resulting in areas of limited healthcare access, known as medical deserts.

As regards older people, in 2019, 46.6 % of those aged 65 or older, with difficulties in respect of personal care or in carrying out household tasks, reported an unmet need for assistance. Residential care infrastructure varies widely across the EU. In 2019, the number of long-term care beds per 100 000 residents ranged from 27.4 in Bulgaria to 1 378.4 in the Netherlands, highlighting significant differences among Member States.

6. Gender equality

Gender equality is a fundamental principle of the EU. It features prominently in the European Pillar of Social Rights – in line with the UN sustainable development goals (SDGs) of achieving gender equality by 2030. SDG5 – and the EU gender equality strategy for 2020–2025[40] – strive to ensure that all EU policy areas contribute to advancing equality (Box 2.5). The European Pillar of Social Rights action plan also includes the target of at least halving the gender employment gap by 2030. While progress towards achieving gender equality in the EU is visible, women still face barriers, as reflected in the gender pay gap, the many fewer women than men in leadership positions and the many more women than men who carry the burden of unpaid care work.

Gender inequality also hampers economic and social development. Increasing the number of women in employment tends to raise productivity as well as further innovation and diversity in the workplace. Increasing the participation of women is crucial to tackling skill shortages in the context of a shrinking population of working age (see Chapter 6).

While women's participation in the labour market has continued to expand over recent years, in 2022, 69 % of women aged 20 to 64 in the EU were employed, 11 pp less than for men, meaning that the gender employment gap has remained virtually unchanged for a decade. Regional differences have also widened.

6.1 Regional labour markets for women

The employment rate of women increased relative to that of men in more developed and transition regions between 2013 and 2022, as well as in north-western Member States. Conversely, it declined in less developed regions and in southern countries where employment rates are lower and high-quality and affordable childcare is lacking (Figure 2.9).

39 Eurostat, Healthcare statistics [hlth_rs_bdsrg2 and hlth_rs_bds1].

40 European Commission (2020b).

In less developed regions, the gender employment gap in 2022 (16 pp) was around double that in more developed (8 pp) and transition regions (9 pp). The gap was also much wider in southern Member States (15 pp) than in north-western (7 pp) and eastern ones (12 pp). It was over 20 pp in all regions in Greece, southern Italy and the eastern regions in Romania (Map 2.15).

Many factors play a role in shaping women's participation in the work-force and in affecting the size of the gender gap[41]. Among these, working conditions and a lack of high-quality and affordable childcare and long-term care have a direct impact on their work-life balance.

6.2 More women than men have tertiary education in almost all regions

Women tend to have higher education attainment than men. In 2022, 37 % of women aged 25 to 64 in the EU had a tertiary degree as against 31 % of men. More women than men had this level of education in all regions except several in Germany, Austria and Noord-Brabant in the Netherlands (Map 2.16). Tertiary-educated women, like men, tend to be concentrated in large cities, though the

Box 2.5 Gender equality

The gender equality strategy 2020–2025 sets out a comprehensive framework for promoting gender equality. It includes goals such as reducing gender-based violence; challenging gender stereotypes; closing gender gaps in the labour market; achieving equal participation across different sectors of the economy; addressing the gender pay and pension gaps; closing the gender care gap; and achieving gender balance in decision-making and in politics. The implementation of the strategy is based on a dual approach of targeting measures to achieving gender equality and strengthening gender mainstreaming at all stages of policy design in all EU policy areas, internal and external.

The EU has taken initiatives covering a wide range of policy areas to promote gender equality. In particular, the Pay Transparency Directive[1] requires Member States to ensure that men and women are paid equally for equal work; the Gender Balance on Boards Directive[2] sets targets for large listed companies in the EU to accelerate progress towards gender balance in their boards; and the Work-Life Balance Directive[3] promotes work-life balance for both male and female workers with care responsibilities through rights to paternity and parental carer's leave, as well as the right to request flexible working time arrangements for care reasons, thus fostering gender equality in meeting care responsibilities. The EU Directive on Preventing and Combating Violence Against Women and Domestic Violence[4] requires EU Member States to take measures to prevent and combat violence against women and domestic violence and provide support to victims.

Gender equality is mainstreamed in the multiannual financial framework for 2021–2027 and is integrated in many EU funding programmes and budget guarantee instruments, including the ESF+, ERDF, Cohesion Fund, CERV (citizens, equality, rights and values), Creative Europe, the European Maritime and Fisheries Fund, Horizon Europe and Invest EU. These programmes all support goals set in the gender equality strategy, with a specific focus on support for female entrepreneurship.

1 European Union (2023).

2 European Union (2022c).

3 European Union (2019).

4 European Commission (2021d).

41 European Commission (2023g).

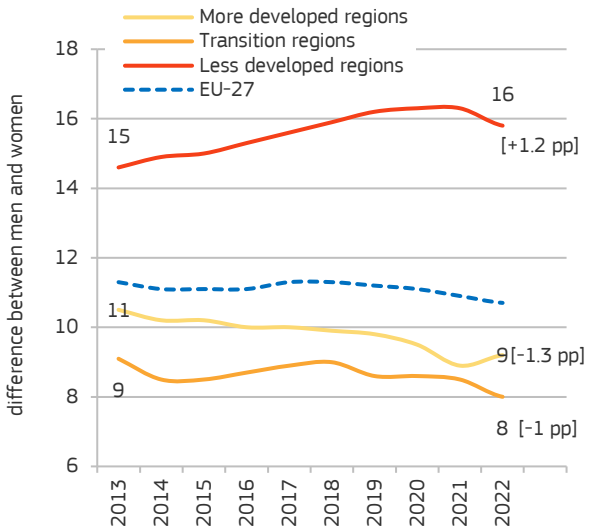
Table 2.7 Gender gap indicators by education level, level of development and geographical area, 2022

	Distribution of population 25–64		Tertiary rate 25–64		Gap in education level of population			Gap in employment rate			
	Women with tertiary	Men with tertiary	Women	Men	Tertiary education	Medium education	Low education	Tertiary education	Medium education	Low education	Total
EU-27			37.1	31.4	6	-4	-2	-5	-12	-23	-11
More developed regions	19	18	39.8	36.8	3	-1	-2	-6	-10	-21	-9
Transition regions	10	8	39.4	32.0	7	-6	-2	-4	-10	-18	-8
Less developed regions	8	6	30.0	21.4	9	-7	-2	-6	-18	-29	-16
North-western EU	19	18	40.0	37.3	3	-2	-1	-5	-7	-17	-8
Southern EU	10	8	33.9	27.0	7	-1	-6	-6	-19	-27	-16
Eastern EU	8	6	35.0	24.7	10	-11	0	-5	-16	-24	-12

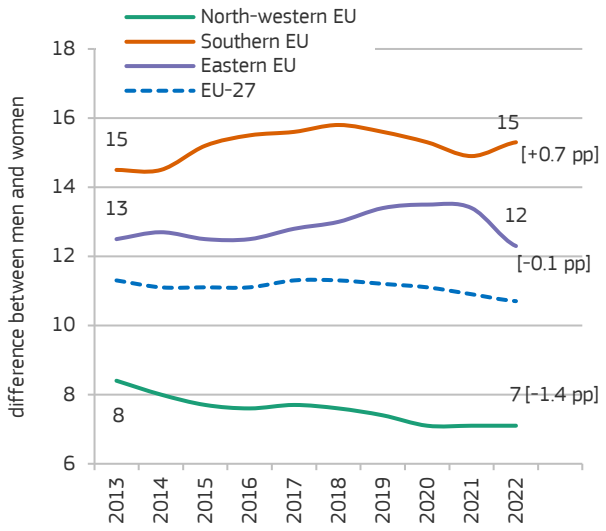
Note: The gap is the value for women minus the value for men. 2021 break in LFS series.
Source: Eurostat [lfst_r_lfe2eedu, lfst_r_lfsd2pop], DG REGIO calculations.

Figure 2.9 Gender gaps in employment rate by level of development and by geographical area, 2013–2022

a) Gender gaps by level of development



b) Gender gaps by geographical area



Note: Gap = value for men minus value for women. 2021 break in LFS series.
Source: Eurostat [lfst_r_lfsd2pwc], DG REGIO calculations.

recent spread of teleworking in office-based jobs may create more prospects for women throughout the EU, in all regions[42].

Women with tertiary education represent a potentially valuable resource and an opportunity in less developed regions. In 2022, some 8 % of all women aged 25 to 64 in the EU had tertiary education and lived in less developed regions, while the figure for men was only 6 % (Table 2.7, part a). Indeed, the larger proportion of women than men in the EU with this level of education largely reflects the difference in less developed regions (9 pp) and transition ones (7 pp) compared with more developed ones (3 pp), as well as in eastern Member States (10 pp) and southern ones (7 pp) as compared with north-western ones (Table 2.7, part b).

A higher level of education is also associated with a narrower gender employment gap, this being only 5 pp for those with tertiary education in the EU, as against 12 pp for those with upper-secondary education and 23 pp for those with only basic education (Table 2.7, parts c and d).

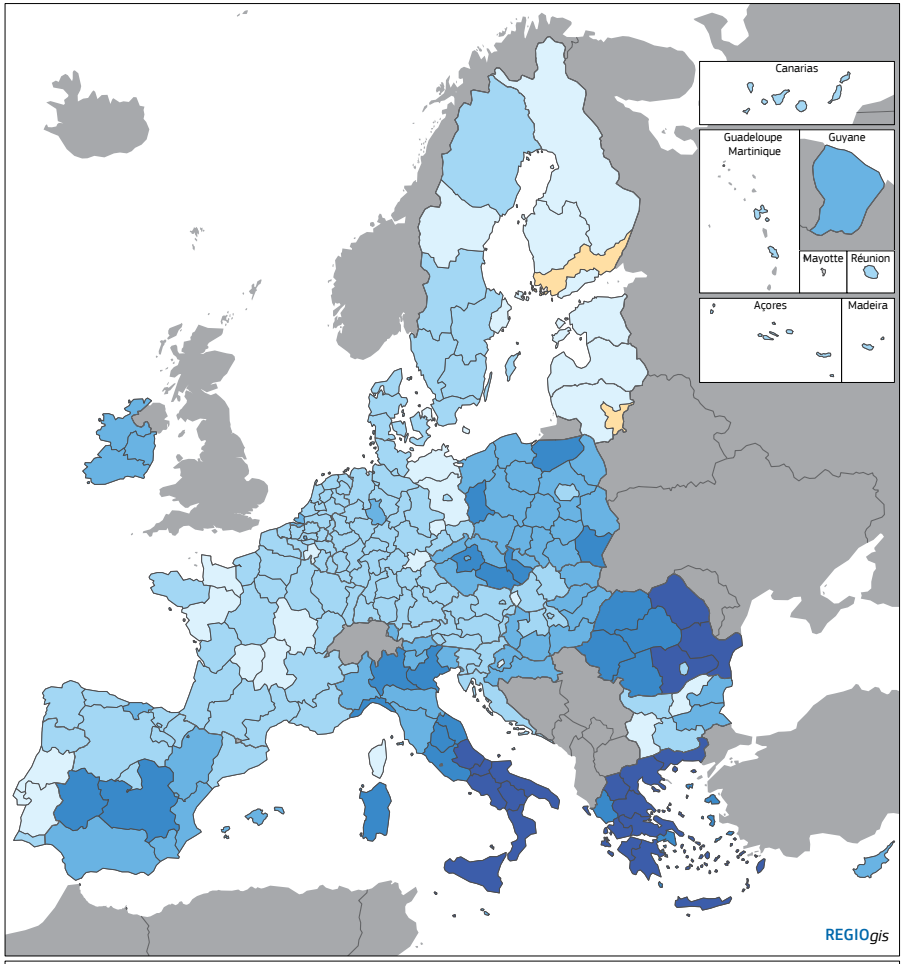
6.3 Women in political power

Women are also less represented than men in government and leadership positions. The 8th Cohesion Report concluded that balanced representation of women (i.e. holding at least 40 % of positions) in all decision-making bodies in political and public life, as recommended in 2003 by the Council of Europe, is not quickly reachable. Indeed, in 2023, women made up half or more of regional assemblies in only 16 out of 285 cases (Map 2.17), with no change from 2021. In some EU regions, not only was the share of women in regional assemblies low in 2023, it had also become smaller over the preceding decade (Map 2.18).

The gender equality index for 2023[43] confirms that gender inequalities in the EU are most pronounced in respect of positions of power (59.1 points out of 100 denoting full equality), despite advances since 2010 (by 17.2 points). The overall index in 2023 exceeded 70 points for the first time, driven by progress in respect of time (+3.6) and work (+2.1) from 2020. This increase in equality

42 The share of women able to telework during the COVID-19 restrictions was larger than for men in the EU, the difference ranging from 3.0 pp in Finland to 17.4 pp in Malta, and it was 10 pp or more in seven out of the 14 EU Member States for which data are available from the EU-SILC.

43 EIGE (2023).

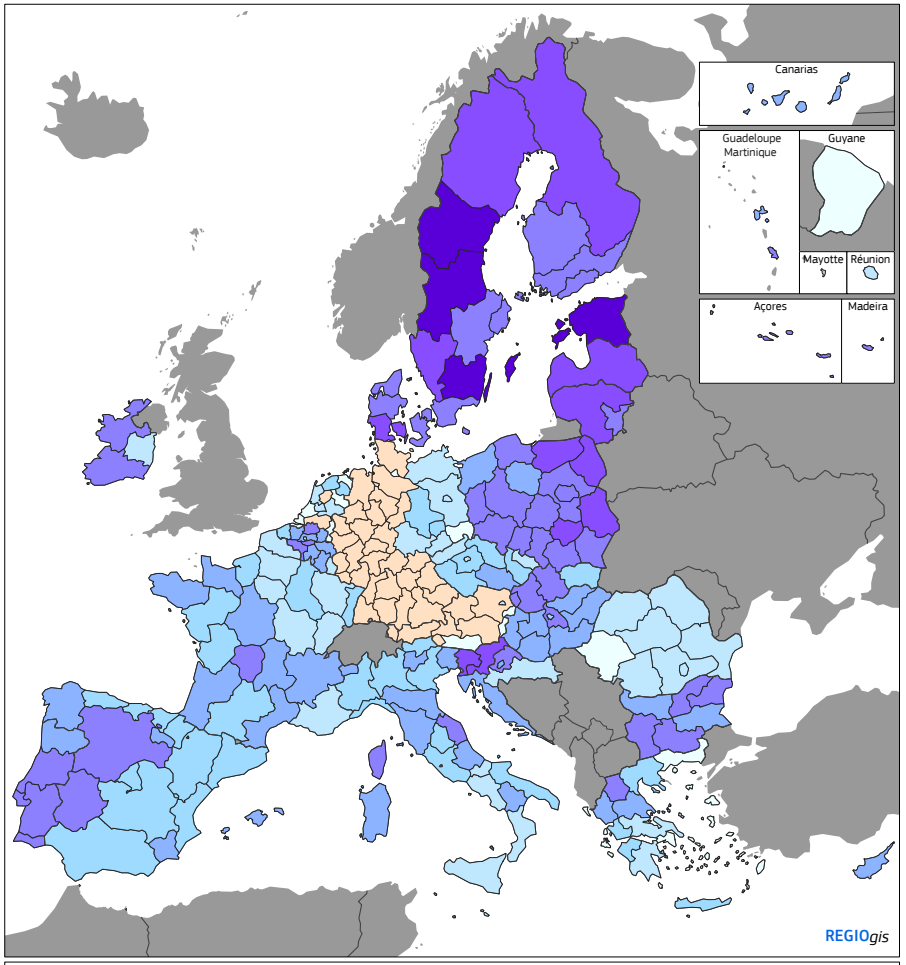


Map 2.15 Differences between female and male employment rates, 2022

Percentage point difference
- < -20
- -20 to -15
- -15 to -10
- -10 to -5
- -5 to 0
- > 0
- no data

EU-27 = -10.7
Source: Eurostat (lfst_r_lfe2emprt).

0 500 km

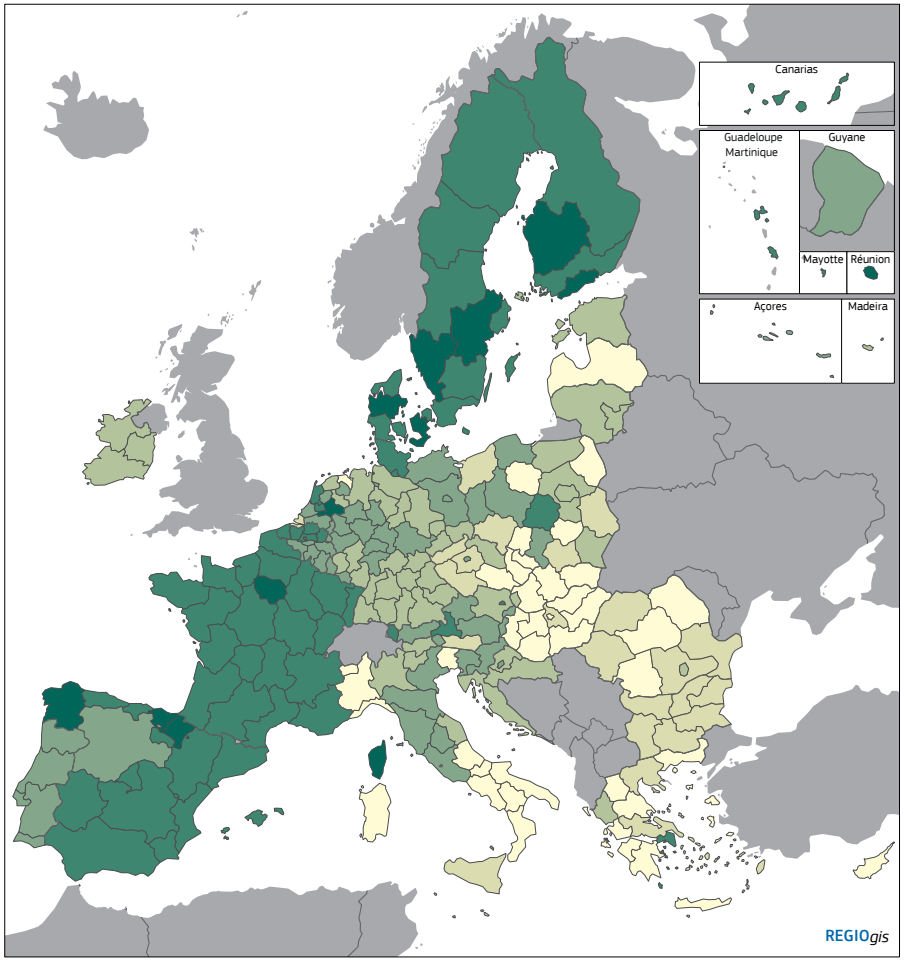


Map 2.16 Differences between female and male tertiary education rates, 2022

Percentage point difference
- < 0
- 0 – 2.5
- 2.5 – 5
- 5 – 7.5
- 7.5 – 10
- 10 – 15
- 15 – 20
- > 20
- no data

EU-27 = 5.7
Source: DG REGIO based on Eurostat [edat_lfse_04].

0 500 km

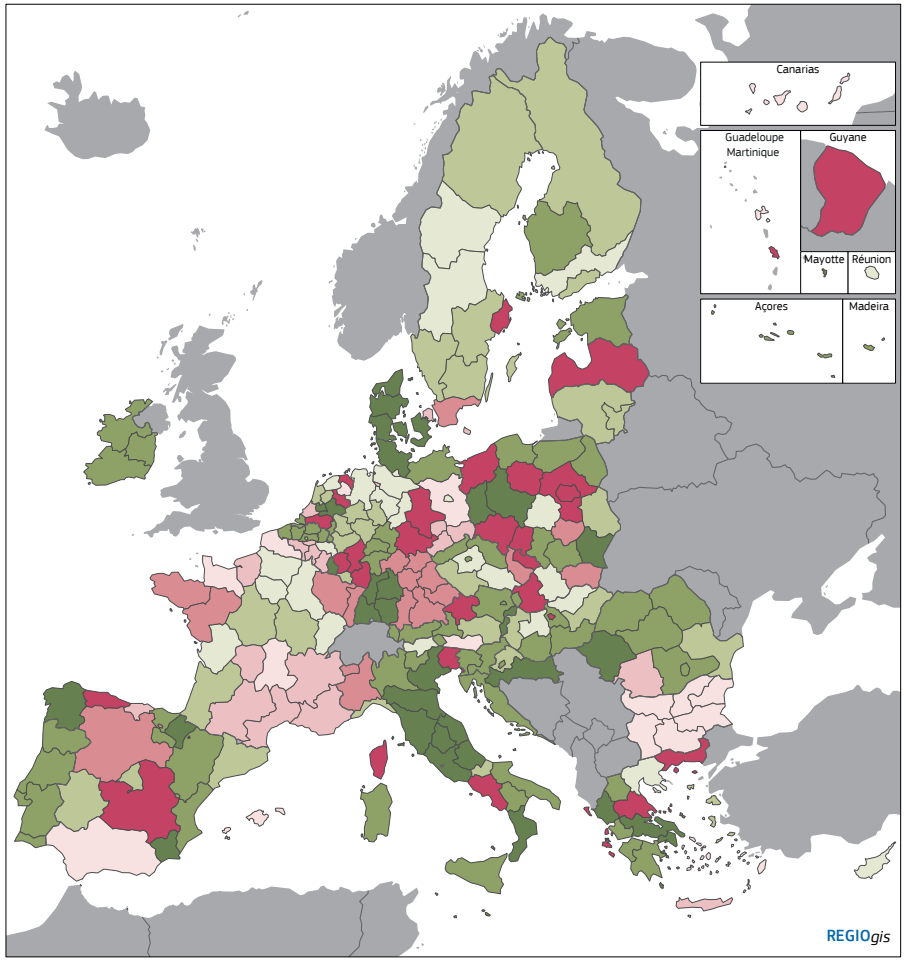


Map 2.17 Women in regional assemblies, 2023

% of members
- < 20
- 20 – 25
- 25 – 30
- 30 – 40
- 40 – 50
- > 50

Countries without regional assemblies (BG, EE, IE, CY, LT, LU, MT and SI) and regions without an assembly (ES63, ES64, PT1): women in national assemblies.
Source: DG REGIO based on EIGE data.

0 500 km



Map 2.18 Change in the share of women in regional assemblies, 2013–2023

Percentage point difference
- < -4.0
- -4.0 to -2.0
- -2.0 to -1.0
- -1.0 – 0.0
- 0.0 – 2.5
- 2.5 – 5.0
- 5.0 – 10.0
- > 10.0

Countries without regional assemblies (BG, EE, IE, CY, LT, LU, MT and SI) and regions without an assembly (ES63, ES64, PT1): women in national assemblies.
FRY5 (Mayotte): 2014–2023.
Source: DG REGIO based on EIGE data.

0 500 km

between women and men has been accompanied by a reduction in differences between Member States. The highest values of the index are in Sweden, the Netherlands and Denmark (78–82), while the lowest are in Czechia, Hungary and Romania (under 58).

7. Advancing equality for migrants and minorities

Migrants, Roma and other minority groups face specific challenges such as discrimination and barriers to accessing the labour market and quality education. Improving their inclusion in the labour market can help to address labour and skill shortages in the context of a declining working-age population (see Chapter 6). The EU values of equality and non-discrimination highlight the importance of having inclusive policies and practices in place so that all members of society can thrive.

7.1 Migrants support regional labour markets, while facing challenges to integrate

Migrants (in this report defined in terms of the country of birth rather than nationality), including people moving within the EU, tend to settle in regions of north-western Member States, especially in larger cities where there are more economic opportunities and support networks are well established (Maps 2.19 and 2.20).

The employment of migrants, especially non-EU migrants, increased markedly between 2015 and 2019. The 'demography toolbox'[44] and the E (Employment) and social developments in Europe (ESDE) 2023 report underline the role of migrants in meeting labour shortages, particularly in low- and medium-skilled occupations[45]. In addition, the COVID-19 pandemic has highlighted the adaptability of migrant employment to changing economic conditions. The employment rate of migrants in the EU fell substantially in 2020 (by 2.5 pp), by much more than for native-born people (just 0.6 pp), but also recovered more over the next two years to 2022 (by 4.0 pp), increasing by almost twice as much as for native-born people (2.1 pp). The extent of the fall in employment in 2020 and the subsequent rebound was particularly large in southern Member States and in less developed regions.

People born in another Member State are mostly mobile EU citizens who benefit from the rights guaranteed by the free movement of workers[46]. As a result, they have similar, or even slightly higher, employment rates in most types of regions (Figure 2.10a), particularly in eastern Member States. Their risk of poverty or social exclusion is also much the same as for native-born people.

In contrast, migrants from outside the EU tend to have significantly lower employment rates, some 10 pp lower than the native-born in north-western and southern Member States (Figure 2.10b). The disparity partly arises from a more substantial employment gap for women (15 pp) than for men (4 pp). A complex set of factors influences where non-EU migrants go and where they perform well in the labour market. They are most numerous in the more robust labour markets in north-western countries. Their employment rates are lowest in the less developed regions, though they appear to play an important role in meeting labour shortages, and the difference in the average rate compared with the native-born is less than in transition and more developed regions (8 pp lower as against 13–14 pp lower).

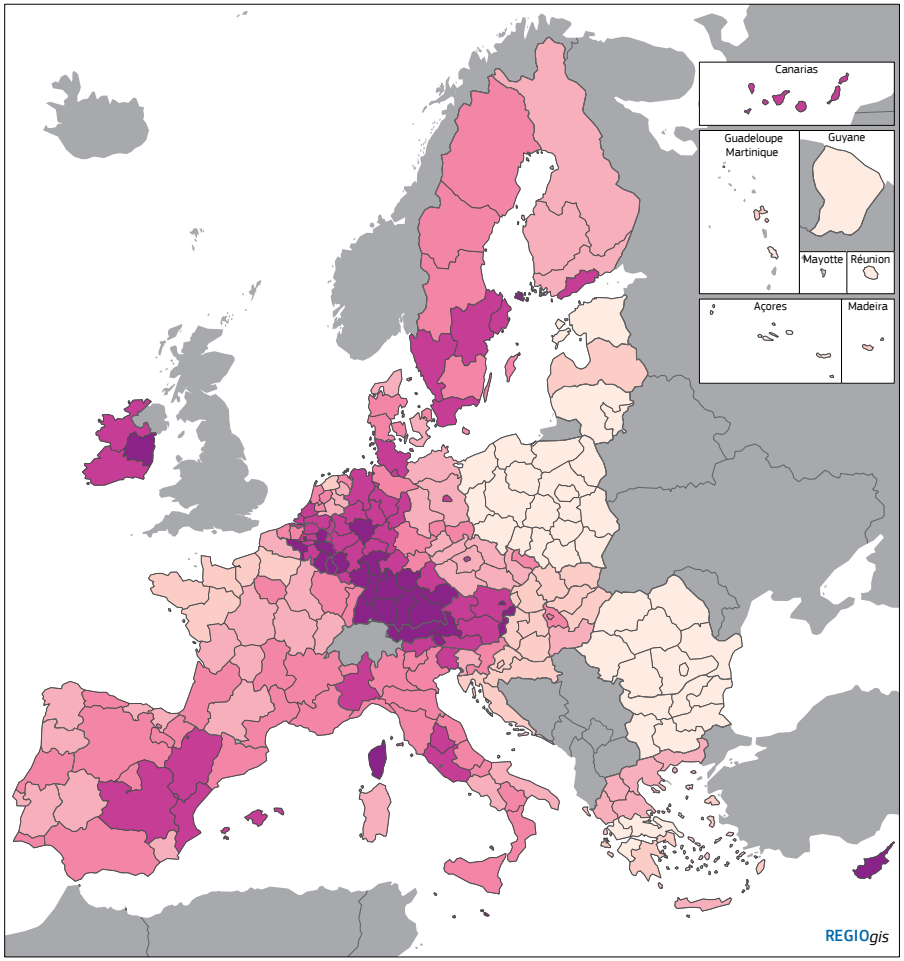
Despite the growth in their employment, migrants face social challenges[47]. Their AROPE rate in 2022 was more than double that of the native-born (40 % against 19 %), as was their rate of material and social deprivation (24 % against 11 % and reaching half of the Roma population).

44 European Commission (2023c).

45 The ESDE report 2023 highlighted that workers born outside the EU are more often employed in occupations facing persistent labour shortages, in particular in low-skilled occupations.

46 European Union (2011).

47 European Commission (2022b).



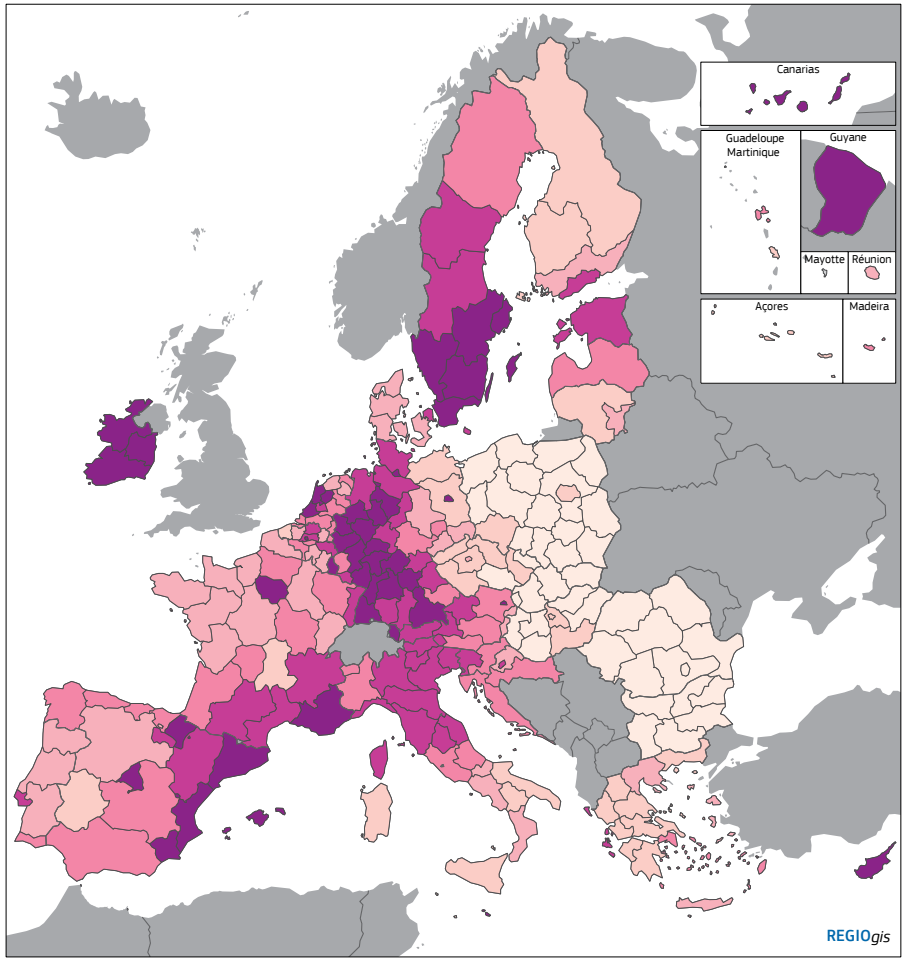
Map 2.19 People born in another EU country, 2022

% of the population (ages 15–74)

< 0.5	4.5 – 8
0.5 – 1.5	> 8
1.5 – 2.5	no data
2.5 – 4.5	

EU-27 = 3.8
Source: Eurostat data (lfst_r_lfsd2pwc) and DG REGIO estimates.

0 500 km



Map 2.20 People born outside the EU, 2022

% of the population (ages 15–74)

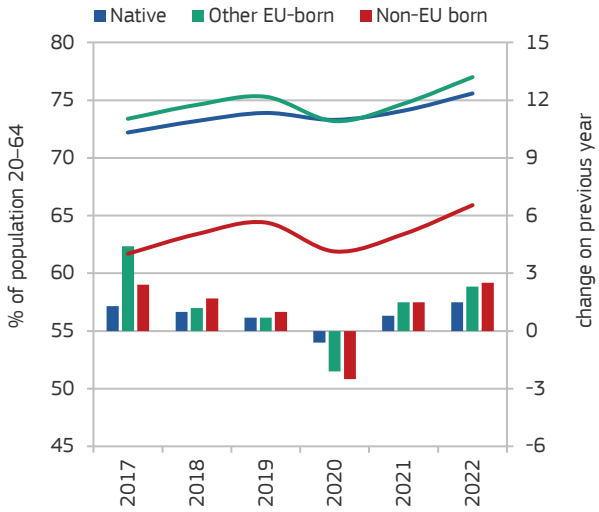
< 1	10 – 14
1 – 4.5	> 14
4.5 – 7	no data
7 – 10	

EU-27 = 9.6
Source: Eurostat data (lfst_r_lfsd2pwc) and DG REGIO estimates.

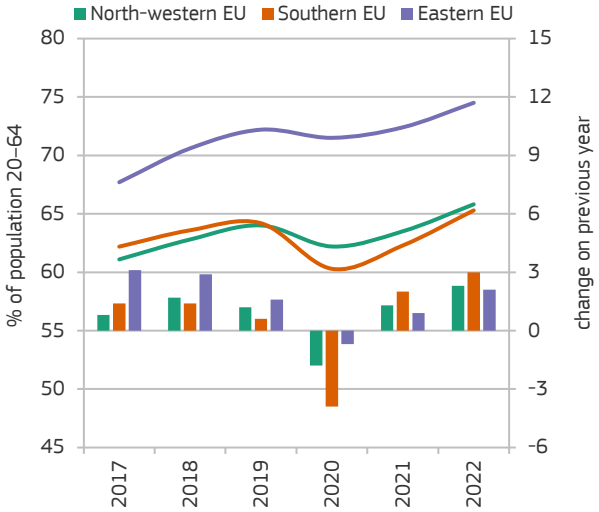
0 500 km

Figure 2.10 Employment rates and changes for migrants as against native-born, and by geographical area, 2017–2022

a) Migrants versus native-born



b) By geographical area



Note: 2021 break in LFS series.
Source: Eurostat [lfst_r_lfsd2pwc], DG REGIO calculation.

A recent OECD report[48] has assessed the uneven impact of migrants on regions and cities, pointing to their positive impact on regional development through innovation, international trade, reducing labour and skill shortages and boosting economic growth. The 'migration outlook 2023' of the International Centre for Migration Policy Development (ICMPD)[49] and the recent Frontex report[50] highlighted the pressure of a significant rise in irregular migration in 2022 and 2023, the highest since 2016. As regards Ukrainian refugees, the statistical evidence on their impact is not yet clear or consistent across EU regions. As of December 2023, more than 4.2 million displaced people from Ukraine had received protection under the Temporary Protection Directive, which provides the right to enter the EU labour market. Cohesion funds have provided support to Member States to ensure Ukrainian refugees can access their rights under temporary protection, for example through language teaching, childcare, the certification of skills and on-the-job training.

7.2 Most EU regions are friendly places for minorities to live in, though progress is needed in eastern and southern parts

Several factors can affect the labour market prospects of different groups and create a more inclusive environment for them to contribute to the economy and society. These include the extent of discrimination, ease of access to education and training, and social attitudes.

Though carried out some time ago, the EU LGBT survey[51] showed that lesbians, gays, bisexual and transgender people (LGBTQ+) face obstacles to enjoying their fundamental rights, particularly in employment and education.

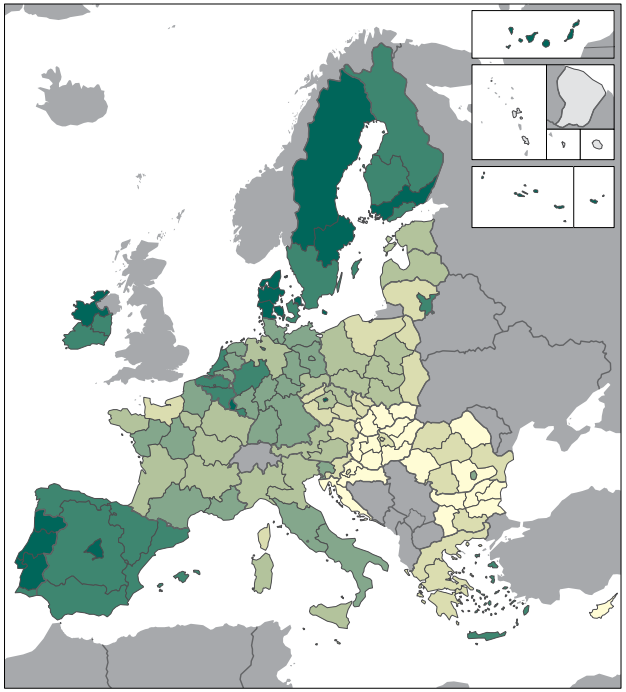
48 OECD (2022).

49 ICMPD (2023).

50 Frontex, the European Border and Coast Guard Agency (2023).

51 European Agency for Fundamental Rights (2014).

Map 2.21 Living conditions for minorities, 2022

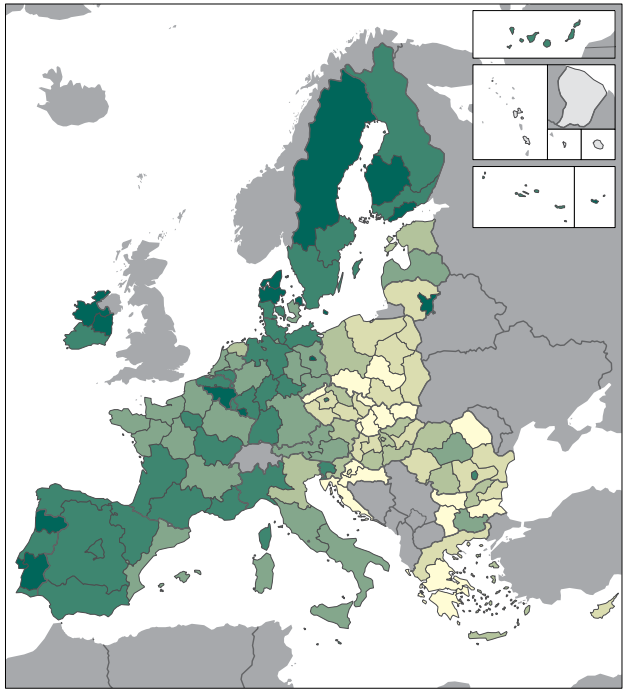


Immigrants from outside the EU

% population aged 15+ responding 'a good place to live'

- < 57
- 57 – 72
- 72 – 77
- 77 – 82
- 82 – 89
- > 89
- no data

Percentages are based on all respondents excluding don't know and refused to answer.
Question: Is the city or area where you live a good place or not a good place to live for immigrants from other countries?
Source: Gallup World Poll (WP106).



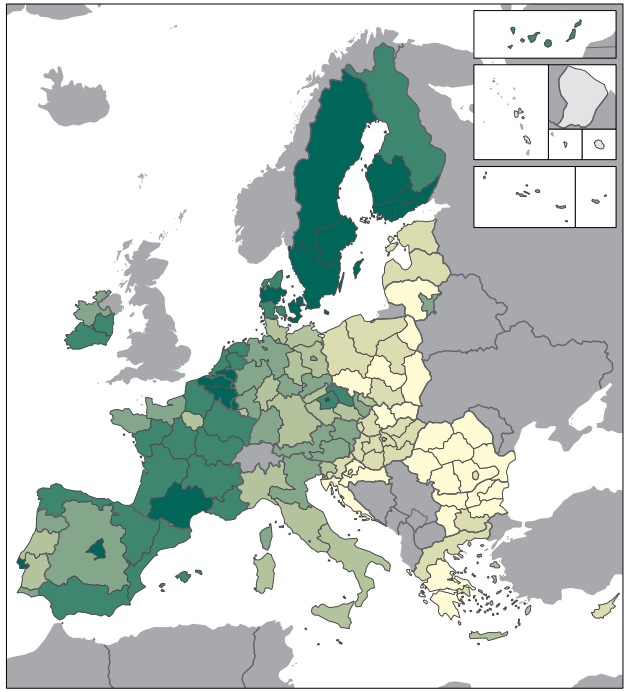
Racial and ethnic minorities

% population aged 15+ responding 'a good place to live'

- < 65
- 65 – 75
- 75 – 80
- 80 – 85
- 85 – 90
- > 90
- no data

Percentages are based on all respondents excluding don't know and refused to answer.
Question: Is the city or area where you live a good place or not a good place to live for racial and ethnic minorities?
Source: Gallup World Poll (WP103).

0 1 000 km



Gay and lesbian people

% population aged 15+ responding 'a good place to live'

- < 43
- 43 – 69
- 69 – 79
- 79 – 86
- 86 – 91
- > 91
- no data

Percentages are based on all respondents excluding don't know and refused to answer.
Question: Is the city or area where you live a good place or not a good place to live for gay or lesbian people?
Source: Gallup World Poll (WP105).

The European Agency for Fundamental Rights 2021 Roma survey[52] indicates that 25 % of Roma across the EU have experienced discrimination over the last 12 months.

The more recent Gallup survey in 2022 provided insights into attitudes towards migrants, ethnic and racial minorities and the LGBTQ+ community in 140 EU regions (Map 2.21). It revealed that regions in north-western Member States are generally seen, by all respondents and not only migrants or minorities, as more friendly places for minority groups than those in eastern and southern countries.

- A significant majority of all respondents reported that their city or area was a 'good place' for racial and ethnic minorities to live, the proportion varying (from 50 % to 95 % across regions and being over 80 % in 80 regions). On the other hand, it was less than 60 % in 10 regions in southern and eastern countries.

- Around two thirds of all respondents believed their city or area was a 'good place' for migrants to live, the proportion varying from 30 % to 97 % across regions. The figure was over 80 % in nearly 50 regions, though under 50 % in 15 regions, mainly in Hungary and Bulgaria.

- The smallest proportion of respondents considered their city or area was a 'good place' for gay and lesbian people to live, though again the figure varied widely across EU regions, from 10 % to 95 %. It was over 80 % in around 60 regions, but under 40 % in 20 regions, primarily in Bulgaria and Romania.

Generally, regional differences were less pronounced (less than 10 pp) in countries where the overall perception of minority groups was positive, and more pronounced where the reverse was the case, with capital city regions showing the widest differences with the rest of the country.

The Gallup results are in line with the distribution of migrants across regions, most concentrating in the north-western parts of the EU, where economic conditions and social support, but also attitudes to migrants, are more favourable. Attitudes to migrants, therefore, tend to be most favourable where they are most numerous.

8. Summary of spatial developments

More developed regions

As indicated above, there has been a continuing increase in employment rates in more developed regions over the past decade, although less than in other parts of the EU. The average employment rate exceeded 78 % in 2022, with unemployment of only 5 %. Though youth unemployment was still 12 % and 9 % of 15–29 year-olds were classified as NEETs, these figures remained less than in other regions. Several factors have contributed to this relatively favourable situation. Many 25–64 year-olds have tertiary education (38 %) or upper-secondary or post-secondary vocational education (32 %). There seems to have been progress in upskilling and reskilling, essential for the green and digital transitions, with increased participation of adults in training. The situation of women has been constantly improving, while more women have tertiary education than men (40 % against 37 %), the gap in employment rates persists (74 % against 83 %). Continuing improvements in access to childcare (93 % of children aged 3 to compulsory school age being in ECEC) has helped to narrow this.

Transition regions

The employment rate in transition regions increased markedly over the period 2013 to 2022, from 67 % to 75 %, while the unemployment rate almost halved to 7 %. Nevertheless, youth unemployment still stood at 16 % in 2022, and 11 % of 15–29 year-olds were classified as NEETs. The factors underlying the general improvement over the past decade include the relatively large proportion of 25–64 year-olds with either tertiary education (36 %) or with upper-secondary vocational qualifications (35 %). There has been some rise in adult participation in education and training after the significant fall in 2020 and the situation of women has constantly improved. However, although even more women than men have tertiary education

52 European Agency for Fundamental Rights (2022).

as compared with more developed regions (40 % against 32 %), the gap in the employment rate remains almost as large (71 % against 79 %), despite 95 % of children between 3 and compulsory school age attending pre-school education.

Less developed regions

Employment rates in less developed regions (NUTS 2) increased more than in others between 2013 and 2022, from 58 % to 69 %, and the average difference with more developed regions narrowed from 15 pp to 10 pp. The unemployment rate halved to 8 % over the period, still higher than in other regions, and though the youth unemployment rate fell by 16 pp, it remained at 22 %; and while the proportion of those aged 15–29 who were NEET also declined, it was still 16 % in 2022. Several factors underlie the worse labour market situation than elsewhere. Tertiary education rates for those aged 25 to 64 remain relatively low (26 % in 2022), though the proportion with upper-secondary vocational education is slightly higher (40 %). While adult participation in education and training has increased lately, it was still only 8 % in 2022. The situation of women improved consistently, but although the gap in tertiary education rates with men is wide (30 % against 21 %), the employment rate of women remains much lower than for men (61 % against 76 %). While some 87 % of children between 3 and compulsory school age attend pre-school education, this is less than in other regions. A larger proportion of people were also AROPE than in other regions (28 % in 2022 as against 19 % in more developed regions and 22 % in transition ones), though this is less than in 2016 (34 %) and the gap with more developed regions narrowed appreciably over these six years (from 14 pp to 9 pp).

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3

COHESION AND TERRITORIAL DIVERSITY

- The EU contains a wide diversity of territories. Differences in population concentration and density and specific geographical features may affect their economic and socio-economic development.

- GDP per head is higher in metropolitan regions than in other regions. Over the last two decades, GDP per head has grown faster in metro regions, mainly as a result of above average growth rates in capital city regions. Other metro regions outperformed non-metropolitan regions only in the eastern and southern Member States. In capital metro regions in the eastern and southern Member States, the contribution of employment growth to GDP growth was double the average, reflecting a continuing concentration of employment there.

- Differences in economic trends are partly mirrored in labour market and education differences. In eastern countries, cities have the highest employment rate and the gap with rural and less densely populated areas widened over the 2013–2022 period. By contrast, in north-western countries, the employment rate in thinly populated areas was higher than in cities. In southern countries, though the gap narrowed over the period, the rate in thinly populated areas remained very low. The proportion of people with both tertiary and upper secondary education increased in all types of regions over the 2013–2022 period, but the substantial gap between cities and thinly populated areas widened further.

- Transport connectivity is lower in thinly populated regions, where access to education and healthcare is much more limited than in urban regions. The dispersed nature of the population in rural and less densely populated areas means that ensuring adequate connectivity requires more transport infrastructure and resources per inhabitant.

- The specific geographical features of islands, outermost regions, border regions, northern sparsely populated regions, and mountain and coastal regions may hamper their economic development. On average, outermost regions and mountain regions have GDP per head below the EU average and the gap has widened over the past 20 years. In border regions, on the other hand, GDP per head has converged towards the EU average since 2001.

- Most of the regions with specific geographical features perform below the EU average in terms of socio-economic indicators. Outermost regions in particular have low employment rates and high unemployment rates, although the latter has decreased significantly since 2001.

Chapter 3
Cohesion and territorial diversity

1. Towards more balanced and harmonious development

Territorial cohesion is about ensuring the harmonious development of the wide diversity of places in the EU and making sure that people there are able to make the most of their inherent features. It means transforming diversity into an asset that contributes to the sustainable development of both the places themselves and the EU. More balanced and sustainable development, implicit in the notion of territorial cohesion, achieves a more even and sustainable use of assets, bringing economic gains. Territorial cohesion is at the core of EU structural policies and has been so since its inception. Four concepts[1] play a major role in this regard: concentration, connecting territories, co-operation, and specific regional geographical features.

Concentration requires overcoming differences in population density. Economic activity is more concentrated across the EU than population. There are gains from this in terms of the increasing returns from agglomeration and from the clustering of activities in particular places. This is reflected in higher levels of GDP per head, productivity and employment in capital cities and most other densely populated conurbations. At the same time, there are also diseconomies, such as congestion, air pollution, and in some areas more poverty and social exclusion. Indeed, in rural and other thinly populated areas that are more remote from cities of any size, small and medium-sized towns often play a more important role than their size might suggest. The role these towns play in providing access to services, including the infrastructure necessary to invest in the adaptability of people and enterprises, is key to avoiding rural depopulation and ensuring these areas remain attractive places to live. Section 2 examines economic and social trends in urban and non-urban regions and areas.

Connecting territories is about overcoming distance. Connecting places, especially urban and rural ones, requires good transport links, but also adequate access to healthcare, education and other basic services. These issues are examined in Section 3.

Co-operation is about overcoming division. The problems of connectivity and concentration can only be effectively addressed with close co-operation at various levels. This may require co-operation between neighbouring local authorities, between regions, between Member States or between the EU and neighbouring countries, or some or all of these. Section 4 examines aspects of cross-border co-operation between EU regions.

Regions with specific geographical features include islands, mountainous regions, coastal regions, and northern sparsely populated ones. Section 5 examines the strength and weaknesses of these regions.

Analysis of the territorial concepts concerned requires the use of typologies. For the analysis of territorial economic trends in Section 1, the NUTS 3 metropolitan typology[2] is used (see Box 3.2). This enables agglomeration effects in cities to be studied along with the wider regional benefits via spill-over effects. In addition, the degree of urbanisation[3] is used to examine social aspects, as it provides a sharper demarcation between urban centres and other areas. Analysis of regions with specific geographical features is based on their typological definition, which is explained in Section 5.

1 COM(2008) 616 final.

2 Eurostat (2019).

3 Idem.

Box 3.1 Functional urban and rural areas

The nomenclature of territorial units for statistics (NUTS) results in geographical units that are based on administrative boundaries. These units differ in area and population size and may not be the most appropriate units to study concepts that transcend such boundaries. The European Commission and OECD have developed approaches to define geographical units that are based on functional spatial linkages instead of administrative boundaries.

Functional urban areas

In 2011, the European Commission and the OECD developed a definition of a functional urban area (FUA)[1]. The concept of an FUA considers the functional and economic extent of cities, beyond the consideration of density and population size only. This concept also includes other lower-density areas surrounding the city but closely linked to it from an economic and functional perspective. In essence, these FUAs combine a densely populated city with its surrounding commuting area. Such a functional approach has the benefit of capturing a single labour and housing market. It avoids fragmenting such a daily urban system into multiple municipalities (local administrative units). It also avoids combining multiple daily urban systems into a single spatial unit, which happens in some NUTS 3 regions. In addition, it helps to overcome the wide variation in the area and population size of municipalities and NUTS 3 regions. This FUA definition has since been included in a Eurostat regulation and endorsed by the UN Statistical Commission[2] as part of the degree of urbanisation.

Functional rural areas

Work on a definition of a functional rural area (FRA) is one of the actions of the Communication on a long-term vision for the EU's rural areas[3], and is currently ongoing in the European Commission[4]. In more rural areas, commuting between municipalities is probably less unidirectional and less focused on a single employment centre than in urban ones. As a result, commuting patterns may be less suitable for defining rural daily systems. In rural areas, services such as education and training, healthcare, shops, banks, and cultural and entertainment facilities are often clustered in a town or a village, which acts as a local centre. The objective of an FRA is to capture a daily rural system, i.e. an area that captures the vast majority of daily trips. These trips go beyond travel to work and include travel to services as well as travel to friends and family. It is likely that most non-commuting trips also occur within the same FRA boundaries. Similar to the FUA, the FRA method is constructed around a denser settlement. Instead of a city, FRAs are constructed around towns and villages as defined by the degree of urbanisation. Instead of commuting flows, this method uses driving time to the nearest town or village, and its population size, to create a functional area.

1 Dijkstra et al. (2019).

2 https://unstats.un.org/UNSDWebsite/statcom/session_51/documents/2020-37-FinalReport-E.pdf.

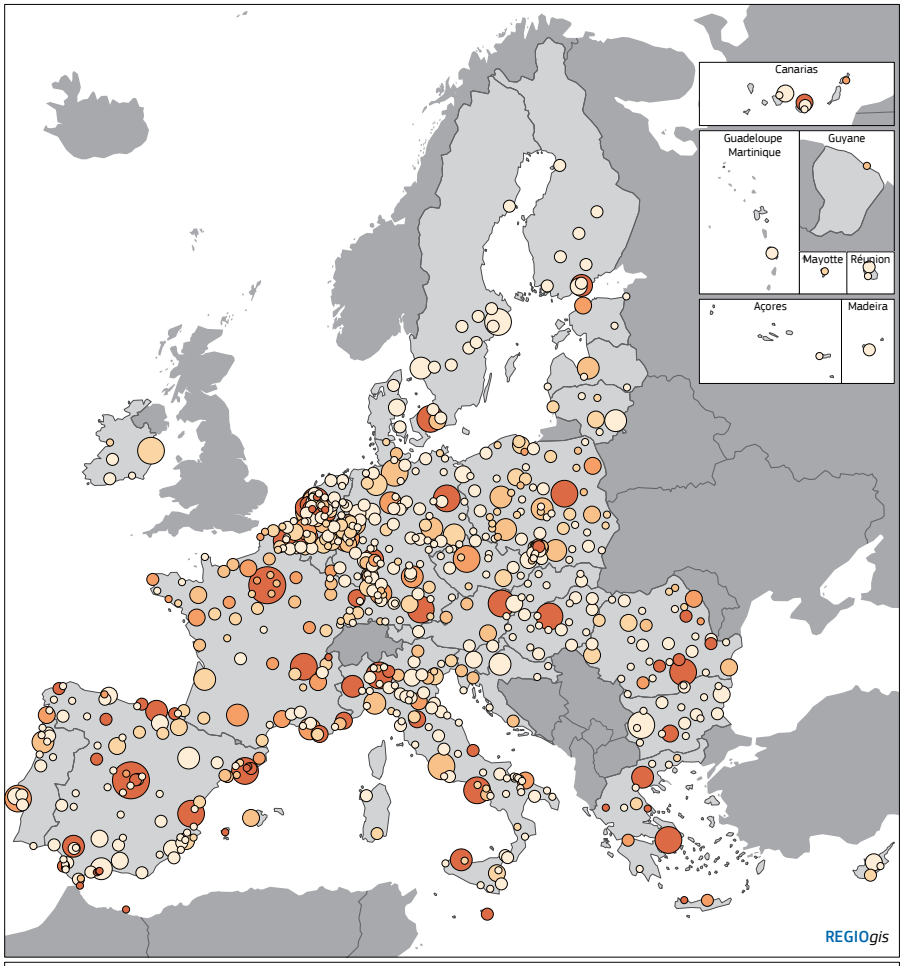
3 European Commission (2021).

4 Dijkstra and Jacobs-Crisioni (2023).

2. Concentration: economic and social trends in urban and non-urban areas

Concentration means that between urban and non-urban regions there are stark differences in economic and social development, opportunities, and living standards. These arise from a complex interplay of factors, including geographical location, infrastructure and services, access to resources, and policies.

In urban areas, economic activities are typically diverse and dynamic, with a concentration of industries, businesses and services. Urban centres often serve as hubs for commerce, finance, education and training, and technology, attracting investment and fostering innovation. Consequently,



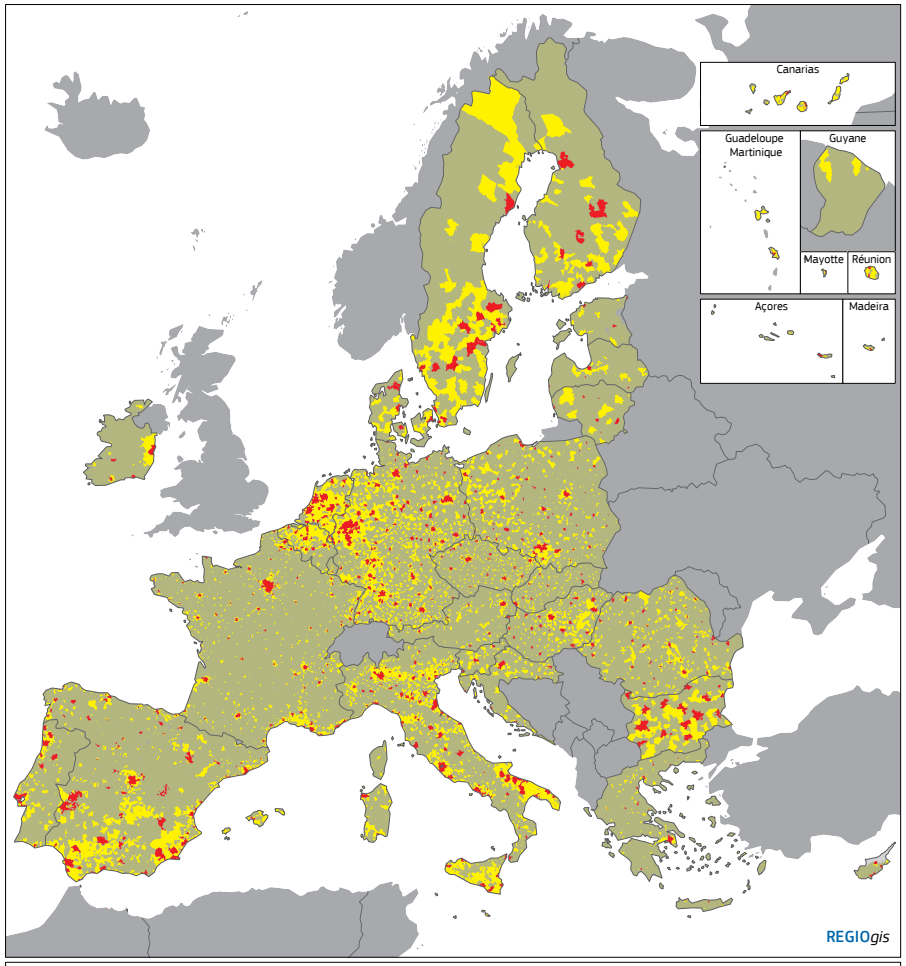
Map 3.1 Cities in the EU, 2021

Inhabitant (inh) per km²
- < 1500
- 1500 – 2000
- 2000 – 2500
- 2500 – 3000
- 3000 – 4000
- >= 4000

city 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

Sources: Eurostat.

0 500 km



Map 3.2 Degree of urbanisation of Local Administrative Units, 2020

Category
- cities
- towns and suburbs
- thinly populated areas
- no data

Source: Eurostat.

0 500 km

Box 3.2 Territorial typologies

Both typologies used in this section are based on a combination of geographical contiguity and population size or density. First, an urban centre is defined as a cluster of contiguous grid cells of 1 square kilometre (km^2) (excluding diagonals) with a population density of at least 1 500 inhabitants per km^2 and a minimum population of 50 000 inhabitants. Second, an urban cluster is defined as a cluster of contiguous grid cells of 1 km^2 (including diagonals) with a population density of at least 300 inhabitants per km^2 and a minimum population of 5 000 inhabitants.

The degree of urbanisation

The degree of urbanisation classifies local administrative units into one of three classes, as follows.

- Cities (densely populated areas): at least 50 % of the population live in an urban centre (Map 3.1).
- Towns and suburbs (intermediate density areas): more than 50 % of the population live in urban clusters but less than 50 % live in urban centres.
- Rural areas (thinly populated areas): less than 50 % of population live in urban centres or clusters.

Maps showing this and other typologies can be viewed via the interactive map viewer via the following link: https://ec.europa.eu/regional_policy/assets/scripts/map/regio-gis-maps/9cr/9cr.html.

Metropolitan and non-metropolitan regions

Capital metro, other metro and non-metro regions are defined as follows. Metropolitan ('metro') regions are NUTS 3 regions, or groupings of NUTS 3 regions, representing FUAs (i.e. a city and its commuting zone) of more than 250 000 inhabitants. Capital metro regions are those that include the national capital. Non-metro regions are all other NUTS 3 regions.

More details can be found at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Territorial_typologies_for_European_cities_and_metropolitan_regions.

urban residents tend to have better access to employment opportunities, higher wages, and a wider range of consumer goods and services. The presence of well developed infrastructure, such as transport networks[4], healthcare and long-term care, and education and training institutes, further enhances their quality of life.

Non-urban areas offer many things associated with better well-being, such as larger and cheaper housing and lower crime rates[5]. They are also widely valued for food production, management of natural resources, protection of landscapes, recreation and tourism[6]. Nevertheless, non-urban areas tend to face numerous challenges that may constrain their development. Their geographical remoteness can limit access to markets, making it difficult for agricultural and rural-based industries to thrive. Lack of infrastructure, including reliable roads and railways, electricity, and internet connectivity, hinders business expansion and inhibits the delivery of essential services and development. Additionally, limited educational and training opportunities can constrain the skill set of the workforce. Together with more limited job opportunities in rural and other less densely populated areas, this can lead to higher unemployment rates and lower wages. Lack of access to care facilities may also constrain the available workforce. Many of these services and infrastructures are public in nature.

Results of the analysis in this section show that in the EU the divide in favour of cities is evident primarily in southern and eastern EU countries, where cities clearly outperform thinly populated areas. By contrast, in north-western Member States, where the overall economic and social situation is better than in other countries, cities indeed generate higher GDP, but the economic and social gains are distributed more widely to towns and suburbs, and to thinly populated areas, in part because of the more developed connectivity. Indeed, in north-western countries employment rates are highest for those living in thinly populated areas,

4 See also Section 3 of this chapter.

5 Eurostat [ilc_mddw06].

6 COM/2021/345 final.

partly reflecting higher rates of commuting, whereas in southern and eastern Member States, employment is lower outside of cities, especially in thinly populated areas. At-risk-of poverty or social exclusion (AROPE) rates are higher, partly as a result of this, posing a challenge for social cohesion. Large disparities exist in tertiary and adult education, cities offering more opportunities for study and providing more jobs for university graduates, while thinly populated areas lag behind, which is reflected in productivity and job quality.

2.1 Capital metropolitan regions perform better than other regions

In 2021, metro regions accounted for 60 % of the population in the EU, 63 % of employment and 69 % of GDP. Accordingly, they are major centres of employment and business activity with higher productivity than elsewhere.

Between 2001 and 2021, real GDP per head in metro regions grew faster than in others in all parts of the EU (Table 3.1). This was a result mainly of above-average growth rates in capital city regions. Other metro regions also outperformed non-metro regions in the eastern and southern Member States, but not in the north-western Member States.

In regions in the eastern and north-western Member States, the growth of GDP per head was mainly associated with productivity growth. The pattern is different in southern Member States. Productivity growth was very low during this period and most of the (modest) growth in GDP per head was associated with growth in employment. In capital metro regions in the eastern and southern Member States, the contribution of employment growth to GDP growth was double the average, reflecting a continuing concentration of employment there.

Table 3.1 Changes in GDP per head, productivity and employment per head by type of region, 2001–2021

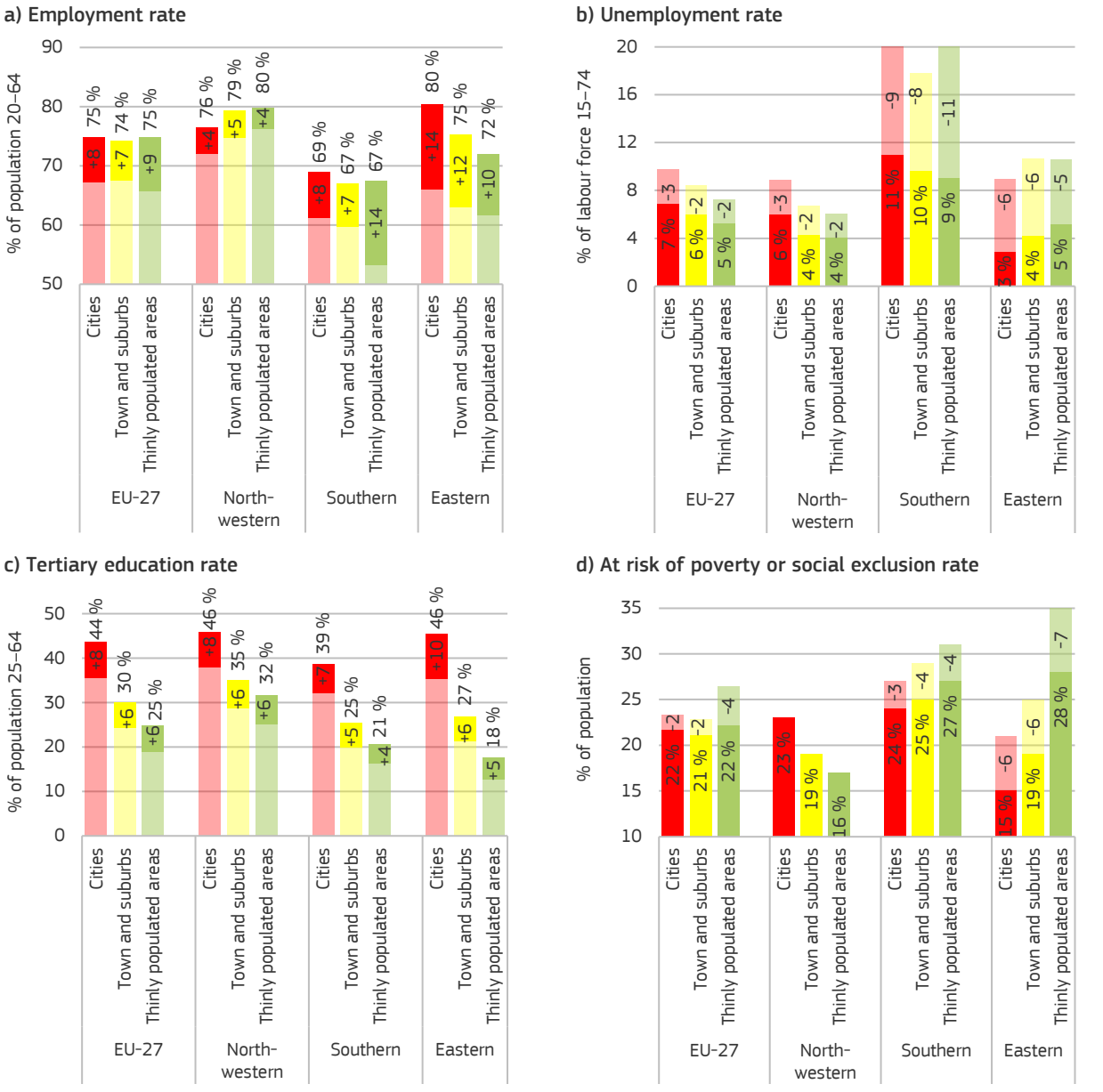
	GDP per head	Productivity	Employment relative to population*
Average % change on the preceding year			
EU-27	**1.1**	**0.7**	**0.3**
Capital metro regions	1.3	0.8	0.5
Other metro regions	0.9	0.5	0.3
Non-metro regions	1.0	0.8	0.2
Eastern Member States	**3.5**	**2.9**	**0.5**
Capital metro regions	3.9	2.8	1.0
Other metro regions	3.4	2.8	0.5
Non-metro regions	3.0	2.8	0.2
North-western Member States	**1.0**	**0.7**	**0.3**
Capital metro regions	1.1	0.9	0.2
Other metro regions	0.9	0.5	0.3
Non-metro regions	1.0	0.7	0.3
Southern Member States	**0.1**	**-0.1**	**0.2**
Capital metro regions	0.2	-0.2	0.4
Other metro regions	0.1	-0.1	0.1
Non-metro regions	0.0	-0.1	0.1

* This combines the employment rate and working-age population as a share of the total.
Source: DG REGIO based on Joint Research Centre (JRC) annual regional database (ARDECO) data.

2.2 Employment rates are higher in cities in southern and eastern Member States, and in thinly populated areas in north-western ones

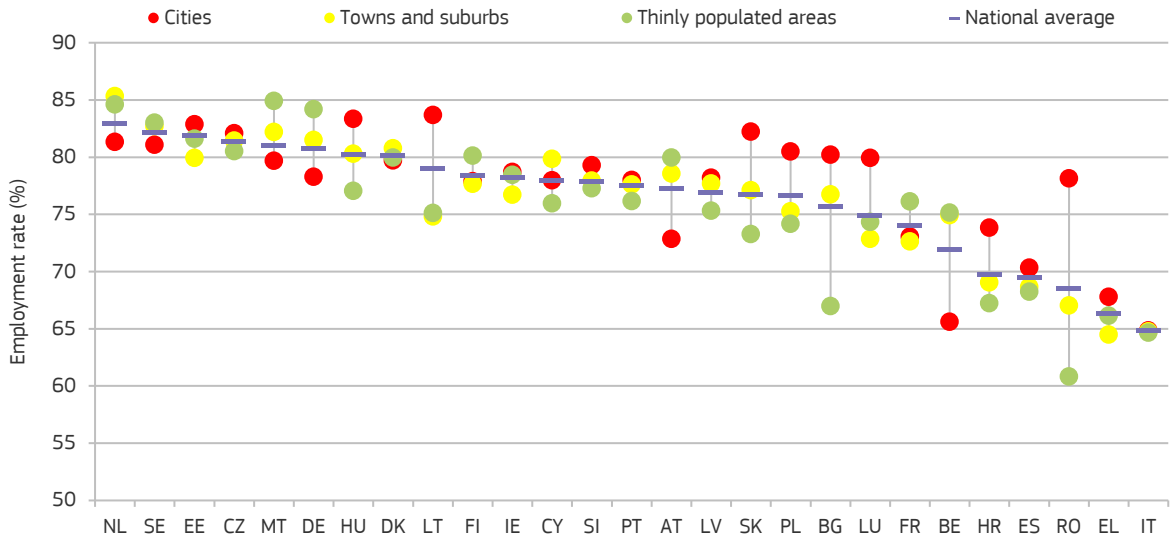
As noted above, in the EU as a whole, employment rates in cities, towns and suburbs, and thinly populated areas are similar – around 75 % in 2022. There are, however, marked differences between different geographical areas (Figure 3.1a). In north-western Member States, the employment rate for those aged 20 to 64 was 80 % in thinly populated areas and towns and suburbs in 2022, as opposed to 76 % in cities. The difference largely reflects differences in Germany, Austria, France and especially Belgium (of 10 percentage points – pp) (Figure 3.2). In southern countries, the employment rate in thinly populated areas increased markedly between 2013 and 2022 (by 14 pp) to almost the same level as in cities (to 67 % as

Figure 3.1 Employment, education and social indicators in regions by degree of urbanisation, 2013 (2015 for AROPE) and 2022



Note: For employment and tertiary education rates: lighter parts of bars are for 2013, darker parts for the increase in 2013–2022, bar heights show the % for 2022. For unemployment and AROPE rates: the heights of bars denote % for 2013 (2015 for AROPE), lighter parts of bars show the reduction 2013–2022 (2015–2022 for AROPE), darker parts and % figures are for 2022. 2021 break in LFS series, 2020 break in EU-SILC series.
Source: Eurostat [lfst_r_pgauwsc, edat_lfs_9915, ilc_peps13n] and DG REGIO calculations.

Figure 3.2 Employment rate by degree of urbanisation in EU Member States, 2022



Source: Eurostat [lfst_r_ergau].

against 69 %). In eastern countries, the employment rate in rural areas also increased over the period (by 10 pp to 72 %) but by less than in cities (by 14 pp to 80 %), so the gap between the two widened (to 8 pp from 4 pp). In Bulgaria and Romania, the employment rate in cities was higher than the EU average and much higher than in thinly populated areas (13 pp higher in Bulgaria, 17 pp in Romania).

Unemployment rates to a large extent mirror these differences. In north-western and southern Member States, rates are lower in thinly populated areas than in cities, while the opposite is the case in eastern Member States (Figure 3.1b).

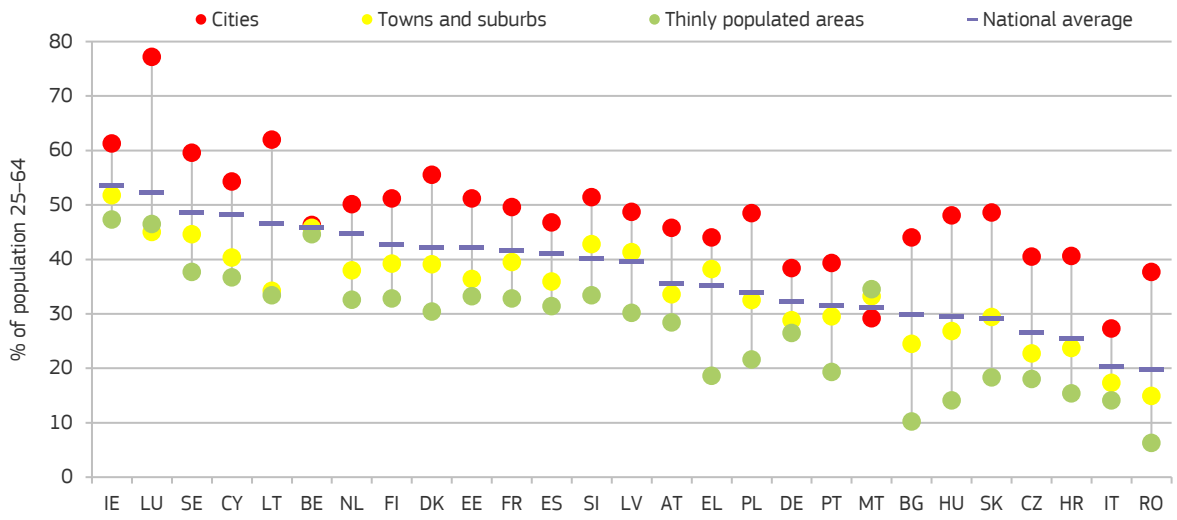
2.3 Tertiary education favours cities, especially in eastern Member States

Around 34 % of people aged 25 to 64 in the EU had tertiary education in 2022. However, there are substantial differences between different types of regions. The proportion was much higher in cities (44 %) than in towns and suburbs (30 %) and thinly populated areas (25 %), reflecting the strong demand for workers with tertiary education there. The average difference, moreover, widened between 2013 and 2022 (from 11 to 14 pp in towns and suburbs, and from 17 to 19 pp in thinly populated areas). The difference was substantially wider in eastern Member States (46 % in cities against 18 % in rural areas), giving rise to a large difference in employment and social outcomes (Figure 3.1c).

This pattern of difference was common across all Member States. In 10 EU Member States, over 50 % of the population aged 25 to 64 in cities – and over 60 % in Luxembourg, Lithuania, Ireland and Sweden – had tertiary education. Conversely, the proportion was below 20 % in thinly populated areas in 10 Member States and around 10 % or below in Bulgaria and Romania. The disparities between cities and thinly populated areas were particularly pronounced in these two countries, as well as in Hungary, Luxembourg and Slovakia (Figure 3.3). To some degree, these disparities reflect the difference in the structure of economic activity and the consequent difference in the mix of skills demanded, though they also act as a constraint on the extent to which activity can shift into higher value-added sectors in rural areas.

Vocational education and training (VET) complements tertiary education and equips the economy with high skills that are essential to address labour shortages and deliver on the green and digital transitions (see Chapter 2). Its contribution is evident in thinly populated areas, where those with VET qualifications accounted for 46 % of the pop-

Figure 3.3 Tertiary education attainment by degree of urbanisation in EU Member States, 2022



Source: Eurostat [edat_lfs_9915].

ulation aged 25–64, compared with 27 % in cities and 38 % in towns and suburbs.

A low level of tertiary education coupled with a limited increase in this between 2015 and 2020 and an accelerating decline in the working-age population are features of regions in a 'talent development' trap, as discussed in Chapter 5. This affects 16 % of the population in the EU, mainly in eastern Member States, especially Bulgaria, Romania, Hungary and Croatia, as well as in the south of Italy, eastern Germany and the north-east of France.

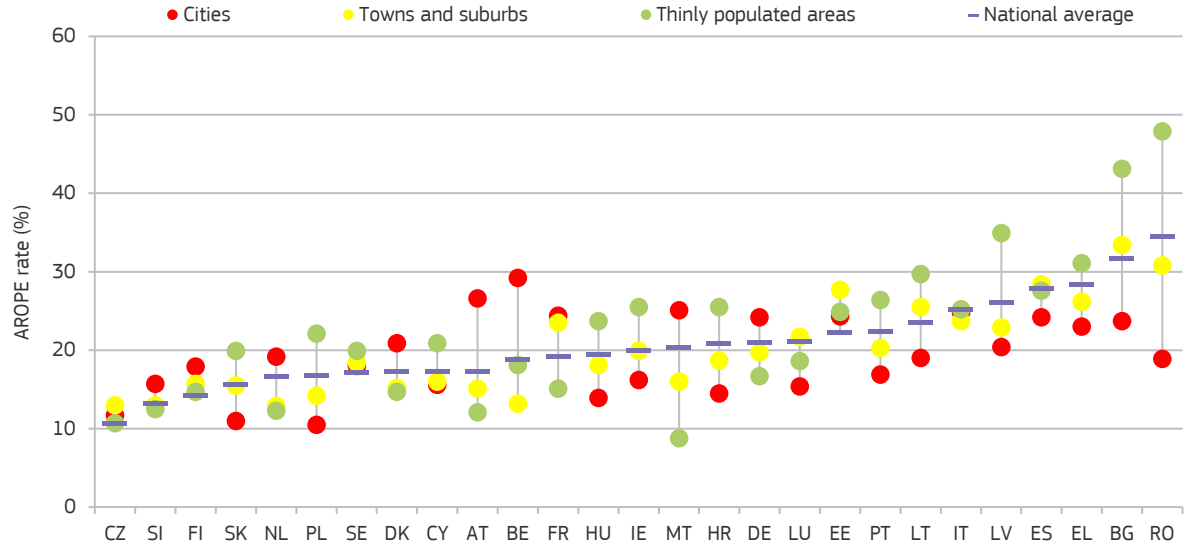
2.4 Poverty and social exclusion are more prevalent in thinly populated areas of eastern and southern Member States and in cities in north-western ones

The AROPE rate declined in the EU over the period 2015–2019 and remained unchanged from then until 2022 in cities, towns and suburbs, and thinly populated areas alike. The reduction in the rate, down on average by 2.4 pp to 22 % over the seven years to 2022, was especially large in rural areas (4.3 pp), particularly in eastern Member States (7.4 pp).

At EU level, the difference between cities, towns and suburbs, and thinly populated areas is notably smaller than between more developed and less developed regions (11 pp) or between north-western and southern Member States (5 pp) (as described in Chapter 2). Indeed, the difference in the rate between cities, towns and suburbs, and thinly populated areas in the EU narrowed over the period, largely as a result of the reduction in rural areas (of 4 pp to 22 %) (Figure 3.1d).

The geographical breakdown highlights the relatively high AROPE rates in thinly populated areas in eastern Member States, despite a large reduction over the 2015–2022 period (of 7 pp to 28 %). In Romania and Bulgaria in particular, the difference in the AROPE rate between thinly populated areas and cities was especially wide (29 pp in the former, 19 pp in the latter). In Austria and Belgium, by contrast, the difference was especially wide in the opposite direction (15 pp and 11 pp, respectively) (Figure 3.4).

Figure 3.4 AROPE rates by degree of urbanisation in EU Member States, 2022



Source: Eurostat [ilc_peps13n].

3. Connecting territories

Mobility is important for both the economy and social life. Cohesion Policy is aimed at improving links between Member States and regions in the EU, in part by supporting the development of the trans-European transport network (TEN-T), especially in regions where transport infrastructure remains under-developed[7]. Promoting sustainable transport and removing transport bottlenecks was one of 11 thematic objectives for Cohesion Policy in the 2014–2020 period and is part of one of the five Policy Objectives for the 2021–2027 period.

Well targeted infrastructure investment and network design are crucial for a transport system that provides accessibility to people and businesses and reduces regional disparities in connectivity. Public transport (especially railways) tends to be less developed outside cities in terms of network density and service frequency. Distances travelled are typically too great to use a bicycle or to walk. As a result, dependency on road transport tends to be higher.

3.1 Road networks are sparser in eastern Member States and infrastructure needs per head are higher in thinly populated areas regions[8]

Road accessibility depends on a sufficiently dense and fast road network that connects places and people. Various other factors also affect accessibility, including the distribution of the population, the efficiency of the layout of the road network, and geophysical features such as mountains, rivers and lakes. Nevertheless, all other things being equal, greater road length per head and more roads that are motorways can be expected to result in greater accessibility and better road performance.

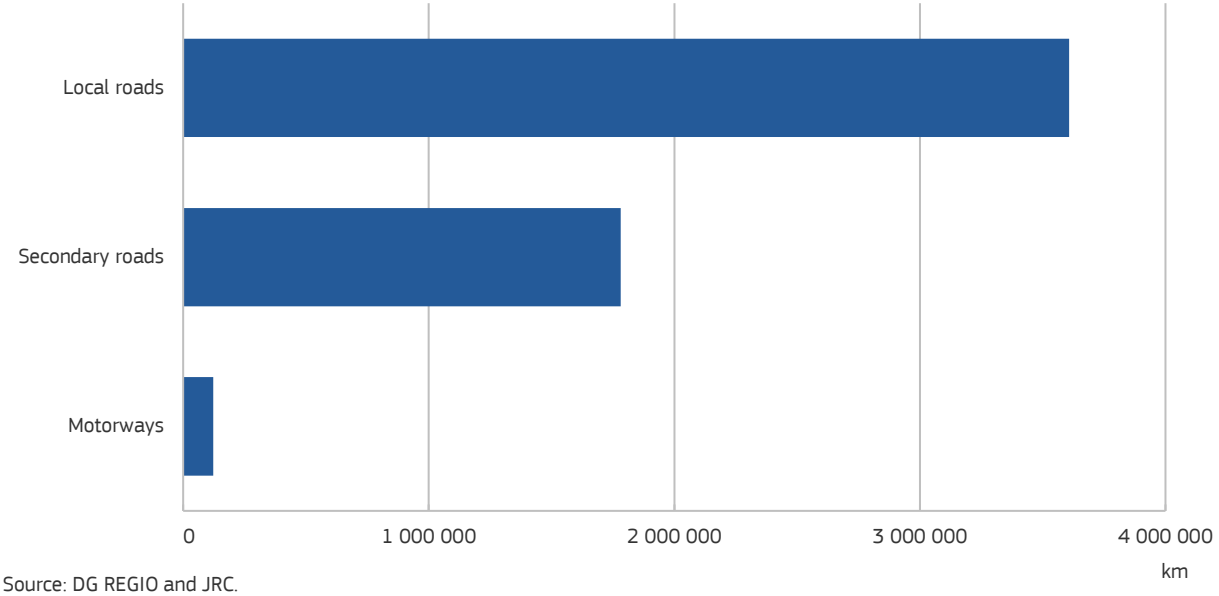
Over the past decade, public investment in transport amounted to around EUR 112 billion a year, accounting for roughly a quarter of total public investment[9]. According to data from the International Transport Forum, the greater part of this went on roads.

7 European Commission (2021).

8 This sub-section is largely based on Brons et al. (2022).

9 This concerns total gross fixed capital formation (Eurostat GOV_10A_EXP).

Figure 3.5 Total road length by road class in the EU (km), 2019



Source: DG REGIO and JRC.

Two thirds of the road network in the EU consists of local roads in terms of length, just under a third of secondary roads, and only 2 % of motorways (Figure 3.5). This breakdown is much the same in all Member States.

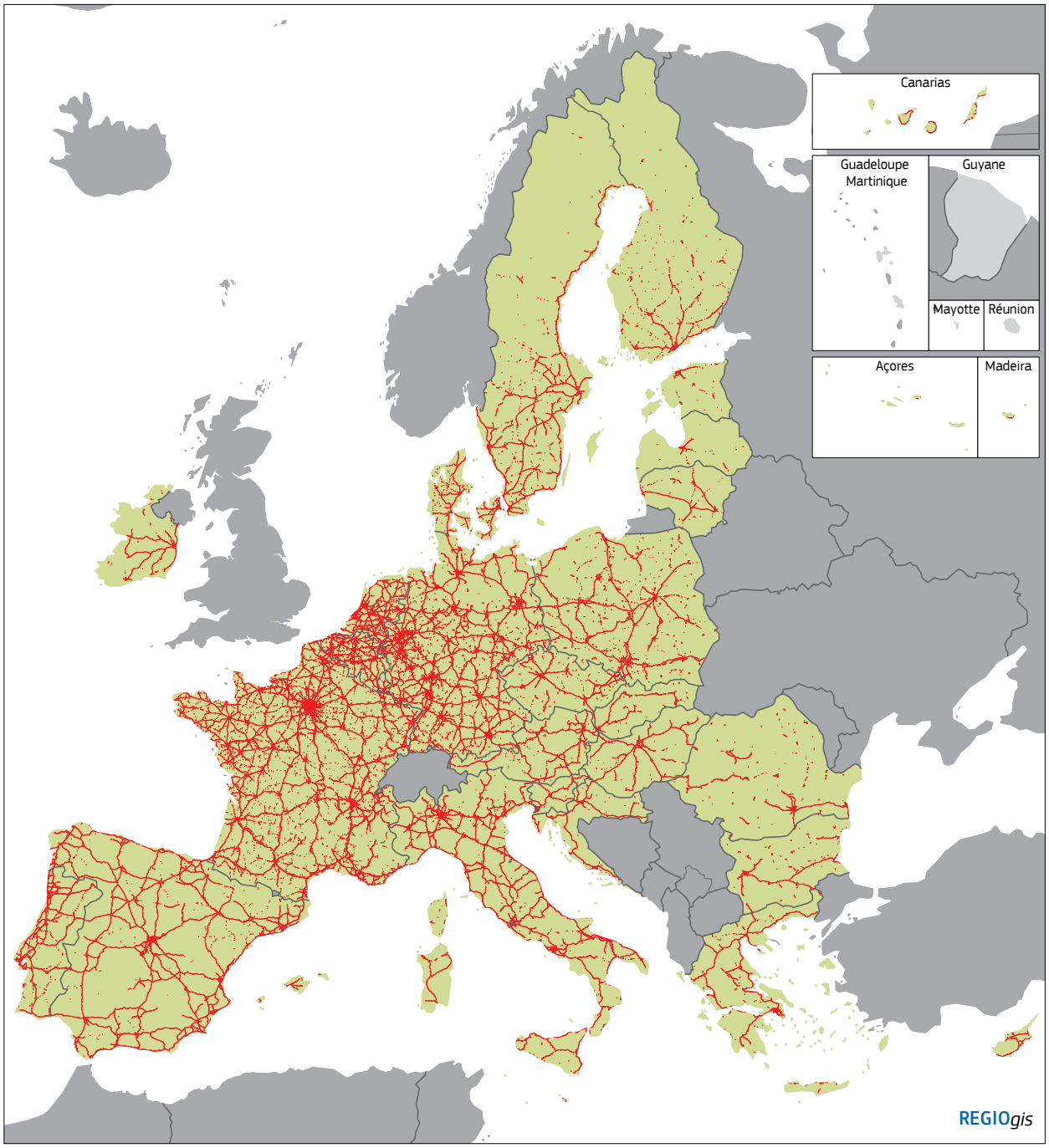
Despite the very small part of the network made up of motorways, they are important in providing fast road connections, particularly for intermediate and long-distance journeys. The motorway network is well developed in most north-western and southern Member States, but much less developed in Romania, Bulgaria, Estonia and Latvia, especially in the more rural parts (Map 3.3). Although these areas are served by secondary and local roads, the lack of motorways tends to imply lower speeds and so lower accessibility.

The length of roads per head differs according to the degree of urbanisation. Because of the dispersed nature of the settlements in thinly populated areas, much greater road lengths per head are required to connect them (Table 3.2). For example, local road length per head is 10 times greater in thinly populated areas than in cities (19 versus 1.8 km per inh), with towns and suburbs in an intermediate position (just under 3 times the length per head in cities, but a quarter of the length in rural areas). The length of motorways and secondary roads per head is also greater in thinly populated areas (though these roads are frequently used by people living outside these areas).

Table 3.2 Road length per inhabitant by road class and degree of urbanisation, 2018

	Thinly populated areas	Towns/suburbs	Cities
All roads (m/inh)	31.0	5.5	2.1
Motorways (m/inh)	0.78	0.10	0.07
Secondary roads (m/inh)	11.3	1.00	0.3
Local roads (m/inh)	19.1	4.4	1.8

Note: Data presented here are based on grid-level classification by degree of urbanisation.
Source: DG REGIO, JRC.



Map 3.3 Motorways and major roads

Roads

No data

Source: JRC based on Tom Tom data.

0 500 km

3.2 Road performance remains low in some eastern Member States and thinly populated areas

Transport performance by car, defined here as the share of population within 120 km that can be reached within 90 minutes[10], varied substantially between Member States in 2021. It is highest in Cyprus and only slightly lower in Malta, both relatively small islands, where most destinations can be reached within 90 minutes. It is also high in Belgium and the Netherlands, countries that are also relatively small and highly urbanised, with dense road networks. In Portugal and Spain, where there have been several decades of substantial investment in transport infrastructure[11], road performance has increased markedly as a result and is now above the EU average and higher than Germany and France. Road performance is lowest in Slovakia and Romania, where road networks remain underdeveloped, and mountainous areas make road construction difficult and costly.

Road performance by car also varies substantially between regions within Member States, both in less developed (especially in Greece, Bulgaria and Slovakia), moderately developed (Portugal) and more developed (Austria) ones (Map 3.4).

Road performance tends to be low in thinly populated areas, especially in eastern Europe, and high in more densely populated regions, particularly in the Netherlands and Belgium, but also in many Spanish regions. In several of the latter, the population is concentrated in densely populated cities – decent road networks, accordingly, providing access to large populations within 90 minutes of driving. Most of the capital city regions have high road transport performance, including in Bulgaria, Croatia, Romania and Slovakia, where overall road performance is low.

3.3 Passenger rail performance is poor compared with road, particularly in thinly populated areas

For journeys between urban areas, trains tend to be the main alternative to cars, provided there is a railway station within easy reach and the journey is affordable. As a sustainable means of transport, rail is pivotal in the design and construction of the TEN-T, because it is integral to EU climate policy. Besides the costs involved, the extent to which travellers are willing to consider using trains depends in large measure on the time journeys take as compared with using a car. It also depends on the ease of reaching the departure station and of reaching the final destination from the arrival station[12].

Box 3.3 Measuring transport performance based on accessibility and proximity indicators

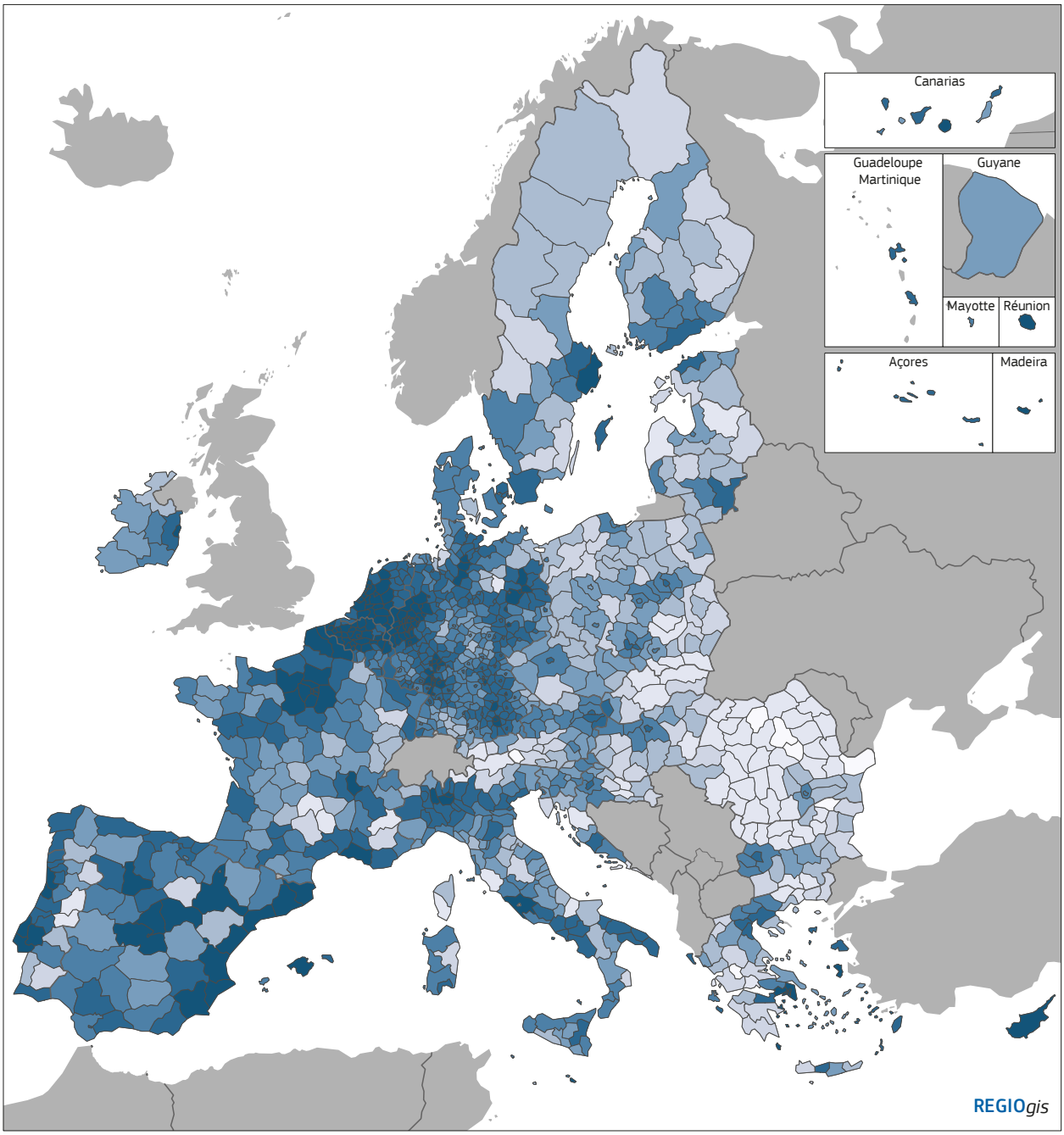
Transport performance is measured here based on a methodology developed by the International Transport Forum together with the European Commission and the OECD. The indicators used and their precise operationalisation in this analysis are as defined in the following table.

Indicator	Description
Proximity	Total population within 120 km (i.e. 'nearby' population).
Absolute accessibility	Population within 120 km that can be reached within 90 minutes by either road or rail (i.e. accessible population).
Transport performance	Ratio of accessibility to proximity, or the share of population within 120 km that can be reached within 90 minutes.

10 For a description of the transport performance indicator see Box 3.3.

11 European Commission (2016); cohesion open data platform (https://cohesiondata.ec.europa.eu/).

12 The focus of the analysis here is on accessibility and travel times and does not take account of other factors determining travel choice, including the cost – i.e. ticket price – safety and comfort.



Map 3.4 Road transport performance (% of population within a 120-km radius that can be reached in 90 minutes) by NUTS 3, 2021

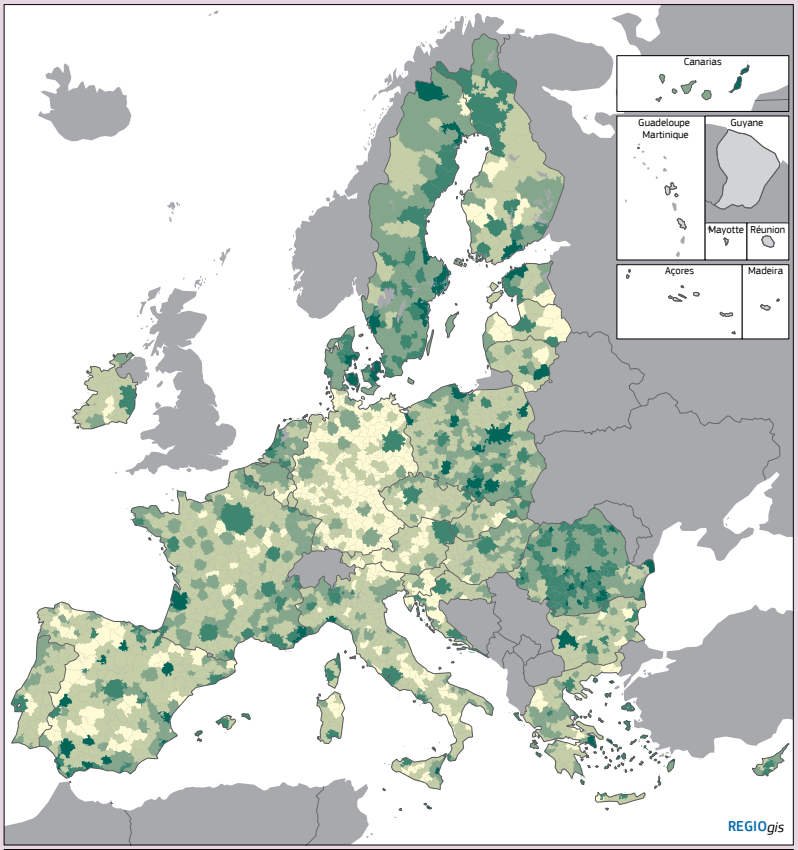
%

0 – 20	60 – 70
20 – 40	70 – 80
40 – 50	80 – 90
50 – 60	90 – 100

EU-27 = 77.2
Share of population within a 120-km radius that can be reached within 90 minutes by car.
Source: DG REGIO, based on Eurostat and TomTom data (FR (RUP): JRC and IGN-F).

0 500 km

Box 3.4 Estimating the impact of traffic congestion on car travel time in the EU



Map 3.5 Estimated average free-flow travel speed by functional urban and rural area (km/h)

km/h
<= 50
50 – 55
55 – 60
60 – 65
> 65
no data

Source: JRC based on TomTom data.

0 500 km

© EuroGeographics Association for the administrative boundaries

A recent analysis by the JRC estimates the reduction in speed and increase in travel time on the European road network due to congestion. As a first step, the approach[1] uses an 'origin-constrained spatial interaction model', which produces a distribution of passenger car trips from every inhabited 1-km origin grid cell to all inhabited grid cells that are: (i) within national borders; and (ii) within 60 minutes driving in free-flow conditions, i.e. without congestion. As a next step, the free-flow speed[2] and travel time on the quickest routes from an origin to all destinations are considered. In order to track changes in speed and travel time in the morning commute, the analysis calculates the travel time on the same route when the network speeds reflect those of a regular weekday at 8:30 in the morning[3].

Map 3.5 and Map 3.6 show, for FRAs and FUAs[4], the estimated average speed of travelling in free-flow conditions and the loss in average travel speeds in weekday 8:30 am driving conditions. Free-flow speeds depend inter alia on national regulations, which explains the fact that some of the variation shows up at the country level (Map 3.5).

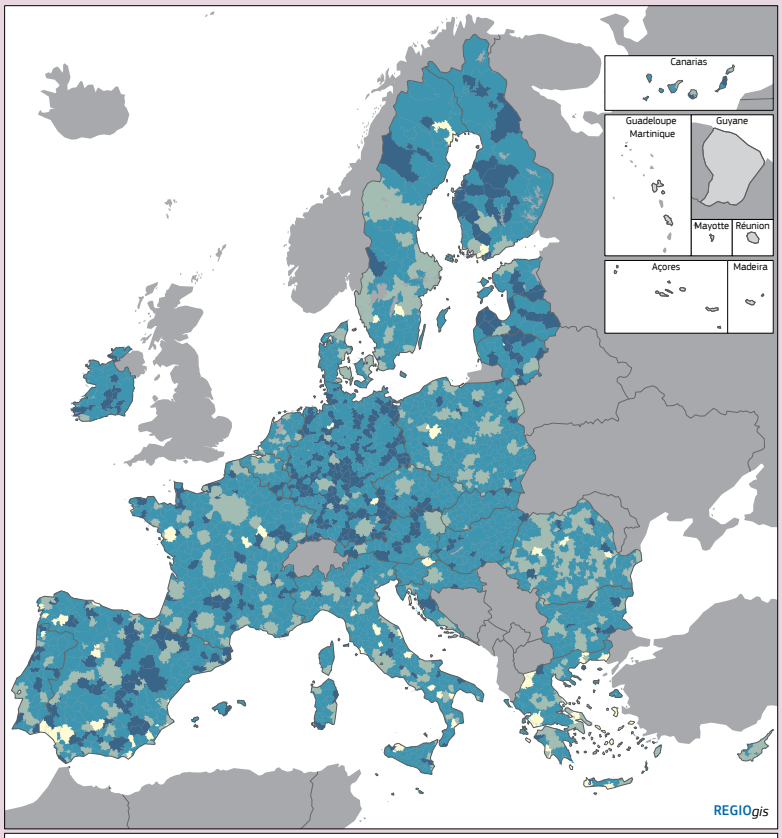
For example, in areas of Germany, Italy, Spain and Latvia speeds tend to be higher than in most other Member States. Nevertheless, there are significant regional variations in most countries, indicating in particular lower free-flow speeds in urban areas. The loss in travel speed in morning peak conditions is largest in FUAs in Spain, Germany, Finland and Latvia (Map 3.6). As a general rule, reductions in speed tend to be larger in areas where the free-flow speed is higher.

1 The approach is based on Jacobs-Crisioni et al. (2015), using data from Batista e Silva et al. (2021).

2 Travel speeds are obtained from speed profiles recorded in the TomTom data.

3 8:30 in the morning is selected because, across Europe, this is when most time is lost (Christodoulou et al., 2020).

4 FUAs are defined using the provisional boundaries of the 2021 Geostat grid. The specification of FRAs is an ongoing task. The definition used here is the currently preferred one but is provisional.

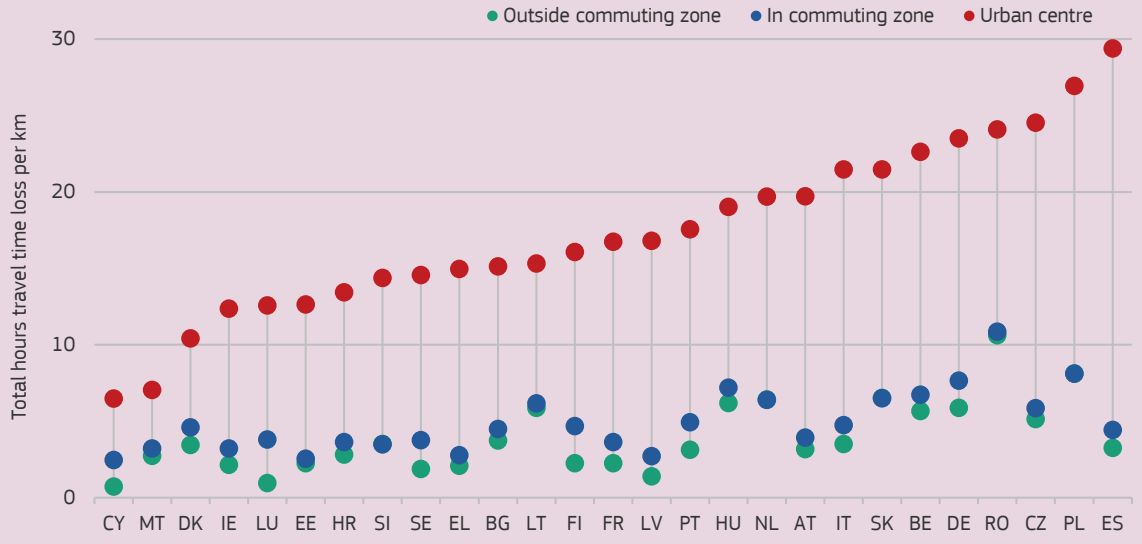


Map 3.6 Estimated average loss in travel speed with 8:30 am driving conditions by functional urban and rural areas (km/h)

Lower car travel speeds during the morning rush hour lead to losses in travel time[5]. Figure 3.6 shows, by Member State and urban audit zone, the amount of travel time lost. This is calculated as the total estimated amount of time residents would lose when travelling their modelled journeys at 8:30 am travel speeds instead of free-flow speeds, relative to the kilometres of road in a specific zone. In all Member States, the impact of traffic congestion on travel time is much greater in urban centres than in other areas. Outside urban centres, the impact of congestion in commuting zones is only slightly higher than in non-commuting ones.

5 Time losses need to be measured appropriately, as they depend among other things on factors such as average travel speeds and lengths of travel, which vary considerably across the EU. To indicate the territorial scale of time loss, hours lost are therefore normalised by road lengths per urban audit zone.

Figure 3.6 Travel time hours lost due to morning peak traffic per km of road length



Source: Batista e Silva and Dijkstra (2024), JRC based on TomTom.

Rail performance is defined here as the proportion of the population living within a 120-km radius that can be reached by rail within 90 minutes (see also Box 3.3). This proportion lies between 0 and 100 % but has positive values only for people living in locations where they have access to a rail station (see Box 3.5).

In all NUTS 3 regions, transport performance by rail remains lower than by road, which hardly encourages people to travel by train, especially if they need to travel frequently or quickly.

At the EU level the average rail performance is 15.7, which means that, on average, around just under 16 % of the population living within a 120-km radius can be reached within 90 minutes by rail. However, there is substantial variation across EU regions (Map 3.7). Around a quarter of people in the EU have access to a reasonable rail service (rail performance indicator above 20). Most of these live in urban areas. Only some 6 % of people, all living in capital city or other metro regions, can reach over half of the population living in a 120-km radius within 90 minutes. The top-performing regions include Paris and surrounding regions, Berlin, Copenhagen and the surrounding region, and Barcelona, where more people live close to a station and where there are more, and faster, train connections. In thinly populated areas, rail performance tends to be lower because the population is more dispersed and stations are fewer and farther between. Indeed, many people in rural regions do not have access to a rail station at all.

Rail performance also tends to be lower in eastern EU regions, particularly in Lithuania and Romania. This is partly linked to the fact that eastern regions tend to be less densely populated and have a larger proportion of people living in rural regions. However, rail performance is also low in urban regions as compared with urban regions in other parts of the EU, which reflects the low investment in the rail network before EU accession.

Box 3.5 Determining who has access to a rail station

To assess whether or not a person has access to a rail station, the approach followed is, first, to determine the area that can be reached within 15 minutes by:

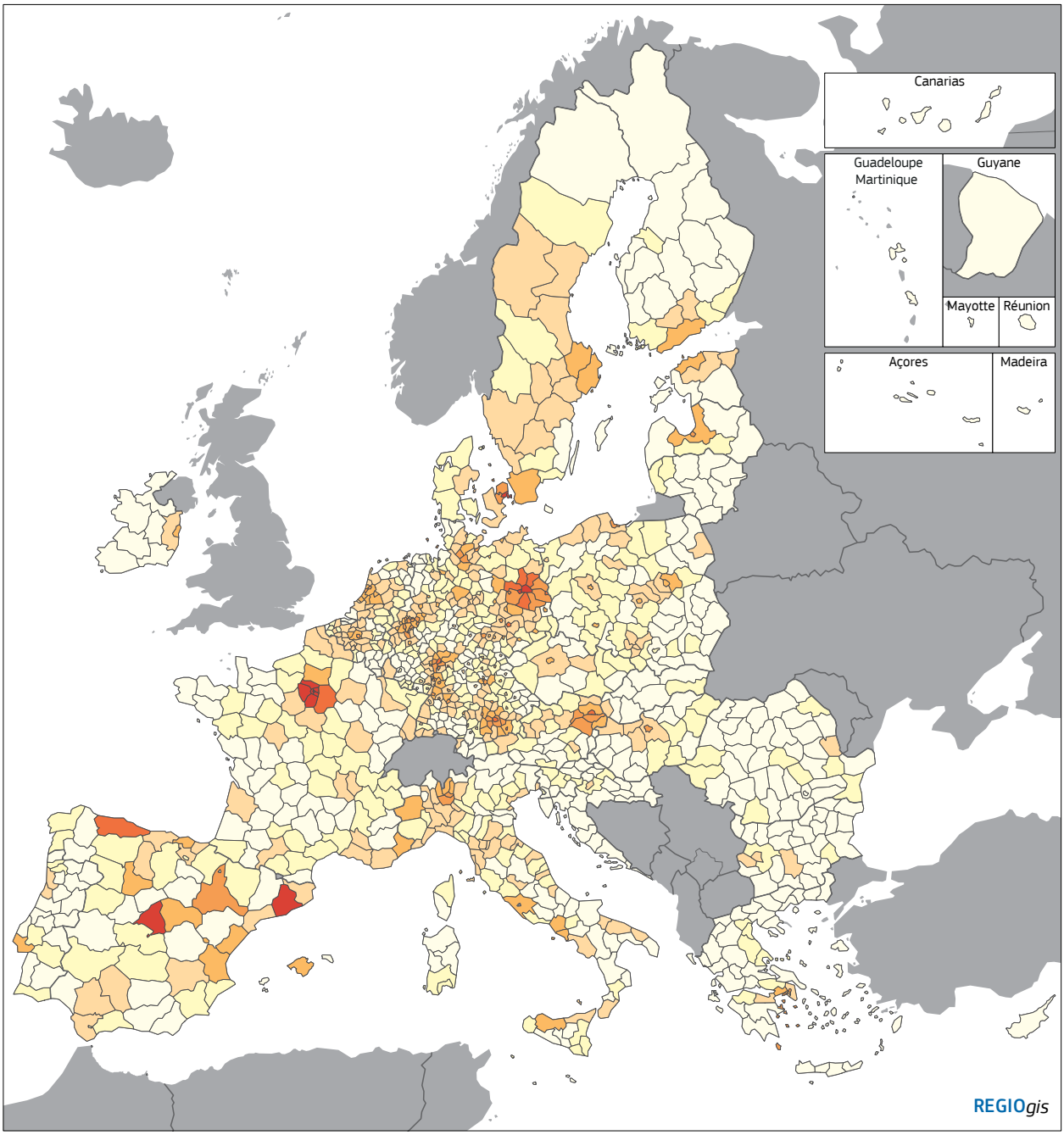
- walking at a moderate speed;
- a bike ride at a realistic speed;
- a car ride, including time for parking and allowing for possible congestion; or
- a short trip by public transport.

All people living in a 200 x 200 m grid cell that has its centre in the area reachable within 15 minutes are considered to have access to the station for the purpose of this analysis.

Table 3.3 Access to primary schools (2018), universities (2020) and healthcare centres (2021–2022) by urban-rural typology including closeness to a city

	Primary school < 15 min walking	University < 45 min driving	Distance to nearest healthcare centre
Urban	**77.9**	**98.6**	**6.4**
Intermediate	**58.0**	**89.8**	**10.3**
Intermediate – close	58.6	91.7	10.1
Intermediate – remote	48.6	61.9	13.6
Rural	**45.3**	**69.1**	**14.0**
Rural – close	44.7	73.9	13.0
Rural – remote	47.3	55.6	16.8

Source: DG REGIO calculations based on data from Eurostat, JRC and TomTom.



Map 3.7 Rail transport performance (% of population within a 120-km radius that can be reached in 90 minutes) by NUTS 3, 2019

%

<= 5	30 – 40
5 – 10	40 – 50
10 – 20	50 – 75
20 – 30	> 75

EU-27 = 15.7
Taking into account population living within 15 minutes at 15 km/h around stations.
Sources: REGIO-GIS, International Union of Railways, railway operators, JRC, TomTom.

0 500 km

3.4 Urban regions have better access to education and healthcare services[13]

If transport networks provide poor connectivity, this typically translates into poor access to essential services such as education and healthcare (Map 3.8).

For children in primary education, access to school varies considerably across regions. The proportion of the population living within a 15-minute walk of a primary school is over 80 % in several regions in the south and east of Spain, south and north-west of Italy, north of France and the Netherlands. It also tends to be higher in capital city regions than others. The smallest proportions are in southern and eastern regions of Germany, and in Croatia, Latvia and Lithuania. While the average proportion is 80 % in urban areas across the EU, in rural regions and in remote intermediate regions it is less than half (Table 3.3). This might well reduce the attractiveness of such regions as places to live for families with young children.

Access to universities tends to follow a similar pattern. The share of the population that can reach a university within a 45-minute drive is close to 100 % in many regions in most Member States. On average, access is less in eastern Member States, but not markedly so. Regions with low access are mostly in Finland, Romania and Poland. More generally, access is better in more densely populated areas. In urban regions, close to 100 % of the population can reach a university within a 45-minute drive. In rural regions, it is only 69 %, and in remote rural regions, only just over half. Proximity to a university may affect the number of students needing to leave their home region to follow a university course of study, which may be reflected in higher outward migration of young people from remote rural regions than others.

Access to healthcare centres varies substantially across regions, but this partly seems to be because of differences at Member State level. Regions where the distance to the nearest healthcare centres is on average longest, over 35 km, are in Greece, Sweden and Romania. Most centres are located in or near cities, the average distance in urban regions being 6.4 km. In rural regions, the average distance is over twice as long, and 16.8 km in remote ones. At the same time, the proportion of the population aged over 65, who are those most often in need of medical treatment, is largest in these regions (see Chapter 5).

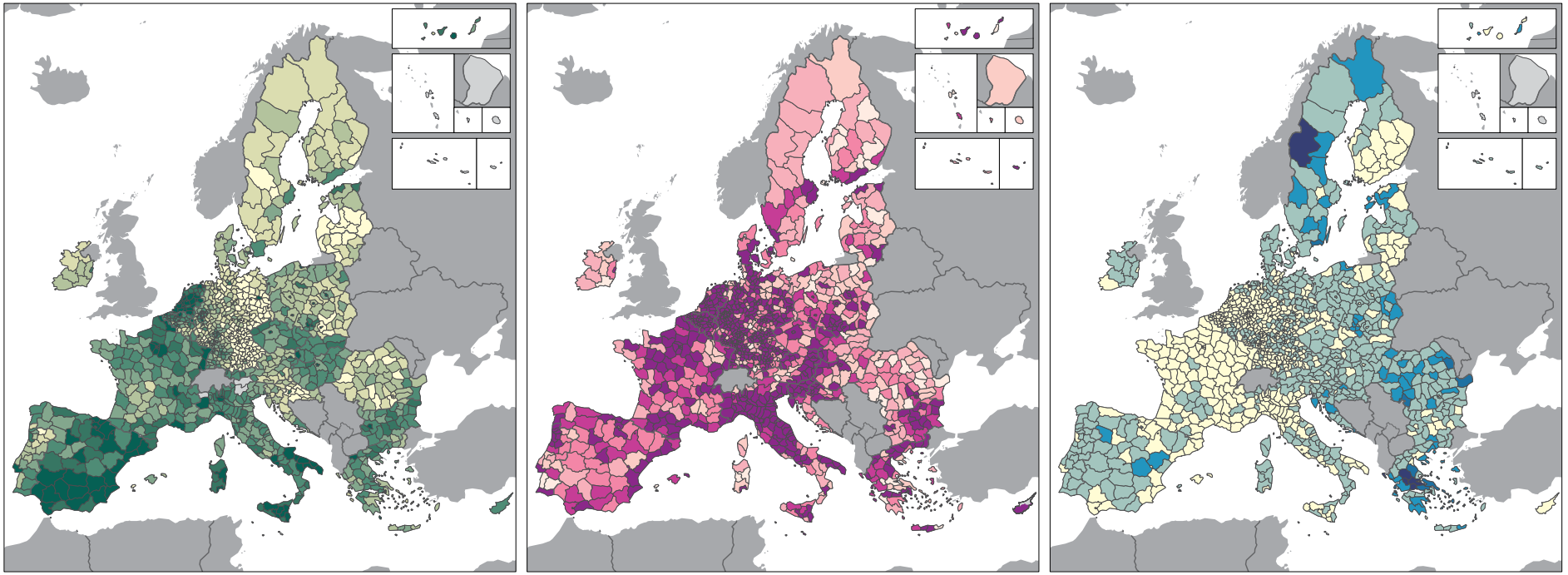
4. Border regions and cross-border co-operation

Border regions account for more than 40 % of the EU's landmass, 30 % of its GDP and 30 % of its population, some 150 million people. Almost 2 million people live in one country in the Schengen area and work in another, and some 3.5 million people cross one of the 38 internal borders of the EU every day. Many border regions are peripheral, distant from metropolitan centres, with more limited access to healthcare and other essential services than others. Border regions can also face specific challenges in times of crises, whether linked to restrictions on cross-border movement during pandemics or a sudden influx of refugees from a conflict zone on the other side of the border. Disaster prevention and precautionary action tend to be more difficult because of differences in governance, and administrative and legal systems. Co-operation across borders may be a way of escaping a development trap or demographic decline. Additionally, border areas are places with high growth potential, where cultural and linguistic diversity encourages intense social and economic interaction, where many people carry out daily activities on both sides of the border and where cross-border co-operation between towns and cities provides opportunities for multipolar growth[14].

13 This subsection uses the urban-rural typology. This typology classifies NUTS 3 regions in three types: (i) urban regions: more than 80 % of the population live in an urban cluster, (ii) intermediate regions: 50–80 % live in urban clusters; (iii) rural regions: less than 50 % live in urban clusters. For a definition of urban clusters see Box 3.2.

14 Strasbourgh-Kehl, Gorizia-Nova Gorica, Cieszyn-Český Těšín, Tui-Valenca, Frankfurt an der Oder-Slubice, etc.

Map 3.8 Access to education and healthcare services in EU regions by NUTS 3 region



Primary schools

Share of population in a region, in %

- < 30
- 30 – 40
- 40 – 50
- 50 – 60
- 60 – 70
- 70 – 80
- >= 80
- no data

EU-27 = 64.0
Share of population within a 15-minute walk of a primary school, 2018.
Source: DG REGIO based on data from Eurostat, JRC and TomTom.

Universities

Share of population in a region, in %

- <10
- 10 – 50
- 50 – 75
- 75 – 90
- 90 – 95
- 95 – 100
- no data

EU-27 = 89.0
Access to a university campus within 45 minutes of travel by car, 2020.
HU: 2019; CZ: 2018; SI: 2016.
Sources: ETER register, OpenStreetMap, TomTom, Eurostat, IGN-F, REGIO-GIS.

Healthcare centres

Travel time by car (minutes)

- <= 10
- 10 – 20
- 20 – 35
- 35 – 60
- > 60
- no data

Data collected in 2021–2022.
Healthcare centres are hospitals or similar centres. No harmonised source of geolocation data of health services exists. This potential lack of comparability should be kept in mind when comparing the figures for different countries.
Sources: Location of healthcare centres – Eurostat (GISCO) based on national authoritative sources; driving time – TomTom network; population – Eurostat 2021 population grid.

0 1 000 km

These opportunities are behind the logic of Interreg[15] intervention, both at the cross-border and transnational level. Interreg intervention supports co-operation by linking resources and people and helping to remove barriers to interaction, and building trust and a common identity.

Towards citizen-driven and people-to-people projects

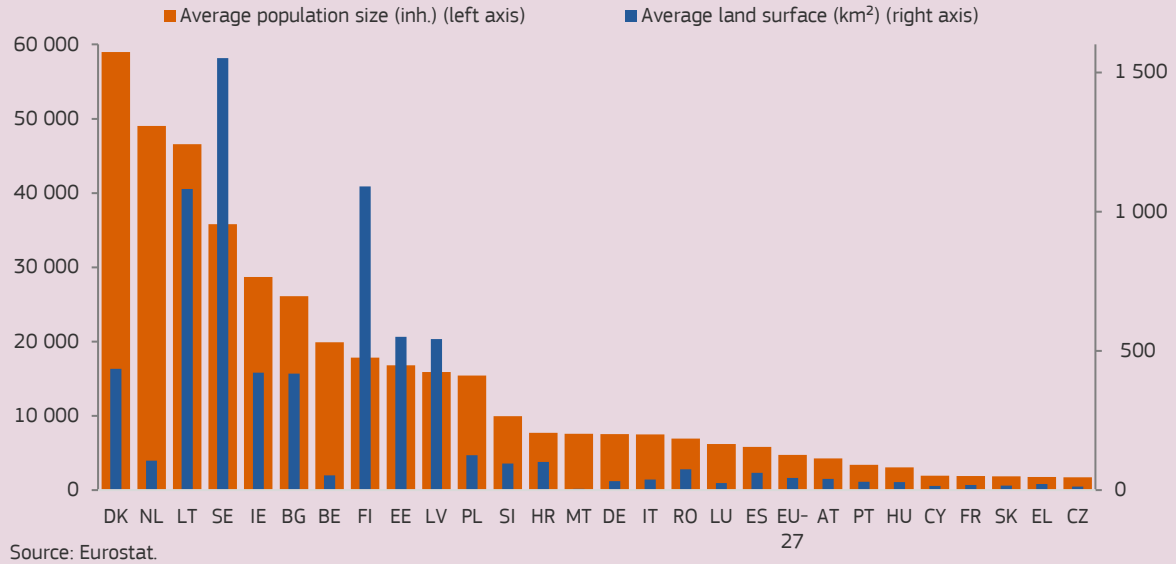
Interreg has been pioneering closer involvement of citizens in Cohesion Policy. There is an increasing number of programmes promoting citizen-led initiatives and participation, through cross-border

Box 3.6 The need for inter-municipal cooperation

The average size of municipalities and communes in the EU displays large variation between Member States, both in terms of their population size and their surface area (Figure 3.7). The average population size varies between 1 710 in Czech municipalities to almost 60 000 inhabitants in Danish municipalities. The variation in the average surface area is even more pronounced, ranging from 4.6 km^2 in Malta to 1 551 km^2 in Sweden.

Efficiency and scale concerns are at the core of territorial reforms in Europe, including at the local level. Control over a complex network of service delivery institutions, organisational fragmentation and multi-territorial public and private entities, with overlapping territories and areas of responsibility that do not always coincide, are, from a governance efficiency point of view, some of the justifications for territorial and functional reforms[1]. Alternative strategies to deal with the challenges of local governance size include inter-municipal co-operation, amalgamation and competition. In general, inter-municipal co-operative arrangements are seen as a way of addressing the challenges of sub-optimal municipal size and can serve as functional substitutes for territorial consolidation[2].

Figure 3.7 Average population size and land surface size per municipality by Member State, 2021



Source: Eurostat.

1 Teles (2016).

2 Koprić (2012).

15 Interreg is a key EU instrument that strengthens co-operation between regions and countries within the EU. As part of the EU's Cohesion Policy, Interreg plays a vital role in promoting regional development and cohesion, and reducing economic disparities. For the 2021–2027 period, Interreg runs with a budget of EUR 10 billion and is focused on addressing current challenges such as climate change, digital transformation, and social inclusion.

'people-to-people' projects and civil society engagement[16]. At the same time, these projects help to build solidarity and change attitudes towards neighbours living on the other side of the border. This is particularly true of projects under the first Interreg specific objective ('a better cooperation governance') introduced in the 2021–2027 period, to improve governance for better territorial co-operation.

Removing obstacles to co-operation

While Interreg support for cross-border interaction increases, co-operation encounters obstacles because of legal and administrative differences on the two sides of the border, which, inter alia, affect the functioning of the Single Market. The removal of these barriers requires decisions well beyond programme management but has potential benefits. It has been estimated that removing 20 % of the obstacles would generate a gain of 2 % in GDP and over 1 million jobs in border regions[17]. On the other hand, the economic impact of border restrictions introduced because of COVID-19 was for border regions more than twice the average in other regions. In 2020, 44 % of respondents in border regions identified legal and administrative differences as the most important obstacle to cross-border co-operation[18]. The Commission has recently adopted a Regulation on facilitating cross-border solutions[19] to reduce the effect of these differences.

Still missing transport links

While Interreg is not designed for funding large infrastructure projects, there is a clear gap in small-scale cross-border transport connections, as illustrated by an inventory of 57 legal and administrative obstacles affecting public transport[20]. Not all of these take the form of missing infrastructure – in many cases they involve lack of coordination in timetables or ticketing.

Paving the way for enlargement

The EU has land borders with 23 countries, including the candidate countries. Participation in Interreg programmes, in which they are equal partners, and in macro-regional strategies gives the countries concerned an opportunity to build their capacity to participate in Cohesion Policy programmes not only at the central but also at the local and regional level, so preparing them for accession.

5. Regions with specific geographical features

This section examines the socio-economic performance of areas with specific geographical characteristics, such as island regions, outermost regions, border regions, mountain and coastal regions, and northern sparsely populated regions.

The unique features of these regions can have a significant effect on their economic development, requiring a more specific approach than other regions at a similar level of development. Islands, for example, may have higher transport costs, which affect the competitiveness of their industries. Mountainous regions tend to be limited in terms of available arable land and transport infrastructure. Coastal regions have issues arising from climate change, such as rising sea levels and increased vulnerability to natural disasters. Outermost regions, geographically distant from the European mainland, have issues of isolation and reduced access to markets. Sparsely populated northern regions have problems of connectivity and accessibility.

Examining the economic dynamics of these regions enables a fuller assessment to be made of regional disparities across the EU. Differences in economic performance between regions can be significant, and disparities can lead to outward migration, social inequalities and political tension. By comparing these regions with others, a deeper understanding can be gained of the factors affecting regional development.

16 Ninka et al. (2024).

17 Camagni et al. (2017).

18 European Commission (2020).

19 European Commission (2023).

20 European Commission (2022).

Box 3.7 Regional typologies based on specific geographical features

The different types of regions examined in this section are defined as follows.

- Border regions are NUTS 3 statistical regions with an international land border, or regions where more than half of the population live within 25 km of such a border. Two categories can be distinguished: external border regions – those sharing a border with countries that are not in the EU, which are mostly located along its eastern border and the border with the western Balkans; and internal border regions – those sharing a border with other EU Member States or the four members of EFTA, Iceland, Liechtenstein, Norway and Switzerland. These categories are not mutually exclusive in that a region may have both an internal and an external border.
- Island regions are NUTS 3 statistical regions that consist entirely of one or more islands, islands being defined here as having: (i) a minimum surface area of 1 square km; (ii) a minimum distance of 1 km between the island and the mainland; (iii) a resident population of more than 50; and (iv) no fixed link (e.g. bridge, tunnel or dam) with the mainland.
- Mountain regions are NUTS 3 statistical regions in which more than half of the land area is mountain or in which more than half of the population live in mountain areas[1].
- Coastal regions are defined as NUTS 3 statistical regions that have a coastline, or in which more than half of their population live less than 50 km from the sea.
- Outermost regions are defined in Articles 349 and 355 of the Treaty on the Functioning of the European Union and are Guadeloupe, Guyane, Réunion, Martinique, Mayotte and Saint-Martin (France), Açores and Madeira (Portugal) and Canarias (Spain). In the outermost regions the NUTS 2 and NUTS 3 levels coincide, except for Canarias, which are comprised of six NUTS 3 regions.
- Northern sparsely populated regions are 11 NUTS 3 statistical regions covering the four northernmost counties of Sweden (Norrbotten, Västerbotten, Jämtland and Västernorrland) and the seven northernmost and easternmost regions of Finland (Lapland, Northern Ostrobothnia, Central Ostrobothnia, Kainuu, North Karelia, Pohjois-Savo and Etelä-Savo). Together with the northernmost regions of Norway, they formed the 'northern sparsely populated areas' network in 2004.

1 The definition of topographic mountain areas is largely based on Nordregio (2004).

At the same time, the specific characteristics of these regions are a source economic potential that can be harnessed for sustainable development not only of the regions themselves but also of the wider EU. Coastal areas, for example, as well as islands and mountainous regions, can capitalise on their natural resources and tourism potential.

Table 3.4 summarises the number of NUTS 3 regions included in each of these types of regions as well as the share of the EU population living in them, GDP at current prices in 2021 and GDP per head in purchasing power standards (PPS) in 2021.

It should be noted that several regions are in fact included simultaneously in different categories. For example, the number of regions with internal and external borders does not add up to the total number of border regions. Mountain regions and sparsely populated ones are often border regions. In several cases, island regions are also mountain regions, and more than half of their population live in a border region; in some cases, island regions are also outermost regions, all of the latter, except Guyane, being islands.

In terms of population, the group of coastal regions is by far the largest, with almost 37 % of the EU population in 2021. This is followed by border regions (28 %) and mountain regions (26 %). The remaining groups have much smaller proportions of EU the population: only 5 % in island regions, 1 % in outermost regions, and 0.5 % in northern sparsely populated regions. Between 2008 and 2021, the proportion of the population living in these regions remained remarkably stable, except for coastal and mountain regions, in which it increased (by 3 pp and 1 pp, respectively).

Table 3.4 Main characteristics of regions with specific territorial characteristics, 2021

	No of NUTS 3 regions (% EU-27)	Population, million (% EU-27)	GDP million EUR (% EU-27)	GDP/head EUR PPS (% EU-27)
EU-27	1166 (100)	446.5 (100)	14 524 809 (100)	32 524 (100)
Border regions	384 (33.0)	124.6 (27.9)	3 412 107 (23.5)	27 923 -85.9
Internal border	332 (28.5)	108.7 (24.3)	3 147 885 (21.7)	28 998 (89.2)
External border	81 (7.0)	25 (5.6)	392 579 (2.7)	20 059 (61.7)
Island regions	58 (5.0)	20.6 (4.6)	748 688 (5.2)	33 578 (103.2)
Coastal regions	339 (29.1)	163.7 (36.7)	5 337 003 (36.7)	31 014 (95.4)
Mountain regions	309 (26.5)	115.7 (25.9)	2 915 947 (20.1)	26 741 (82.2)
Outermost regions	14 (1.2)	5 (1.1)	98 368 (0.7)	19 947 (61.3)
Northern sparsely populated regions	11 (0.9)	2.2 (0.5)	93 898 (0.6)	33 995 (104.5)

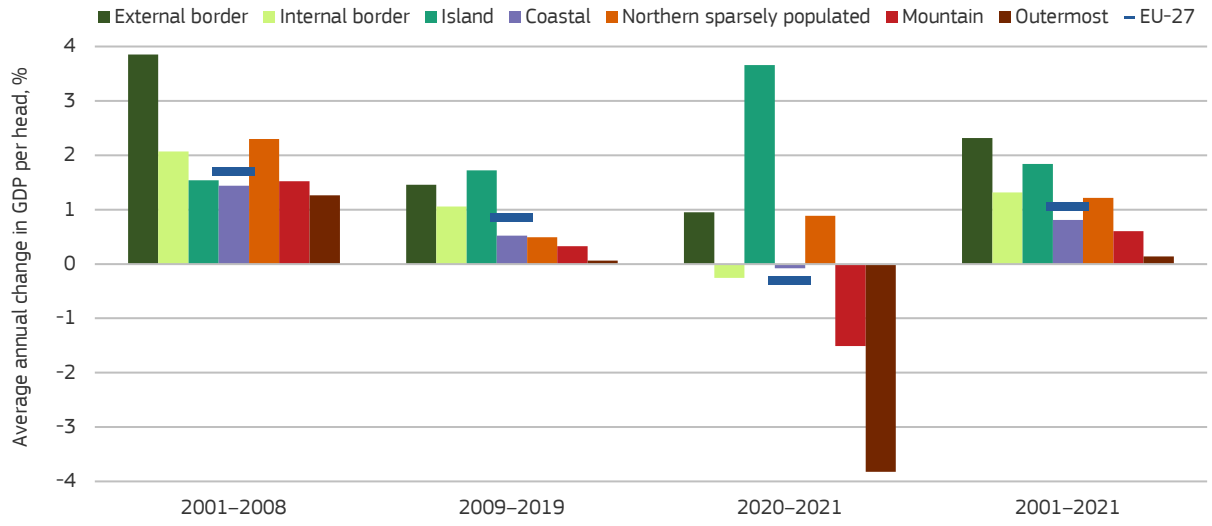
Source: DG REGIO calculations based on Ardeco.

In 2021, coastal regions accounted for the same share of EU GDP as their population, while border, mountain and outermost regions accounted for smaller shares, and island and northern sparsely populated regions larger shares.

GDP per head in PPS in island regions and sparsely populated northern regions was higher than the EU average in 2021 (3.2 % and 4.5 % higher, respectively), while in the other regions it was below the average, most especially in external border regions and outermost regions (both 38–39 % below).

In terms of growth of GDP per head in real terms, border regions, islands and northern sparsely populated regions had average growth rates higher

Figure 3.8 Growth rates of GDP per head (at constant prices) in regions with specific territorial characteristics in different time periods during 2001–2021



Source: DG REGIO calculations based on Ardeco.

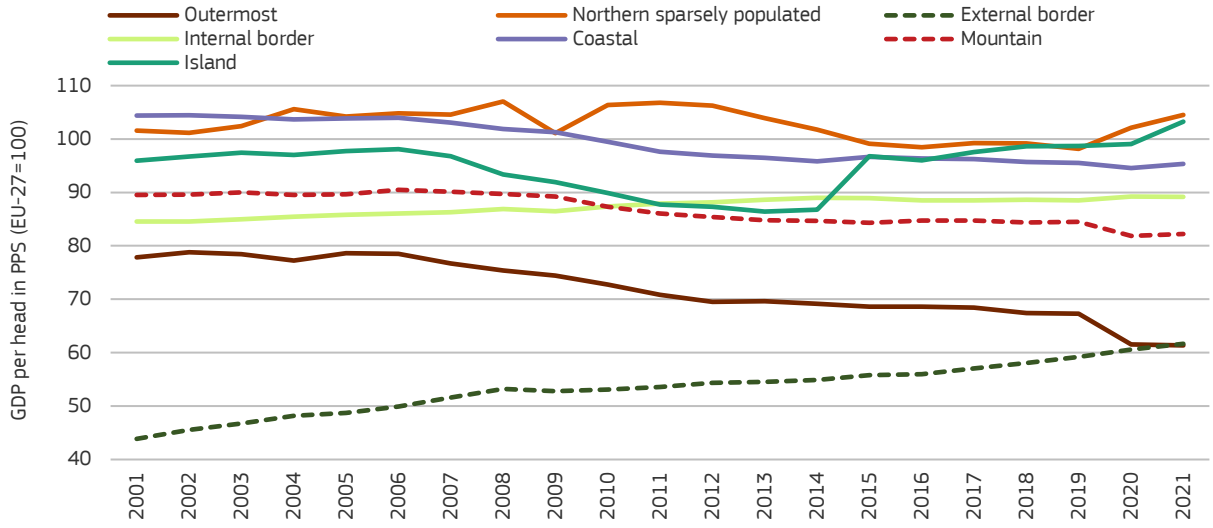
than the EU average over the period 2001–2021 (Figure 3.8). In the external border regions, the growth rate averaged 2.3 % a year, twice the EU average (1.1 %). This is in part because of the regions concerned being mostly less developed regions with higher growth potential than others.

The figures for the island regions must be treated with caution, as they are distorted by the fact that Ireland had a significantly higher growth rate than the EU average, especially after 2014, because of the presence of large multinational companies, whose profits form a significant share of GDP. In all island regions apart from Ireland, GDP per head declined slightly in real terms over the 20-year period, especially after 2008, which clearly reflects structural weaknesses. GDP per head in the outermost regions was also less than the EU average after 2008.

Dividing the period before and after the COVID-19 pandemic, i.e. 2009–2019 and 2020–2021, growth of GDP per head was above the EU average in both sub-periods in external border regions and island regions. The latter, however, is because of Ireland. In the other island regions, GDP per head fell in both the years before the pandemic and the years after (by 2.7 % between 2019 and 2021). The outermost regions were affected most by the pandemic, with GDP per head falling by 3.8 % between 2019 and 2021, while mountain regions also experienced a decline (of 1.5 %). The northern sparsely populated regions had higher growth than the EU average in both the 2001–2008 and 2020–2021 periods.

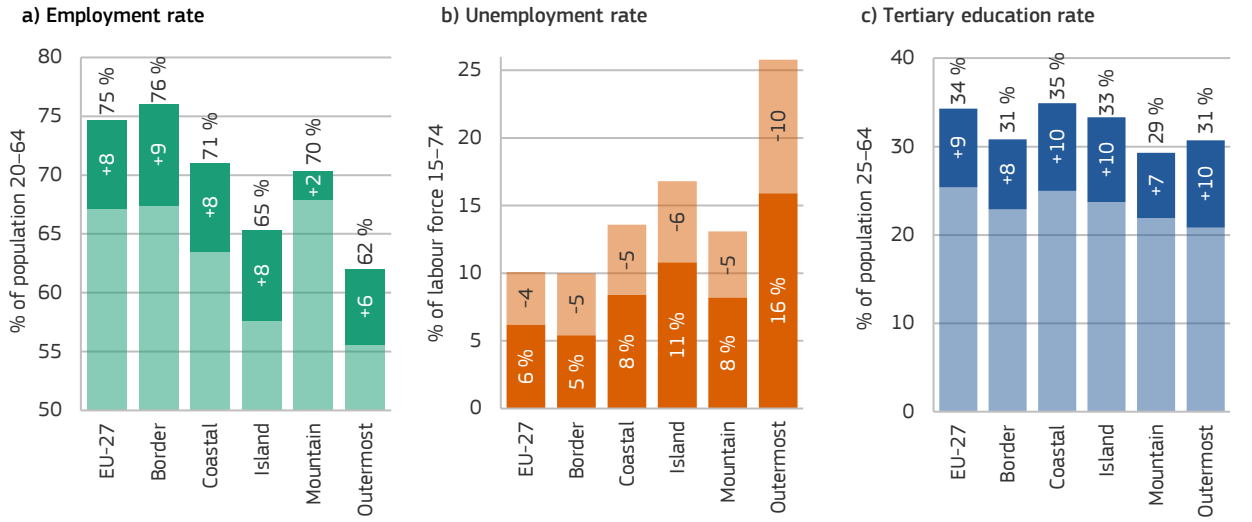
GDP per head in PPS was above the EU average in northern sparsely populated regions in 2021 and for most of the 2001–2021 period (Figure 3.9). In island regions, it converged to the average after 2014 and exceeded it in 2021, again solely because of Ireland. In the other island regions, there was a steady and progressive reduction in GDP per head relative to the EU average over the period (from 84 % in 2001 to 66 % in 2021). In coastal regions, GDP per head declined relative to the average from 2010 onwards, in the aftermath of the Great Recession of 2008–2009. The same is the case for mountain regions, though at a lower level. In the outermost regions, GDP per head began to fall relative to the EU average from 2006, and in the following 15 years it fell by 17 % of the average. In internal and especially external border regions, on the other hand, GDP per head increased continuously relative to the EU average – especially in the latter, the level rising from 44 % of the average to 62 % over the period.

Figure 3.9 GDP per head in PPS, EU=100 in regions with specific territorial characteristics, 2001–2021



Source: DG REGIO calculations based on Ardeco.

Figure 3.10 Change in social indicators in regions with specific territorial characteristics, 2011–2021



Note: For employment rate and tertiary education rate: lighter bar parts are for 2011, darker parts for increase 2011–2022, and bar heights show the percentage for 2021. For unemployment rate: the bar heights show the percentage for 2011, lighter bar parts show the reduction 2011–2022 and darker parts the percentage for 2022.
Source: DG REGIO calculations based on Eurostat [urt_lfe3emp].

The different indicators of the socio-economic situation in regions with specific territorial characteristics help to give a better understanding of their performance and situation relative to that of other parts of the EU[21]. Figure 3.10a shows that border regions (including both internal and external border regions) performed slightly better than the EU average in terms of the employment rate, in terms of both the level in 2021 (76 % compared with 75 %) and the growth over the period 2011–2021 (9 pp compared with 8 pp). Coastal and mountain regions had a lower employment rate of around 70 %, but while the former have seen a substantial increase over the decade, the latter have seen only a slight rise. Island and outermost regions lag behind the other categories, with employment rates of 65 % and 62 % respectively, although both showed a marked improvement over the decade.

All categories of regions show a reduction in the unemployment rate over the period 2011–2021, ranging from a third to a half (Figure 3.10b). In 2021, the border regions had a lower rate of unemployment (5 %) than the EU average, while in coastal and mountain regions it was above the average (8 %), and in the islands further above (10 %). The outermost regions had the highest rate in 2011, and although it fell by 10 pp over the following decade, it still stood at 16 % in 2021.

The share of the population aged 25–64 with tertiary education also varies between these categories of regions and others (Figure 3.10c). In 2021, the average share was marginally larger than the EU average in coastal regions, though smaller than the average in all the other categories, if only slightly so in island regions. Mountain regions had the smallest share (29 %). Between 2011 and 2021, the share of the population with tertiary education increased in all categories of regions and by much the same as the EU average, by slightly less in mountain and border regions, and by marginally more in coastal, island and outermost ones.

21 Data on these indicators were not available for the categories of northern sparsely populated regions and internal and external border regions.

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4

THE GREEN TRANSITION

- The effects of climate change in the EU are exacerbating regional disparities, particularly in coastal, Mediterranean, and south-eastern regions. These regions are at risk of losing over 1 % of GDP annually as a result and their ageing populations are more exposed to the harmful effects of climate change.
- The EU has reduced its total greenhouse gas (GHG) emissions by 27 % since 1990 while GDP has increased by 65 %. There is, however, significant regional variation. Capital city regions with high population density have the lowest emissions per head while regions with heavy industry have the highest. Meeting the 2030 target requires a comprehensive effort to decarbonise all sectors.
- The green energy transition offers opportunities for rural, less developed regions rich in untapped wind and solar energy potential. These regions, however, require a higher level of competitiveness and innovation as well as a skilled workforce to develop and produce the necessary clean technologies.
- The conservation status of most protected habitats and species, which are in danger of disappearing, remains unfavourable. A regional assessment of the health of forests shows that they are productive and well connected but have levels of organic carbon in their soils that are too low, and too few threatened bird species.
- Concerns persist over air, water and soil quality. Air pollution, especially in eastern Europe and urban areas, creates health inequalities. Wastewater treatment gaps exist in south and south-eastern Europe. In rural regions built-up areas per person are increasing faster than in urban ones, weakening the capacity of soil to retain water.
- Rail has the potential to outperform flights for journeys up to 500 kilometres, provided speeds reach 175 kilometres an hour. Electric vehicle recharging points doubled in the EU between 2020 and 2022, but availability is concentrated in certain regions, creating disparities.
- 6 million people work in carbon-intensive industries in the EU. Shifts to green employment favour more developed regions, so widening regional disparities.
- Extending the EU's emissions trading system to fuels for heating buildings and transport will reduce GHG emissions but create problems for low-income, rural households and micro-enterprises that spend proportionately more on fuel.

Chapter 4
The green transition

1. Introduction

Europe has experienced unprecedented droughts, floods, forest fires and heatwaves in recent years, in line with the expected increase in frequency of these extreme weather events as a consequence of climate change. Together with biodiversity loss and environmental pollution, they underscore the urgent need for sustainable practices to protect our planet's delicate ecosystems and ensure the existence of a healthy environment for future generations. The European Green Deal addresses these challenges in a co-ordinated way by providing a comprehensive framework to integrate environmental, economic and social dimensions to tackle ecological degradation and foster a sustainable and resilient EU. It serves as the guiding policy for the EU's efforts to transition to a greener and more sustainable future. Its central objective is to transform Europe into the world's first climate-neutral continent by 2050.

Cohesion Policy, which has been supporting the pursuit of environmental objectives, will continue to play a key role in implementing the Green Deal, notably by providing financial support and guiding regional development in a sustainable direction. The policy, with its long-standing focus on reducing socio-economic disparities between EU regions, is in line with the Green Deal's goals of achieving a sustainable, fair and inclusive transition. In the 2021–2027 period, over EUR 100 billion is programmed to go to supporting the green transition through projects on renewable energy infrastructure, energy-efficiency, sustainable transport, climate adaptation, and initiatives on disaster risk management, circular economy, water management, and nature conservation. Additionally, Cohesion Policy promotes research and innovation, helping regions to develop and implement green technologies and practices[1].

This chapter examines the main regional trends with respect to climate change and the environment. The focus is on assessing the extent to which the impacts of climate change, biodiversity loss and environmental pollution are unevenly distributed across the EU and therefore have the potential to widen inequalities between regions and the people living there. Moreover, this chapter examines the regional contribution to achieving climate targets and describes the challenges and opportunities of the green transition.

2. The climate and energy transition

In 2015, countries agreed in Paris on a global framework to limit global warming to below 2°C and to continue efforts to limit it to 1.5°C above pre-industrial levels. Parties also agreed to increase the ability to adapt to the impacts of climate change and increase climate resilience. The European Climate Law establishes the legal framework for achieving these goals, of the EU becoming climate-neutral by 2050, with an interim target of reducing net greenhouse gas (GHG) emissions by at least 55 % from 1990 levels by 2030.

The 'Fit for 55' package of measures is aimed at achieving this goal by revising and updating the EU's climate legislation and policies. The main elements are a revised emissions trading system (ETS), including fuel use in buildings and road transport, a social climate fund, binding emission reductions for each Member State, new emission rules for cars and vans, a new carbon border adjustment mechanism, and a target for carbon storage in natural ecosystems and agricultural soils. In addition, in response to the global geopolitical situation, the EU has decided to reduce its dependence on Russian fossil fuels, save energy, and accelerate the use of renewable energy while also

1 At least 30 % of the European Regional Development Fund (ERDF), 37 % of the Cohesion Fund (CF), and 35 % of 'horizon Europe' needs to go to support climate action (mitigation and adaptation). The 2021–2027 inter-institutional agreement sets the goal of allocating at least 7.5 % of annual spending to biodiversity objectives in 2024 and 2025 and 10 % in both 2026 and 2027.

scaling up the production of clean technologies, such as batteries, wind turbines, heat pumps, photovoltaics, electrolysers, and carbon capture and storage.

This section assesses current and future territorial climate effects and estimates the costs of inaction to regions. It examines the current emissions pathways by sector and region and identifies challenges to achieving the 2030 emissions reduction target. It also sets out trends in energy-efficiency and highlights the potential for regions to contribute to the transition from fossil fuels to renewable energy generation. It addresses, in addition, the issues of sustainable mobility and a fair transition from the perspective of employment in carbon-intensive sectors and household energy costs.

2.1 Regions in the frontline of climate change

The 2021 floods in the regions along the Belgian-German border caused direct damage of EUR 34.5 billion, while the costs resulting from the 2023 floods in Emilia-Romagna (Italy) amounted to EUR 8.5 billion. These costs show the vulnerability of both national and regional economies to extreme weather events[2]. 2022 was the second-worst year in the EU as regards area burned by wildfires[3]. Nearly 900 000 hectares of natural land were affected by the fires. About 43 % of the total burnt area burned within 'Natura 2000' sites. The frequency of these events is expected to increase with climate change. These examples underscore the importance of preparing regions against the impacts of climate change.

This section reports the effects of climate change on people, ecosystems and economies at NUTS 3 level using a data-driven framework[4]. Historical climate data, socio-economic factors, and reported effects were combined to establish impact relationships. High-resolution climate projections were used to estimate climate hazards in the EU for various global warming scenarios. The corresponding effects were determined at the regional level in 2050. These were calculated under three different scenarios for global warming levels by 2050 (of 1.5, 2 and 3°C), assuming no climate adaptation. The present-day baseline represents the average global climate observed between 1991 and 2020, which was already 0.9°C warmer than the pre-industrial temperature. The economic costs of climate change are based on the estimated damage from river and coastal flooding, droughts and storms to buildings, infrastructure, agriculture, and water and energy supply. Costs resulting from energy demand for climate regulation of buildings, losses in labour productivity because of high summer temperatures and heatwaves, and increased maintenance of roads and railways are also included. Human exposure to climate extremes is quantified as the number or proportion of people exposed to river or coastal flooding, storms, water stress and wildfires. Finally, human mortality is calculated as the number of excess deaths caused by less-than-optimal temperatures, both low and high. Not all possible impacts are included, so the total damage is therefore probably underestimated. Table 4.1 describes the climate effects of the different impact categories used in the regional assessment.

The various effects of climate change impose additional costs on the EU economy. Global warming of 2°C by 2050 – the most plausible scenario given current global commitments to reduce GHG emissions[5] – would imply an estimated additional cost of EUR 203 billion by 2050 (0.44 % of total GDP) compared with the present-day baseline. The largest economic effect comes from the energy required for air conditioning in buildings and the losses in labour productivity from excessively high temperatures (Figure 4.1). These additional costs are on top of the already large effects of climate extremes on the economy at present. For instance, under the baseline scenario, the costs of damage from storms, coastal and inland flooding,

2 Source: DG REGIO, data from the EU Solidarity Fund, which supports Member States with post-disaster relief – https://cohesiondata.ec.europa.eu/stories/s/An-overview-of-the-EU-Solidarity-Fund-2002-2020/qpif-qzyn/.

3 San-Miguel-Ayanz et al. (2023).

4 Based on preliminary results of an ongoing study by the Joint Research Centre (JRC), building on the 'PESETA IV' project: https://joint-research-centre.ec.europa.eu/peseta-projects/jrc-peseta-iv_en.

5 Intergovernmental Panel of Climate Change (2021).

Table 4.1 Socio-economic characteristics of development-trapped regions and other regions

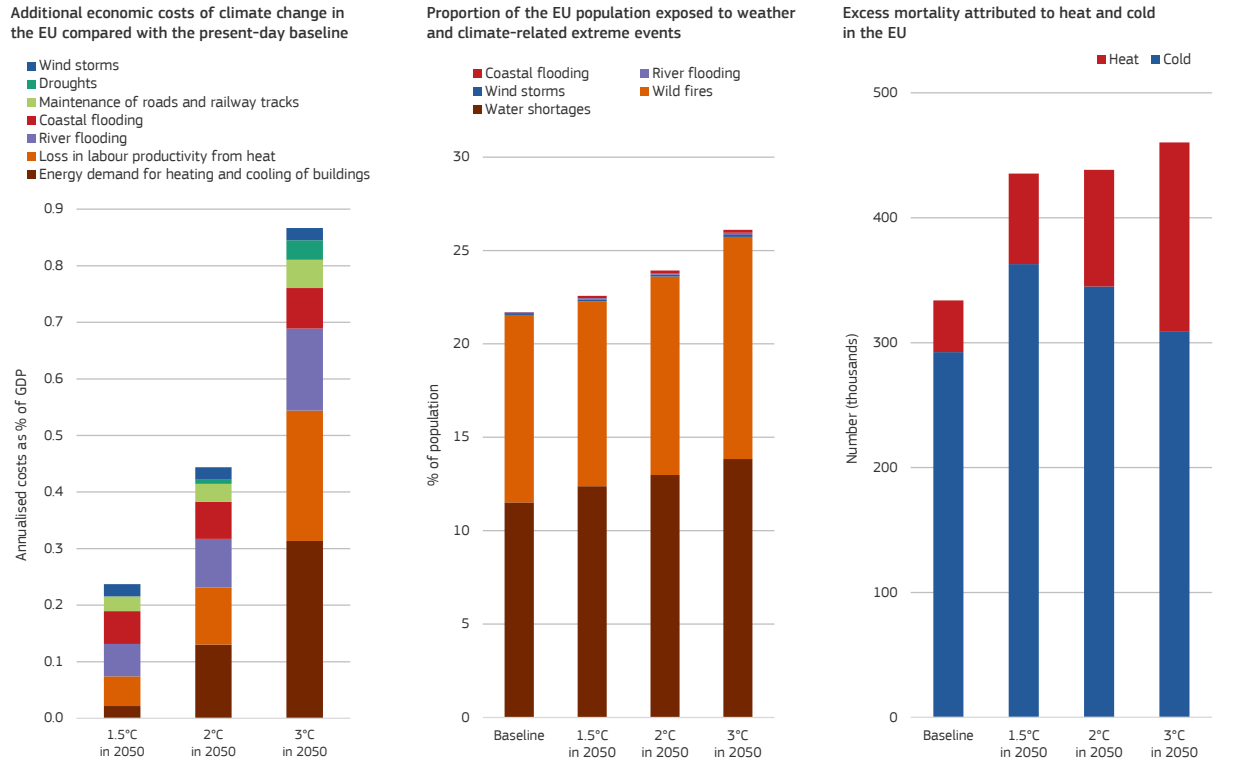
Sector	Description of the climate effects
Coastal flooding	Coastal Europe faces rising sea levels and more intense storms, increasing economic losses and population exposure. Inadequate flood protection may amplify the damage, varying with coastal features and wealth distribution. Urbanisation exacerbates these threats.
River flooding	In most river basins, floods become more frequent and intense as global warming continues, leading to increased economic losses and population exposure. Urbanisation of river floodplains exacerbates these effects.
Droughts	The effects of drought increase most in southern and western parts of the EU, while in central and eastern European regions they remain relatively unchanged with 2°C warming. The effects in most northern and north-eastern regions will decline because of northern Europe generally becoming wetter with climate change.
Fires	Regions in the southern EU already face a high risk of fire for prolonged periods. 2°C global warming increases and lengthens fire risk in most regions, with the most significant expansion of the population exposed to the risk of wildfires being in western and south-eastern parts of the EU where scrubland and woods are close to urban areas.
Wind and storms	Projections for storms associated with global warming are highly uncertain, with the effects tending to be limited and variable in different regions of the EU. Damage from storms increases as the density of infrastructure and asset values increase.
Water availability	Global warming leads to northern Europe becoming wetter and the south drier, causing the availability of water to increase in the former and diminish in the latter. The duration and intensity of water scarcity increases in existing water-scarce areas in southern Europe, along with the number of people exposed.
Labour productivity	Labour productivity declines everywhere in Europe with global warming, but the effect is greater in southern regions, which are already more exposed to heat stress.
Transport	In all regions of the EU, higher temperatures increase the risk of roads rutting and rails buckling, raising operating and maintenance costs. The largest effects are projected for eastern regions, where routine maintenance is less frequent, and replacement costs higher than in other parts.
Energy	Warmer climates reduce the need for heating per unit of floor area but this is countered by increasing house sizes with higher income levels, while the need for cooling increases. This results in higher energy costs across most of the EU, most notably in the south and east.
Temperature-related mortality	Global warming reduces cold-related deaths because of milder temperatures. However, this is offset by the increased mortality with an ageing population. Heat-related deaths rise in all regions, amplified by population ageing. This leads to higher overall mortality from non-optimal temperatures, with the largest increases in the eastern and southern EU.

and droughts amount to EUR 28 billion a year. This is projected to rise to EUR 73 billion with a rise of 2°C by 2050, a figure well above the estimated costs of such damage in 2021 and 2022 (EUR 50– 60 billion)[6].

Crucially, the effect is very different across regions (Map 4.1). In the vast majority of NUTS 3 regions (76 %), the additional economic costs in 2050 are estimated to remain below 1 % of regional GDP. In regions of north-eastern Germany, Lithuania and Finland, costs would be slightly lower than today, mainly because of less risk from drought and lower energy demand for buildings. By contrast, 42 of the 1 152 regions are estimated to face additional costs of over 2 % of regional GDP, 28 regions costs of over 3 %, 17 regions costs of over 4 %, 11 regions costs of over 5 %, and six regions costs of over 6 %. In several of these regions, the high costs mainly come from a large increase in coastal damage.

6 European Environment Agency – EEA.

Figure 4.1 Overall estimated effects of climate change in the EU in 2050 under the present-day baseline and different global warming scenarios



Source: JRC.

In addition to economic effects, climate change will increase people's exposure to coastal and inland flooding, storms, water shortages and wildfires. Already, 97 million people, 21 % of the EU population, are exposed to these hazards. This number is estimated to increase to 24 % by 2050 under a 2°C global warming scenario and to over 25 % if global warming reaches 3°C. Water scarcity and wildfires have the potential to expose people to risks over a wider geographical area, while coastal and inland flooding and storms have much more localised effects and so result in less exposure. Exposure also varies markedly between the north and south (Map 4.1), with southern regions and the people living there most exposed, especially to forest fires and water shortages.

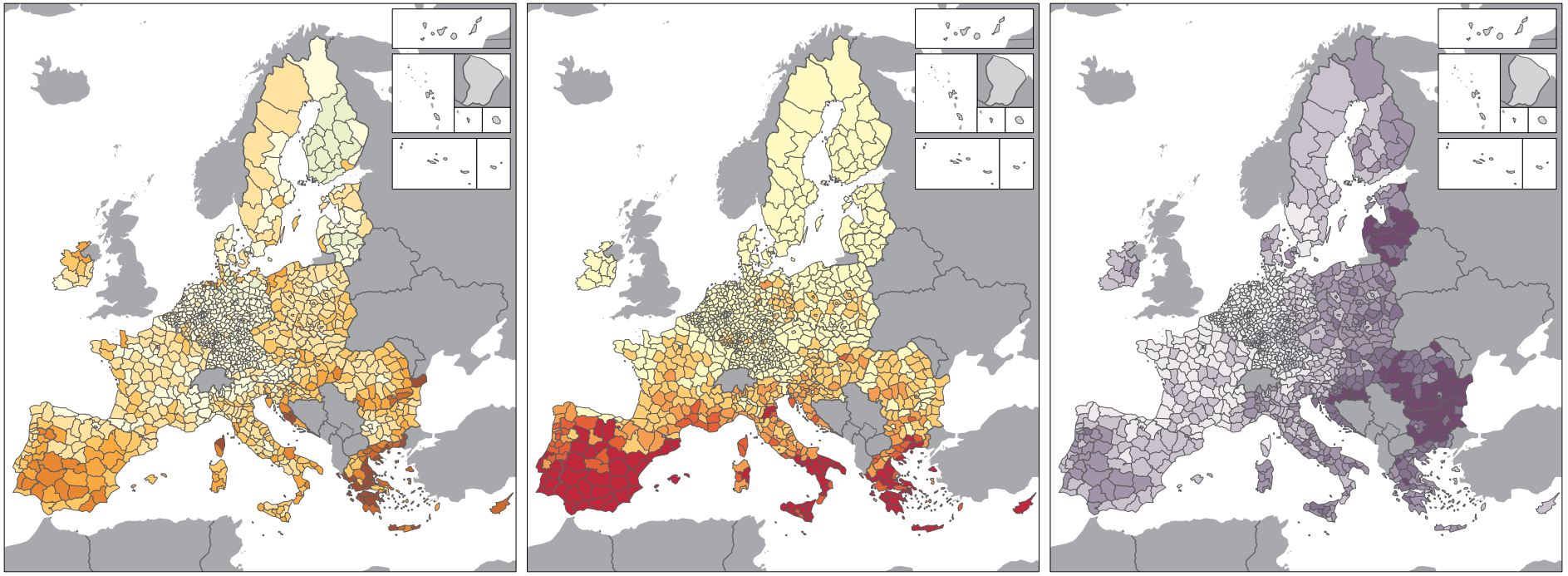
Heat and cold are recognised environmental risk factors for human health. The current excess mortality from cold and heat in the EU amounts to 334 000 people, with the majority dying from the cold. Overall mortality is projected to increase to 438 000, with a larger proportion dying from heat than at present. Mortality is higher in eastern Europe than elsewhere, mainly because of population ageing more than in the rest of the EU (Map 4.1). (Perhaps unexpectedly, excess mortality from the cold is higher than from the heat, even under global warming scenarios.)

The impact of climate change on tourism, which is responsible for 5 % of total GDP, is also likely to be significant. Global warming will lead to a redirection of tourism. According to forecasts, a temperature increase of 3°C will reduce the number of summer tourists in southern coastal regions by almost 10 % and increase those in northern coastal regions by 5 %[7].

In summary, the regions that will be most affected by climate change are mainly in the Mediterranean region and in the eastern EU, especially in Bulgaria

7 Matei et al. (2023).

Map 4.1 The impact of climate change under a 2°C global warming scenario in NUTS 3 regions, 2050



Additional economic costs

% of GDP

- <= 0.0
- 0.0 – 0.5
- 0.5 – 1.0
- 1.0 – 1.5
- 1.5 – 2.0
- 2.0 – 2.5
- 2.5 – 3.0
- > 3.0
- no data

Additional economic costs of a 2°C global warming scenario by 2050 compared with the present-day baseline.
Source: JRC.

Human exposure to harmful climate impacts

% of population

- <= 10
- 10 – 25
- 25 – 50
- 50 – 75
- > 75
- no data

Share of the population exposed to wind storms, coastal flooding, river flooding, water shortage and wildfire danger.
Source: JRC.

0 1 000 km

Mortality from less-than-optimal temperatures

Deaths per million inhabitants

- <= 1 000
- 1 000 – 1 500
- 1 500 – 2 000
- 2 000 – 2 500
- > 2 500
- no data

Mortality from heat and cold under a 2°C global warming scenario by 2050.
Source: JRC.

and Romania. Many of these regions are already poorer than the EU average. Their economies are expected to be disproportionately affected, their populations to be much more exposed to climate risks and, in the case of eastern Europe, their ageing populations to experience higher mortality.

Climate risk management and adaptation are crucial in the EU to prepare for the climate impacts and to mitigate the escalating costs of the effects of extreme weather events, floods, forest fires and water scarcity. By pro-actively preparing for these challenges, EU regions can reduce the impacts on human life as well as the economic costs associated with disaster response, infrastructure repair, and healthcare needs, so safeguarding their financial stability. In addition, effective adaptation strategies enhance resilience, ensuring the well-being of both ecosystems and communities in the face of climate change. For every euro invested in risk prevention, the return on investment in terms of lives saved and damage avoided can range from EUR 2 to EUR 10, and sometimes even more[8]. Importantly, these investments can also yield additional economic and social benefits. For example, nature-based solutions help reduce climate-related disaster risks such as floods or wildfires, but they also attract tourism, increase property values, and improve air quality and public health conditions.

2.2 Reducing GHG emissions must be accelerated to meet the 2030 target

In 1990, total GHG emissions in the EU were 4.9 gigatonnes of CO_2 equivalent ($GtCO_2eq$)[9]. This had fallen to 3.6 $GtCO_2eq$ by 2022, a reduction of 27 %. The total amount of GHG emissions corresponds to 11.7 tCO_2eq per person in 1990 and 8.0 tCO_2eq per person in 2022[10]. This is unevenly distributed across regions (Map 4.2). Capital city regions have the lowest emissions per person, often less than 5 tCO_2eq, while regions with heavy industry or gas- and coal-fired power plants emit over 10 tCO_2eq per person. It should be noted, however, that these emissions are production-based and are calculated by dividing the GHG emissions produced in a region by its population. This means that the emissions generated by the electricity consumed by a region are accounted for in the region where it is produced rather than where the demand for it arises. Moreover, GHG emissions from imports to the EU have not been factored in.

The downward trend in GHG emissions has not prevented the EU economy from expanding by 65 % between 1990 and 2022, signifying a decoupling of growth from emissions. This is demonstrated by the carbon intensity of GDP (the tonnes of GHGs emitted to produce EUR 1 000 of GDP), which in 2022 averaged 259 kilogrammes of CO_2eq, less than half that in 1990 (600 kilogrammes of CO_2eq). In several eastern countries, many regions had both low GDP and high emissions in 1990, but have succeeded in achieving high growth while reducing emissions since then. As a result, regional disparities in carbon intensity have narrowed across the EU[11].

In the EU as a whole, GHG emissions have steadily decreased since 1990 at a rate of 0.1 tCO_2eq per person a year. There are pronounced national and regional differences in the pattern of reduction, but three main 'pathways' can be distinguished (Figure 4.2). In Belgium, Czechia, Germany, France, the Netherlands, Denmark and Sweden, average emissions peaked well before 2000 and then gradually declined. In most of the countries that joined the EU in 2004 and in subsequent years (Estonia, Latvia, Lithuania, Poland, Hungary, Slovakia, Bulgaria and Romania), average emissions declined rapidly in the early 1990s after the collapse of the Soviet Union when GDP fell markedly, but then remained broadly unchanged, though with fluctuations up and down, reflecting (in some degree) developments in GDP. In the southern Member States (Spain, Portugal, Italy, Slovenia, Greece and Malta), as well as in Ireland, Austria and Finland, emissions peaked around 2005 and then declined sharply up until 2021. All three pathways show a

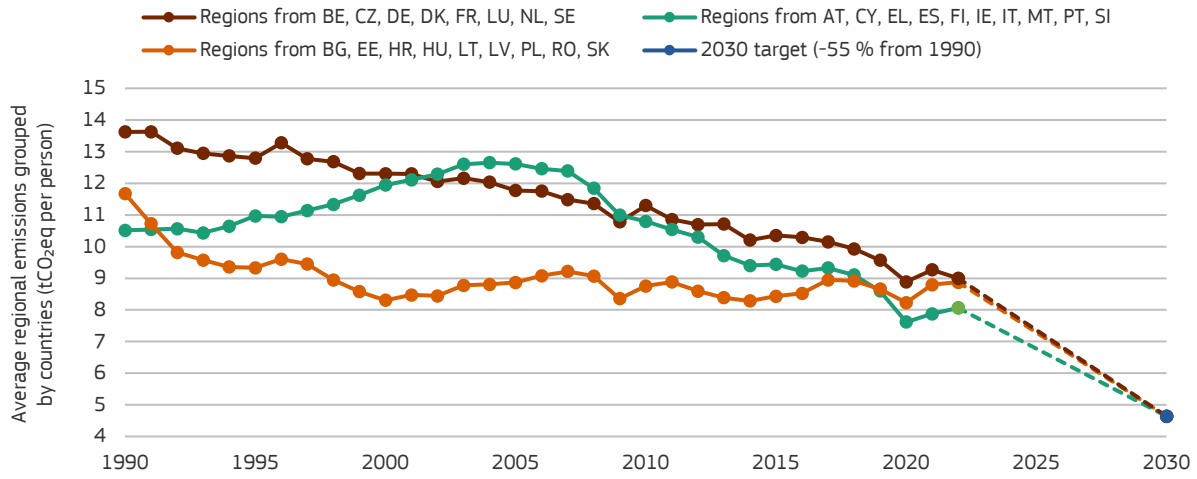
8 International Bank for Reconstruction and Development / World Bank (2021).

9 Crippa et al. (2023); GHG emissions based on the emissions database for global atmospheric research (EDGAR) excluding emissions from shipping, aviation, offshore installations and land use, land-use change, and forestry.

10 Population and GDP from the annual regional database of DG REGIO; GDP at constant prices (2015 as reference year).

11 European Commission (2023b).

Figure 4.2 Trends in regional greenhouse gas emissions, 1990–2022



Note: Countries are grouped based on their emission profiles. The 2030 target is at the EU level and represents a reduction in emissions of 55 % compared with 1990.
Source: JRC-EDGAR.

rebound of emissions in 2021 and 2022 as GDP recovered from the effects of the COVID-19-related restrictions on economic activity in 2020.

Achieving the 2030 target (a 55 % reduction in GHG emissions compared with 1990) means that the average GHG emissions in the EU in 2030 need to fall to 4.7 tCO_2eq per person[12]. To achieve this, emissions will need to fall at a faster rate between 2023 and 2030 than between 1990 and 2022. Power generation and industry together accounted for nearly half of GHG emissions in 2022. For both, emissions were reduced by 37 % over the 1990–2022 period and by 29 % over the 2005–2022 period. The two are since 2005 covered by the EU ETS, a mechanism that limits the total number of emission allowances each year. Emissions also declined from buildings (by 30 %) and agriculture (by 24 %) over the period, whereas emissions from transport increased by 20 %.

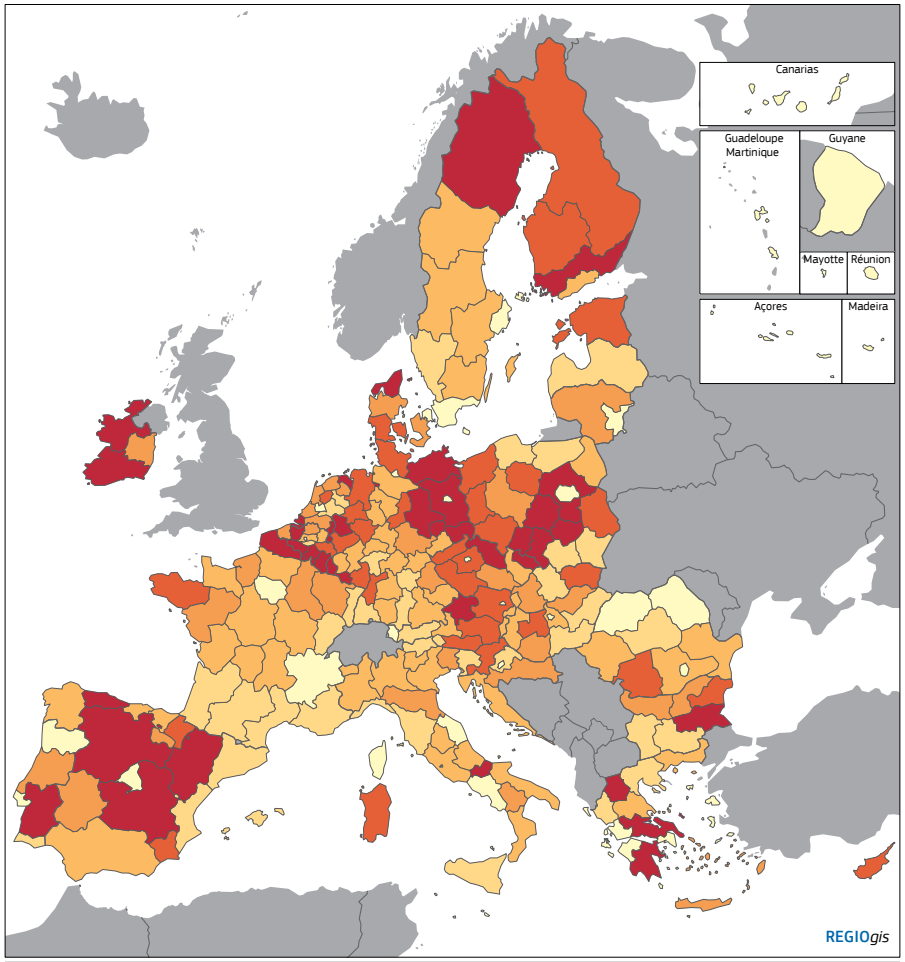
The challenges that regions face to reduce emissions differ (Map 4.3, which uses a different colour for the sector contributing most to total GHG emissions in 2022, indicates some of these). Agriculture contributed most to GHG emissions in the Irish and Danish regions. Transport was the most important source in rural regions in Spain, France, Italy, Austria and Germany (see also Box 3.5 in Chapter 3). Up to now, it has proved difficult to fully decarbonise transport, with oil and petroleum remaining the main source of power, still accounting for nearly 30 % of final energy demand in the EU. To reverse this trend, the Commission has proposed a separate emissions trading scheme for fuel combustion in buildings and for road transport, the Social Climate Fund providing financial support to vulnerable households, transport users and micro-enterprises in the transition to sustainable energy use.

2.3 Rural, less developed regions can drive the energy transition

Achieving the EU's climate and energy goals requires saving energy, increasing the share of renewable energy, using energy more efficiently, and enhancing carbon sinks. Beyond reducing GHG emissions, these measures also help lower energy bills, protect the environment, and reduce fossil fuel purchases (and hence the EU's dependence on oil and gas imports).

In 2021, the EU's primary energy consumption was 1 309 million metric tonnes of oil equivalent (Mtoe), down 12.6 % from 2005. The current 2030 target is 992.5 Mtoe. At the country level,

12 European Commission (2023a).



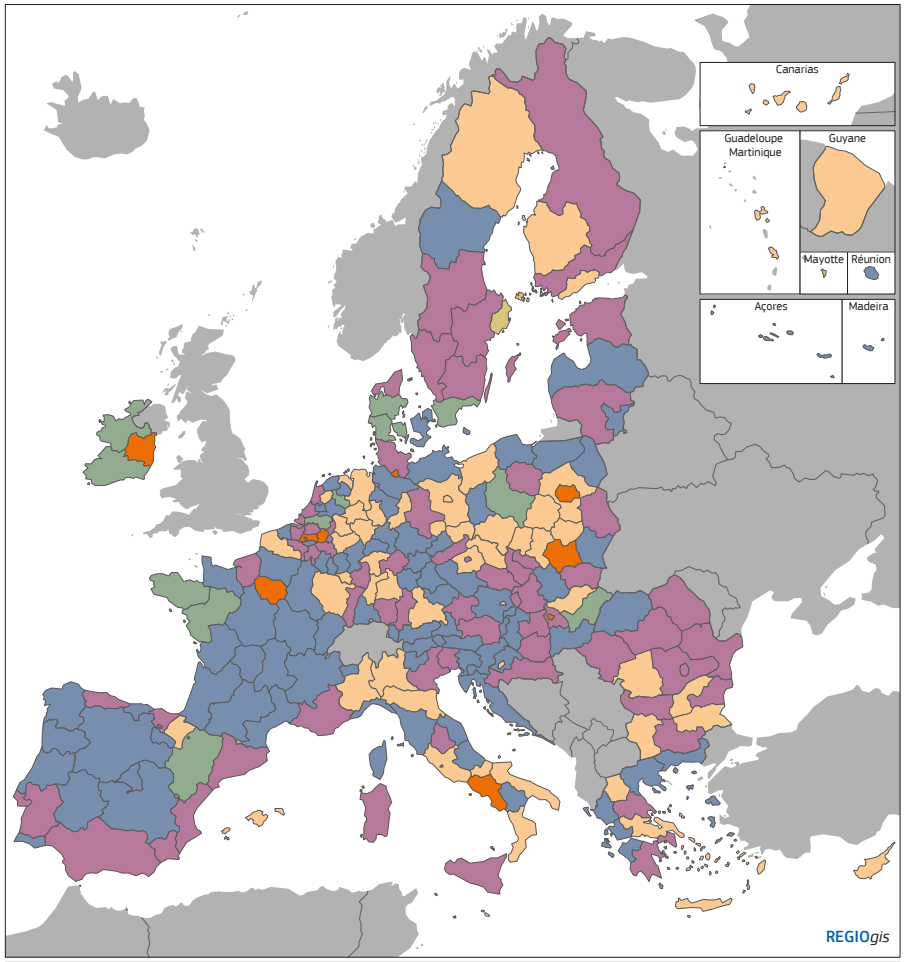
Map 4.2 Greenhouse gas emissions per person by NUTS 2 region, 2022

tCO_2 equivalent per capita

- <= 5.0
- 5.0 – 6.5
- 6.5 – 8.0
- 8.0 – 9.5
- 9.5 – 12.0
- > 12.0

EU-27 = 7.96
Source: JRC-EDGAR.

0 500 km



Map 4.3 Sector with the highest contribution to total greenhouse gas emissions, 2022

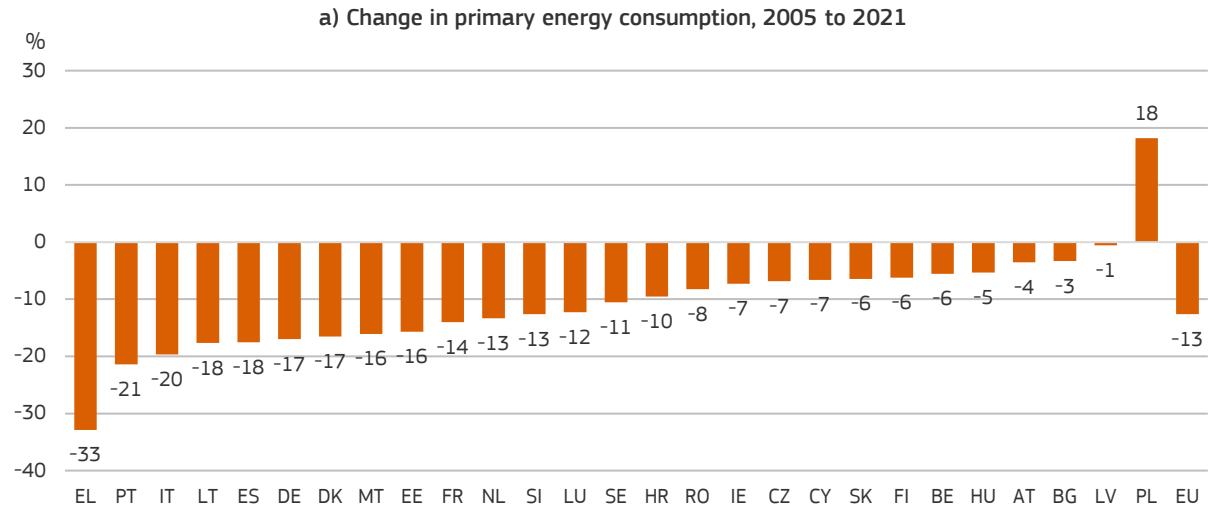
Sector

- agriculture
- buildings
- energy
- industry
- transport
- waste

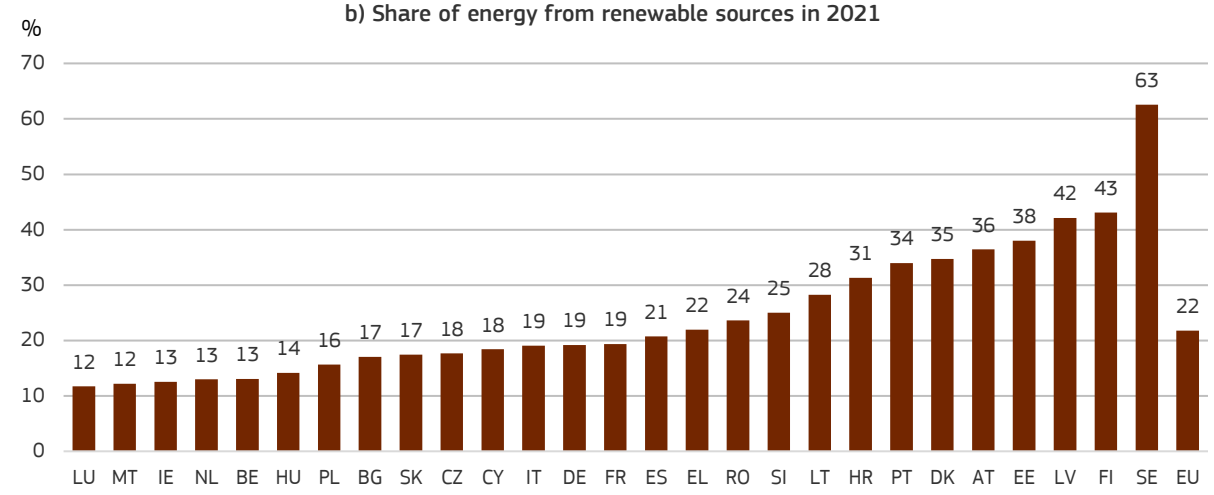
This map uses a different colour to show the sector that contributes most to greenhouse gas emissions in each region in 2022.
Source: JRC-EDGAR.

0 500 km

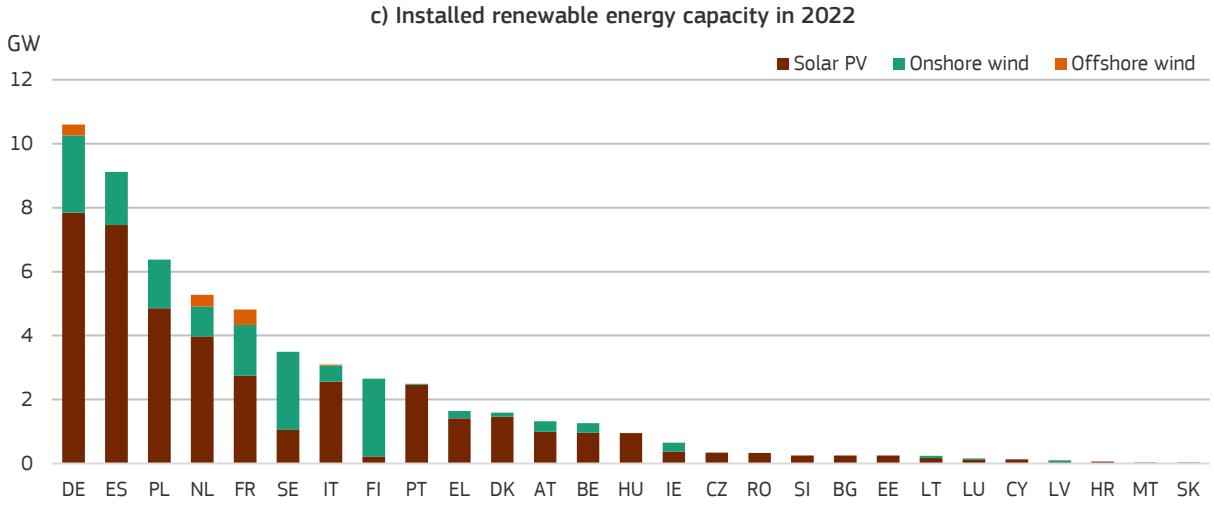
Figure 4.3 Energy statistics by country



Source: Eurostat [NRG_IND_EFF].



Source: Eurostat [NRG_IND_REN].



Source: Wind Europe and Solar Power Europe.

Box 4.1 How well prepared are regions to make the transition to a climate-neutral economy?

Highly competitive and innovative EU regions that are able to develop and produce the necessary green technologies are better equipped for the green transition of their economies. In most cases, these are the economically strongest, urbanised regions with a large share of knowledge-intensive services.

This conclusion is reached by several studies[1] that examined the risk of territorial imbalances that may result from the green transition. Map 4.4, based on results of the CINTRAN project, identifies regions that are at risk. The analysis shows that more economically diversified regions, such as Köln, have lower socio-economic risk than regions heavily dependent on fossil fuel extraction, such as Severozápad. Most of the regions with a high risk are already lagging behind the national average and need to rely on support to overcome the challenges from decarbonisation of energy. Carefully implemented territorial policies can help mitigate the adverse effects and ensure that all regions reap the benefits from the transition to climate neutrality.

1 Maucorps et al. (2022); Rodriguez-Pose and Bartalucci (2023); CINTRAN (2023); Sasse and Trutnevyte (2023).

the largest reductions in energy up to 2021 were achieved in Greece (of 33 %) – where GDP declined substantially after 2002, so depressing energy demand – Portugal (21 %) and Italy (20 %) (Figure 4.3). Poland is the only country that consumed more primary energy than in 2005 (18 % more).

In 2021, renewable energy accounted for 21.8 % of gross energy consumption in the EU, only around half the target for 2030 (42.5 %). Again, there are wide variations between countries. Sweden (62.6 %) had by far the largest share coming from renewables in the EU, ahead of Finland (43.1 %) and Latvia (42.1 %). At the other end of the scale, Luxembourg (11.7 %) had the smallest share. Forest biomass is an important source of renewable energy, especially in northern Europe. It should be emphasised that biomass can only contribute effectively to reducing GHG emissions if it is produced in a sustainable way.

Following Russia's war of aggression against Ukraine and the subsequent rise in energy prices, demand for natural gas in the EU fell by 13 % in 2022, the sharpest decline in history[13]. While milder winter temperatures played a role, policy was also important, particularly record increases in solar and wind capacity. Two industry organisations, SolarPower Europe[14] and WindEurope[15], have estimated that 41 GW of new solar photovoltaic (PV) capacity and 16 GW of additional wind capacity, mostly onshore, were installed in the EU in 2022, signifying an increase of 47 % relative to 2021 for solar and 40 % for wind power. Germany and Spain accounted for nearly 35 % of the overall increase in renewable capacity.

These numbers suggest that EU policies to reduce reliance on Russian fossil fuels and to accelerate the green energy transition are succeeding. However, achieving a carbon-neutral energy sector requires further upscaling of renewables and there is substantial untapped potential in this regard[16].

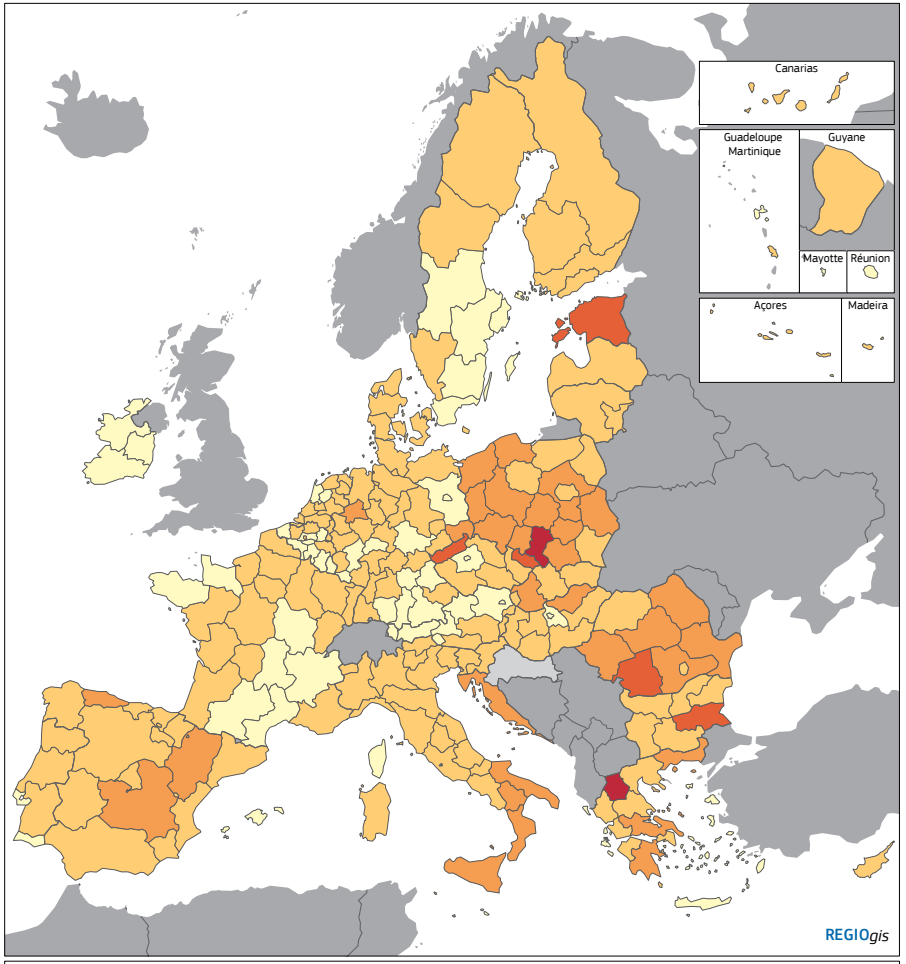
In 2023, solar, wind and hydro power installed in the EU together produced 972 terawatt hours (TWh) of electricity. But this represents only a fraction of the technically available potential, estimated at 12 485 TWh a year, divided between solar PV (88 %), onshore wind (11 %) and hydro power (1 %). The potential amounts to over 5 times the electricity consumed in 2021 and is mainly concentrated in the EU's rural areas (9 784 TWh). It would come predominantly from potential

13 IAE (2023).

14 SolarPower Europe (2022).

15 WindEurope (2022).

16 Perpiña Castillo et al. (2024).

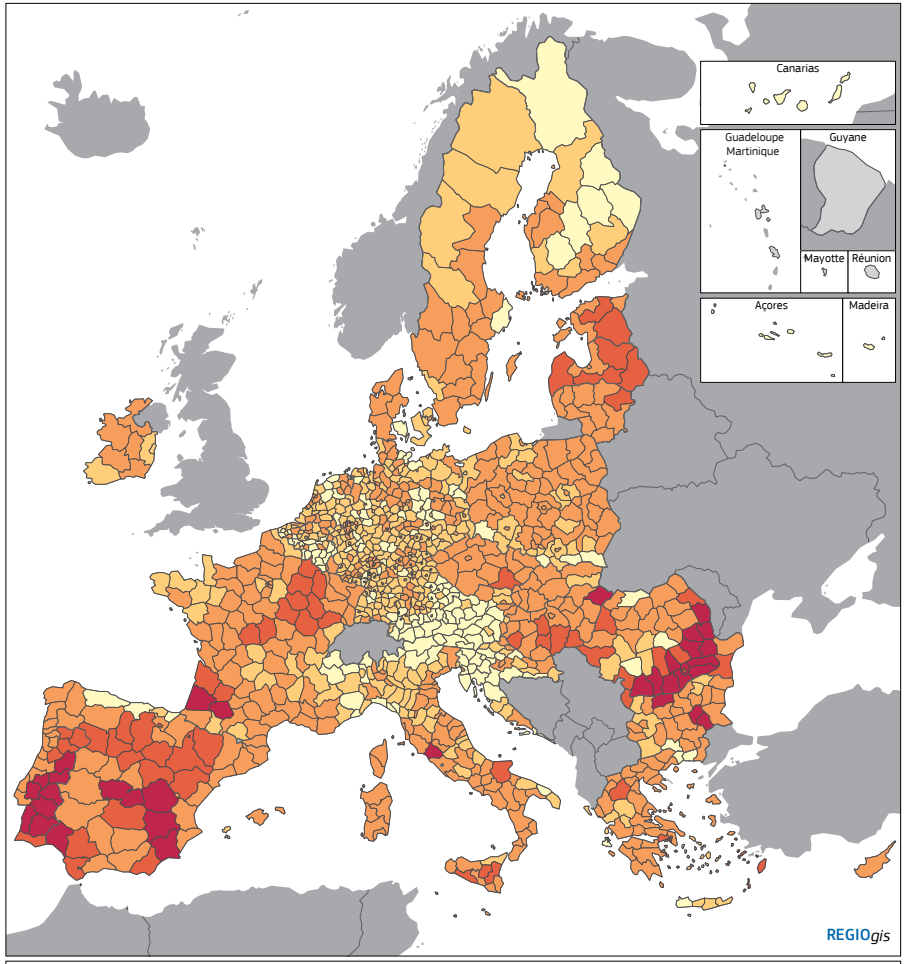


Map 4.4 Socio-economic risks associated with the green transition by NUTS 2 region

Index (0 – 100)
- <= 20
- 20 – 40
- 40 – 60
- 60 – 80
- > 80
- no data

Source: CINTRAN project (carbon-intensive regions in transition).

0 500 km



Map 4.5 Untapped potential from solar, wind and hydro power by NUTS 3 region

MWh/km^2/year
- <= 500
- 500 – 1000
- 1000 – 5000
- 5000 – 10000
- > 10000
- no data

Potential annual production per unit area.
Source: JRC.

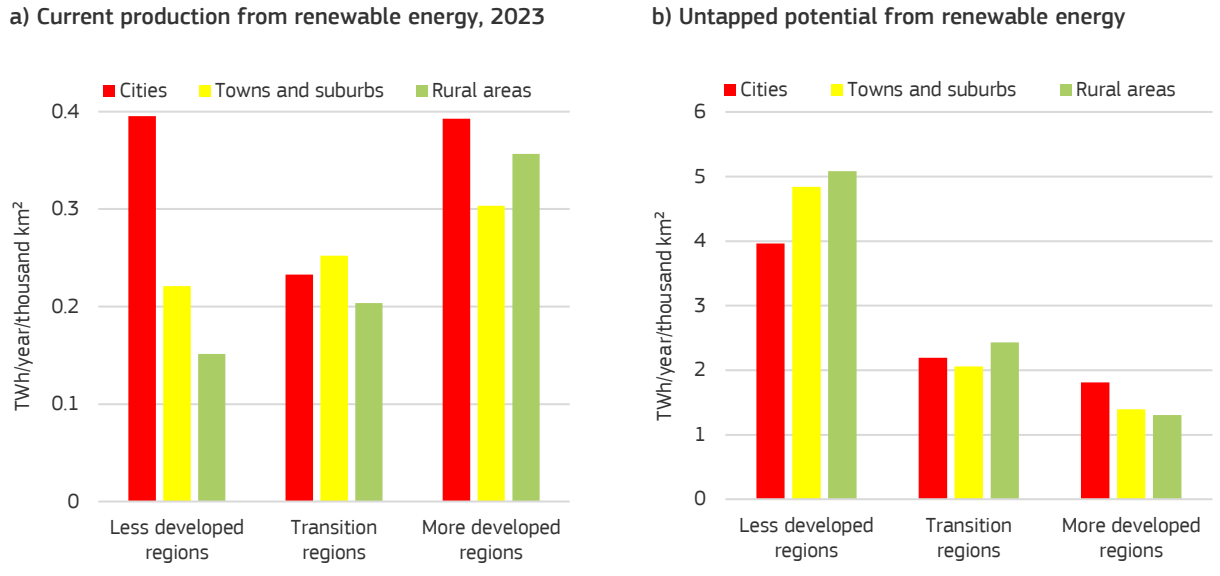
0 500 km

ground-mounted PV systems in Spain, Romania, France, Portugal and Italy (Map 4.5)[17].

The green energy transition and the associated strengthening of the role of renewables offer unique opportunities for rural, less developed regions, as they can benefit from their natural resources and geographic position. Whereas most of the current energy production from renewables is in the more developed regions, especially in their rural areas, most of the potential production is in the rural areas of less developed regions (Figure 4.4). Exploiting this potential could benefit economic cohesion in the EU. A recent study[18] used the data on untapped potential to simulate the impact of exploiting this on job creation and economic growth. Phasing out fossil fuels for energy generation while phasing in wind and solar energy is projected to deliver more value-added (up to EUR 1 570 per head more) and more employment (up to 4.9 % more) in lagging, rural regions. Realising this potential, however, necessitates facilitating knowledge exchange, technical support, and investment in renewable energy generation but also in distribution infrastructure, digitalisation and connectivity potential. It also requires factoring in the impacts on landscapes or biodiversity but also on rural communities. A number of EU-level initiatives were taken to provide needed support and technical assistance to rural areas willing to create, among others things, rural energy communities, so that they also benefit from the green transition[19].

Green hydrogen is produced when renewable energy is used to produce hydrogen gas through electrolysis. In 2022, there were 143 renewable hydrogen projects in Europe, of which 97 in operation and 46 under construction. The projects currently under construction are projected to significantly outperform existing operational plants, with an anticipated average capacity of 26 MW – around 10 times higher than the current operational plant's average

Figure 4.4 Current production and untapped potential from renewable energy by category of region and degree of urbanisation



Source: JRC.

17 Note that, because of the Russian invasion of Ukraine, the planned development of renewable energy installations in regions bordering Russia and Belarus can be postponed or cancelled. This is particularly relevant for onshore wind, since 21 % of the EU's technical potential is located in border regions, and to a lesser extent for solar (9 %) and hydropower (1 %). Overall, Latvia and Lithuania have the largest shares (over 50 %) of technical potential in border regions for solar and wind power, while in Finland it is over 60 % for hydro and wind power and in Estonia over 40 % for all three sources.

18 Többen et al. (2023).

19 Rural Energy Community Advisory Hub (https://rural-energy-community-hub.ec.europa.eu/index_en).

Box 4.2 The condition of European forests

EU forests absorb 10 % of all carbon dioxide emitted each year, meaning that forests are essential to achieving a net-zero economy. Healthy forests also help regions to be resilient to climate change. They regulate surface and groundwater flows and so mitigate floods and droughts, or they help cool down cities and towns during heatwaves. But forests do much more than delivering climate services. They are important habitats for protected plant and animal species, they are a source of economic activity, and they provide people with opportunities for recreation. Keeping forests healthy, restoring them where they are degraded or planting new biodiverse forests in areas where they have been cut down, therefore serves the twin goal of mitigating climate change and adapting to it, while also helping to restore biodiversity.

An assessment of their health[1] shows that forests in the EU are productive and well connected to each other and to other natural areas. But forests have too low levels of organic carbon in their soil and too few threatened bird species in their trees. Forests in Mediterranean regions and in the Atlantic plain stretching from France to Denmark are worse off than others in the EU and need to be restored to a good condition. Forests in mountain regions, on the other hand, are often in the best condition (Map 4.6).

The development of regional accounts describing the condition of forests is useful for supporting Cohesion Policy objectives, particularly the goal of a greener, low-carbon Europe. Protecting and restoring forests is still overlooked as a means of mitigating climate change and adapting to it. Under Cohesion Policy programmes for 2021–2027, investments of over EUR 22 billion are planned on action on biodiversity, around EUR 16.8 billion of which is funded by the EU. The forest accounts can help Member States decide where to invest to restore degraded forest ecosystems.

1 Maes et al. (2023).

capacity. The RePowerEU ambition is to produce 10 Mtoe of renewable hydrogen in the EU and to import another 10 Mtoe from outside the EU.

The production of biomethane in EU-27 also increased significantly. According to the European Biogas Association it multiplied by 2 in the period 2018–2022 (3.4 bcm were produced in EU-27 in 2022). However, the estimated potential is much higher. The EU has set itself the objective of producing 35 bcm of biomethane by 2030 as part of its efforts to phase out its dependence from Russian fossil fuels.

2.4 Healthy ecosystems as nature-based solutions to address climate change and biodiversity loss

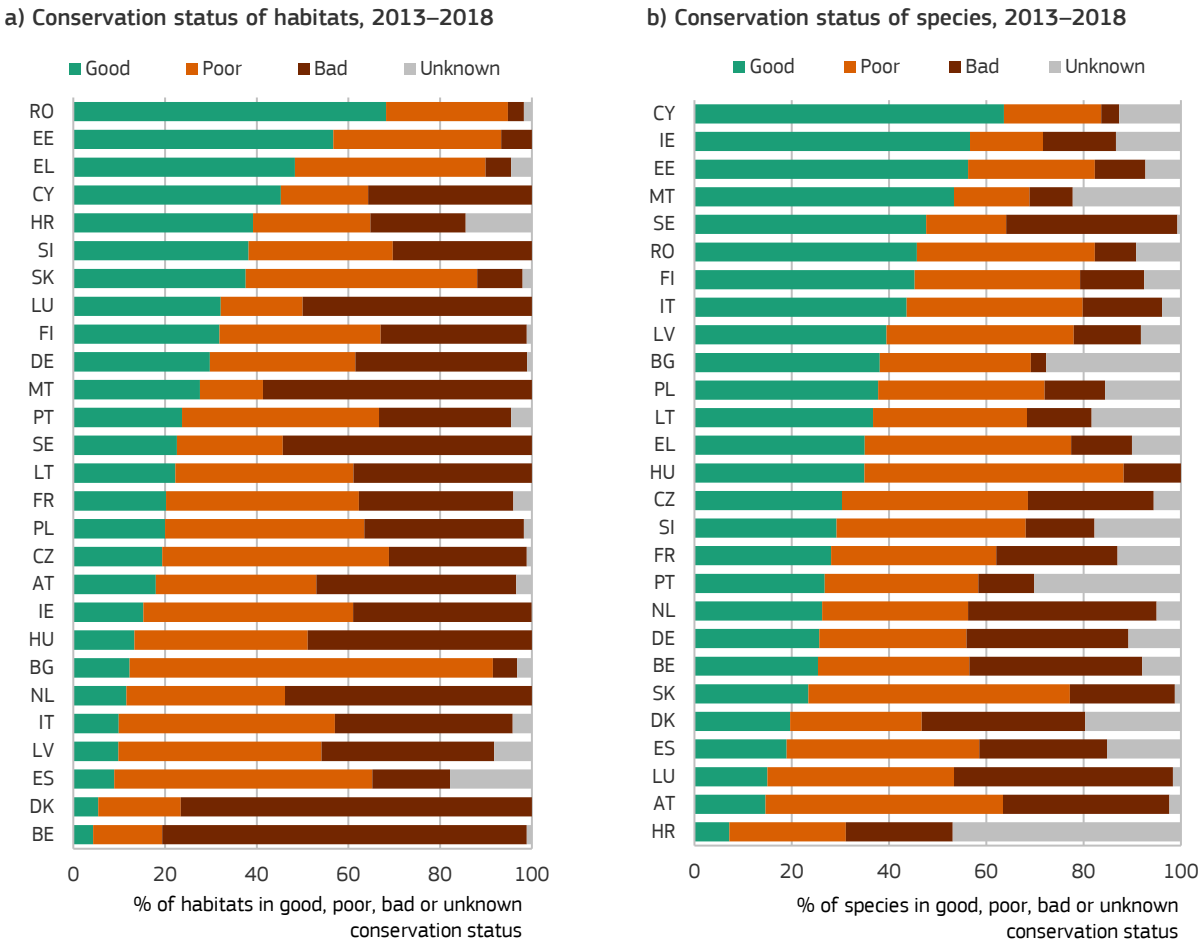
Natural ecosystems are essential in the fight against climate change. Reaching climate neutrality requires first and foremost reducing GHG emissions, but also depends on enhancing carbon removal, particularly for those sectors with hard-to-abate emissions. Healthy ecosystems, particularly natural forests and wetlands, are carbon sinks. They sequester and store more carbon dioxide from the atmosphere than they emit. Moreover, through ecosystem services such as water retention or the cooling effect of trees and forests, ecosystems mitigate the effects of climate change and extreme weather events. These ecosystem services are so important that over half of the world's total GDP is moderately or highly dependent on nature[20]. In the same way, 75 % of the bank loans in the eurozone is exposed to risks from nature loss[21]. Key sectors of the economy are particularly concerned, in particular construction, agriculture, food and beverages. In 2019, the economic value provided by a wider set of ecosystem services in the EU amounted to EUR 234 billion. This value is comparable to the gross value-added of agriculture and forestry combined[22]. Yet the biodiversity

20 World Economic Forum (2020).

21 European Central Bank (2023).

22 Vysna et al. (2021).

Figure 4.5 Conservation status of habitats and species protected under the EU Habitats Directive for the period 2013-2018



Source: European Environment Agency (EEA).

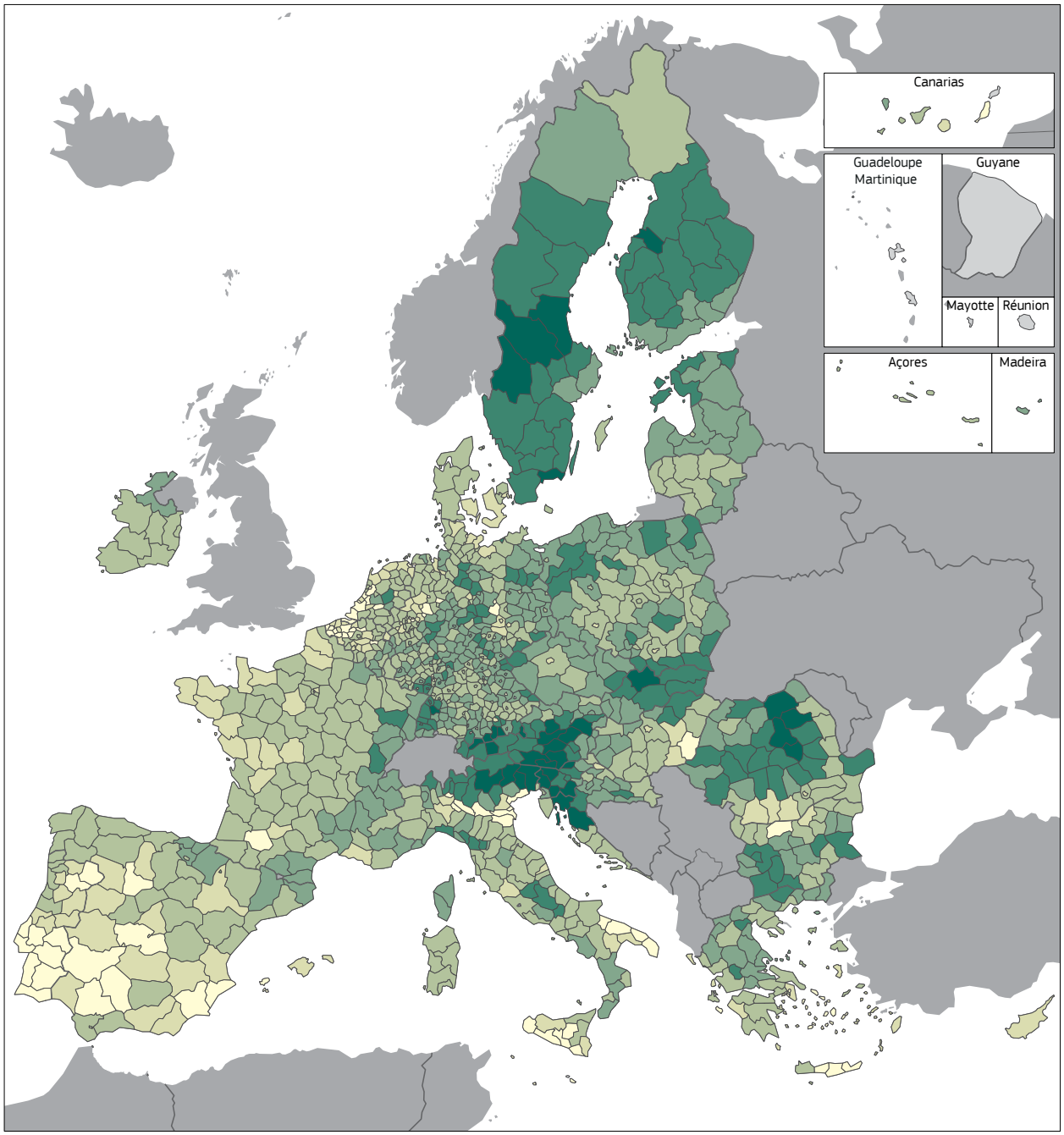
that underpins ecosystems, and the services they provide, remains under threat. Every six years, EU Member States report on the conservation status of habitats and species protected under the Birds and Habitats Directives. The latest assessment covers the period between 2013 and 2018[23]. At EU level, only 15 % of the habitats assessed have good conservation status, while 81 % have poor or bad conservation status. Grasslands, dunes, and wetland habitats show strong trends towards deterioration, while the status of forests is improving the most. Member State reports show considerable variation in the conservation status of habitats within their borders (Figure 4.5). With the exception of Cyprus, Estonia, Greece and Romania, Member States report that under 40 % of the habitats assessed have good conservation status. The figure is lowest for Belgium and Denmark, which report that over 70 % of their habitats are in a bad conservation state.

Only 27 % of species assessed are reported to have good conservation status, while for 63 % it is poor or very poor[24]. Only 6 % of all species show an improvement from the previous assessment. Reptiles and vascular plants have the largest proportion of species with good conservation status.

The reports show that the conservation status of species varies widely. Cyprus, Ireland, Estonia and Malta report the largest proportion (over 50 %) of species with good status. Animals account for almost 80 % of species with improving status and

23 Conservation status of habitats: https://www.eea.europa.eu/ims/conservation-status-of-habitats-under.

24 Conservation status of species: https://www.eea.europa.eu/ims/conservation-status-of-species-under.



Map 4.6 Average condition of forests in NUTS 3 regions, 2018

Index

- <= 0.45
- 0.45 – 0.50
- 0.50 – 0.60
- 0.60 – 0.65
- 0.65 – 0.70
- > 0.70
- no data

Forest condition is measured on a scale from 0 to 1, where 0 represents a degraded forest and 1 represents a reference condition based on primary or protected forests.
Source: DG REGIO, JRC and King Juan Carlos University of Madrid.

0 500 km

plants for 20 %. Belgium, Denmark, Estonia and Luxembourg report the largest proportion (over 20 %) of species with an improvement relative to the previous assessment, while Cyprus is the only Member State not to report a single species for which the status had worsened, though for over 75 % of species the assessment is 'unknown'.

3. Environmental challenges for health and regional development

A large majority of people in the EU are concerned about the state of the environment[25]. The pollution of air, water and soil has a direct impact on people's health. Exposure to pollutants increases the likelihood of respiratory diseases and cardiovascular and other health issues. The uneven distribution of environmental pollution is one of the reasons for disparities in health outcomes across the EU, with more vulnerable or disadvantaged groups exposed to more health risks[26].

Part of the European Green Deal, the zero-pollution action plan, is aimed at creating a toxic-free environment by reducing air, water and soil pollution to levels not considered harmful to health and natural ecosystems. Legislation, including binding targets on pollutant emissions, remains essential to keeping pollutant concentrations below these levels.

EUR 100 billion is allocated under Cohesion Policy for 2021–2027 to environmental action, to improving air quality, reducing noise, water management, waste recycling and rehabilitation of industrial sites and contaminated land. Support is also provided to investment in clean technologies, and in the broad range of products, services, and processes that utilise renewable materials and energy sources, which are key to achieving a zero-pollution society. In addition, a significant part of the budget is planned to go to investment in environmentally friendly production processes and the circular economy.

3.1 Air pollution across the EU causes persisting regional health inequalities

Despite progress made in the last decade on achieving better air quality standards, air pollution remains a major cause of premature death and disease and is the single largest environmental health risk in Europe. Fine particles of under 2.5 mm diameter ($PM_{2.5}$) are particularly harmful to human health. In 2020, they are estimated to have caused 253 000 premature deaths and resulted in 2 582 563 years of life lost across the EU. The estimated impact is largest in regions where solid fuel burning causes high $PM_{2.5}$ levels, mainly in Bulgaria, Croatia, and regions in Poland, Slovakia, Hungary and Romania (Map 4.7), with the largest of all in the Polish regions of Miasto Kraków, Katowicki and Sosnowiecki and the Bulgarian region of Vidin, where years of life lost are 2 000 or more per 100 000 inhabitants. The smallest is in Scandinavian regions, where $PM_{2.5}$ levels are low. LIFE[27] strategic integrated projects for better governance, and for supporting the development and implementation of air quality plans in combination with Cohesion funding, delivered promising results in various European hotspots such as the Po basin in Italy, the south of Poland (Malopolska, Silesia), Slovakia, Bulgaria and Hungary.

Air quality also varies according to the extent of urbanisation. Concentration of fine particulate matter and nitrogen dioxide is consistently higher in cities than in rural areas (Figure 4.6). The main source of fine particulate matter is the heating of buildings, which in 2020 was responsible for 58 % of emissions in the EU, while nitrogen dioxide is mainly caused by road transport, which accounted for 37 % of emissions[28]. Some 96 % of the urban population was exposed to levels of fine particulate matter above the latest guideline set by the World Health Organisation (WHO) (five milligrams per cubic metre). They were also exposed to levels of nitrogen dioxide exceeding the WHO guideline (10 milligrams per cubic metre).

25 Eurostat (2020).

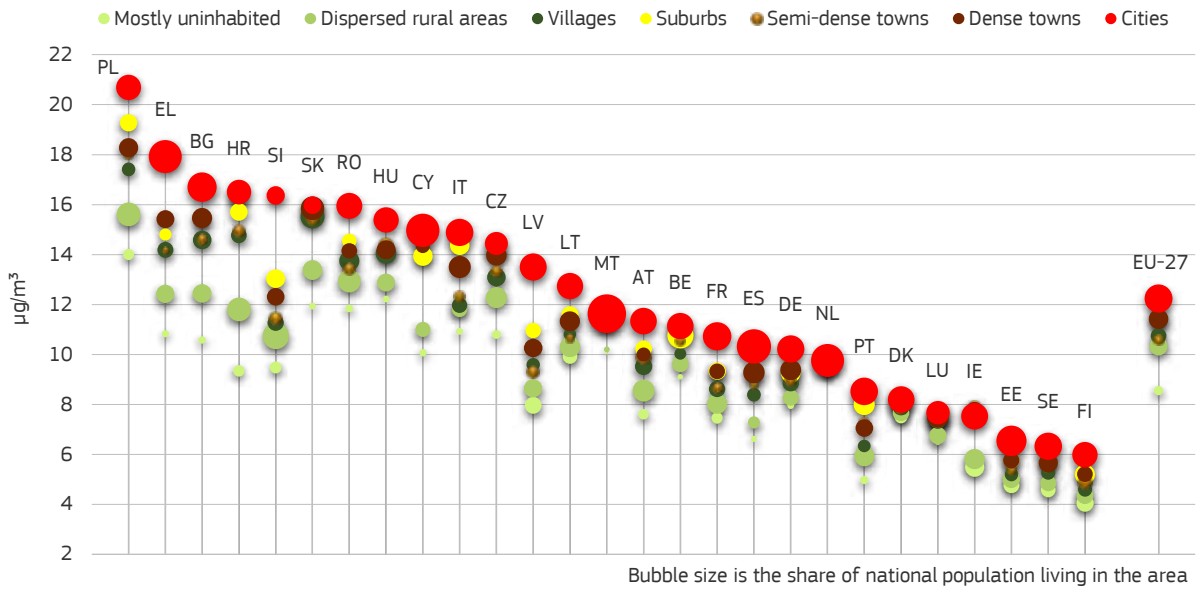
26 European Environment Agency (2018).

27 L'instrument financier pour l'environnement.

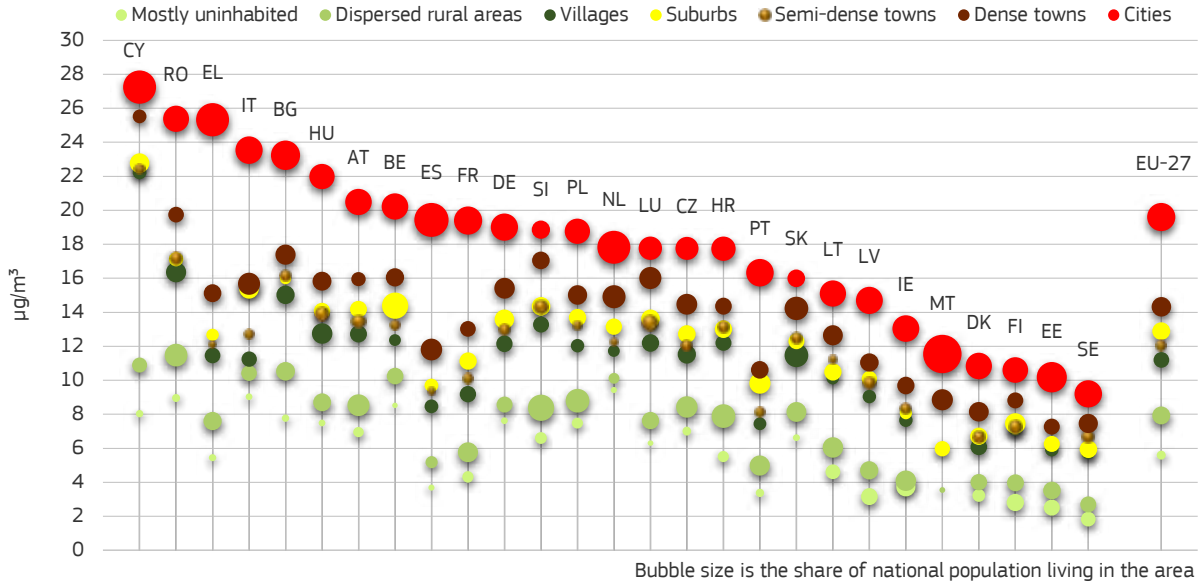
28 https://www.eea.europa.eu/publications/air-quality-in-europe-2022/sources-and-emissions-of-air.

Figure 4.6 Concentration of fine particulate matter ($PM_{2.5}$, upper panel) and nitrogen dioxide (NO_2, lower panel) by country and by refined degree of urbanisation, 2021

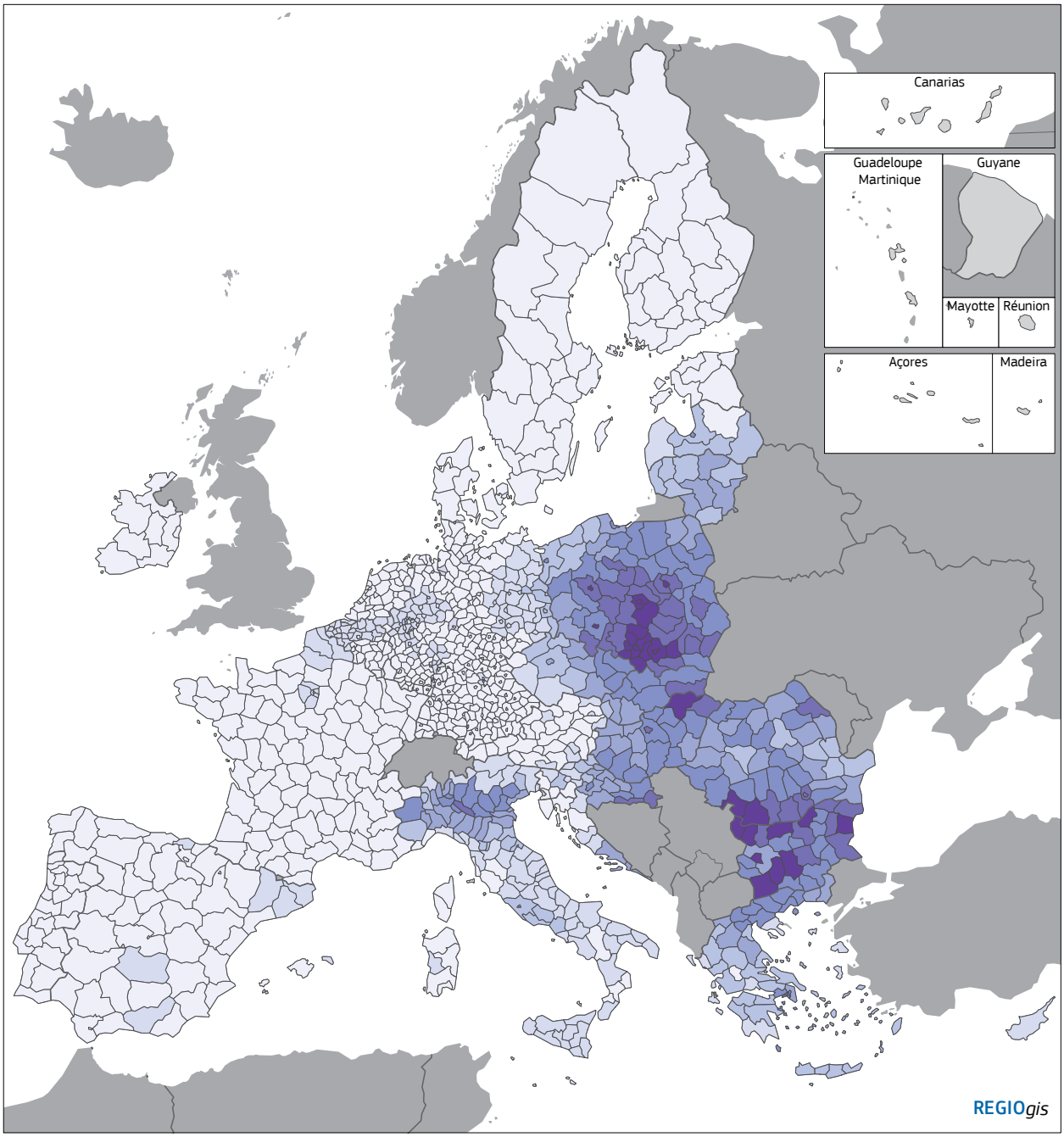
a) Concentration of fine airborne particulate matter ($PM_{2.5}$) by refined degree of urbanisation



b) Concentration of NO_2 by refined degree of urbanisation



Note: Countries ranked by the value of cities. A concentration of 1 µg/m³ means that one cubic metre of air contains one microgram of pollutant.
Source: EEA and DG REGIO calculations.



Map 4.7 Years of life lost attributed to exposure to $PM_{2.5}$ in NUTS 3 regions, 2021

Years of life per 100 000 inhabitants

- <= 400
- 400 – 600
- 600 – 800
- 800 – 1000
- 1000 – 1250
- 1250 – 1500
- > 1500
- no data

EU-27 = 584
Source: EEA.

0 500 km

Box 4.3 Regional disparities associated with air pollution in Europe

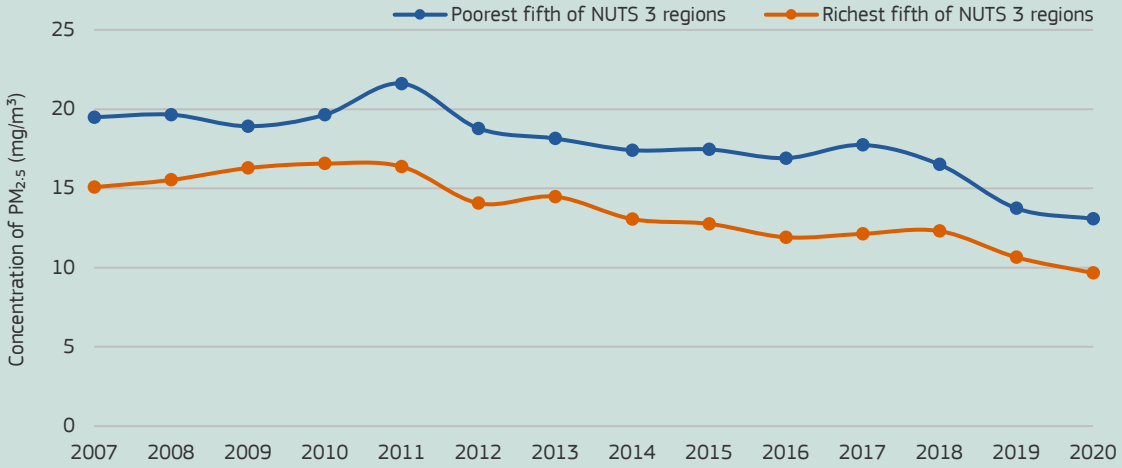
Figure 4.7 compares the average exposure to air pollution from fine particulate matter of those living in the poorest regions in the EU with that in the richest ones.

Despite improving trends in air pollution in both the richest and the poorest regions of the EU over the 2007–2020 period, inequalities remained with levels of $PM_{2.5}$ concentrations consistently higher by around one third in the poorest regions. This lack of progress in reducing air pollution exposure disparities seems to indicate that we are not progressing in reducing this important type of environmental inequality.

Between 2007 and 2020, air quality, measured as population-weighted concentrations of $PM_{2.5}$, improved in both the least disadvantaged (i.e. richest) and the most disadvantaged (i.e. poorest) quintiles of the EU-27's NUTS 3 regions. However, regions in the richest quintile had lower $PM_{2.5}$ levels to begin with (around 15 µg/m³ in 2007) than those in the poorest quintile (19.5 µg/m³ in 2007).

Energy poverty in the poorest regions can cause the burning of low-quality coal, wood and even waste to heat homes. This results in high emissions of pollutants, which often not only affect outdoor air quality but also degrade indoor air quality and consequently harm human health.

Figure 4.7 Population weighted concentrations of fine particulate matter in the richest and poorest NUTS 3 regions of the EU, 2007–2020



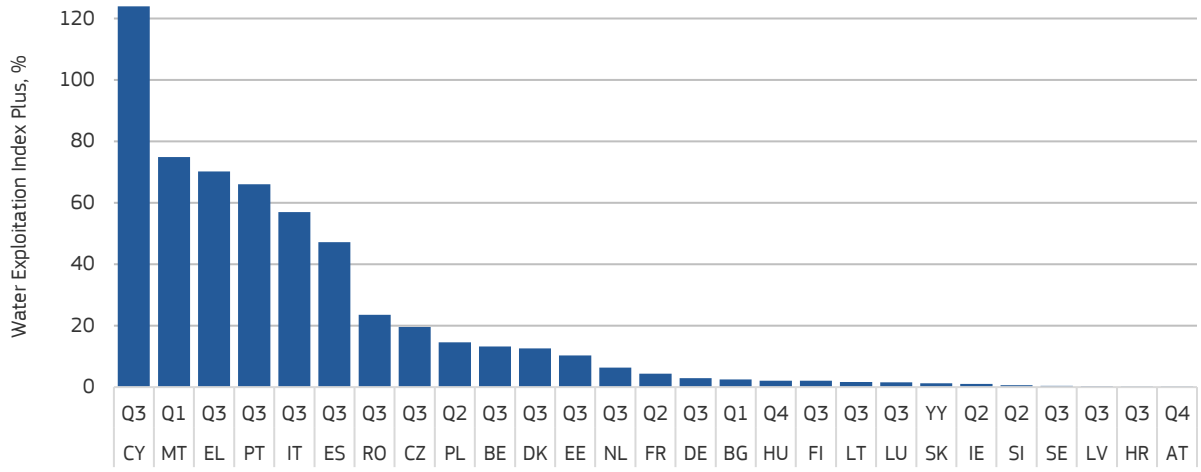
Note: The chart shows population-weighted concentrations of PM2.5 in the 20 % of NUTS 3 regions in the EU with the lowest GDP per head (in purchasing power standards – PPS – terms) along with those in the 20 % with the highest GDP per head.
Source: EEA.

The COVID-19 pandemic clearly demonstrated the impact of traffic on air quality in cities[29]. In 2020, concentrations of nitrogen dioxide fell sharply as a direct result of reductions in road transport caused by the restrictions imposed. Average concentrations over the year fell by up to 25 % in major cities in France, Italy and Spain, and during the first lockdown, in April 2020, concentrations at monitoring stations fell by up to 70 %.

Further reductions in emissions of air pollutants are needed to lower their concentration in the atmosphere. The EU's climate agenda, particularly the transition to non-emitting renewable energy sources, higher energy-efficiency and less-polluting combustion fuels, is aimed at achieving this.

29 https://www.nature.com/articles/s41598-021-04277-6; https://www.lifeprepair.eu/index.php/actions/air-quality-and-emission-evaluation/?lang=en#toggle-id-14.

Figure 4.8 The quarters when water was most scarce in EU Member States, 2019



Note: Based on the three-month period in 2019 when the Water Exploitation Index Plus (WEI+) was at its maximum.
Source: EEA.

3.2 Access to clean and safe water

Clean and safe water is an essential resource and Cohesion Policy contributes to ensuring the availability and security of water, through water-purification plants and distribution networks, especially in areas where the population has no access to adequate water provision. Cohesion Policy helps regions that are facing problems of water management, water quality treatment and flood prevention. It promotes a circular approach to water, in particular in water-stressed regions. Water scarcity[30] affected 29 % of the EU in at least one season in 2019. In general, it is more common in southern Europe, where around 30 % of the population live in areas with permanent water stress and up to 70 % of the population live in areas with seasonal water stress during the summer. Countries where water shortages were seasonally most acute were Cyprus (where water consumption exceeded renewable water availability), Malta, Greece, Portugal, Italy and Spain (Figure 4.8). Water abstraction for agriculture, public water supply and tourism imposes the most pressure on fresh water[31]. However, water scarcity is not limited to southern Europe. It extends to river basins across the EU, particularly in western Europe, where water shortages are caused primarily by high population density in urban areas, combined with high levels of abstraction for public water supply, energy and industry.

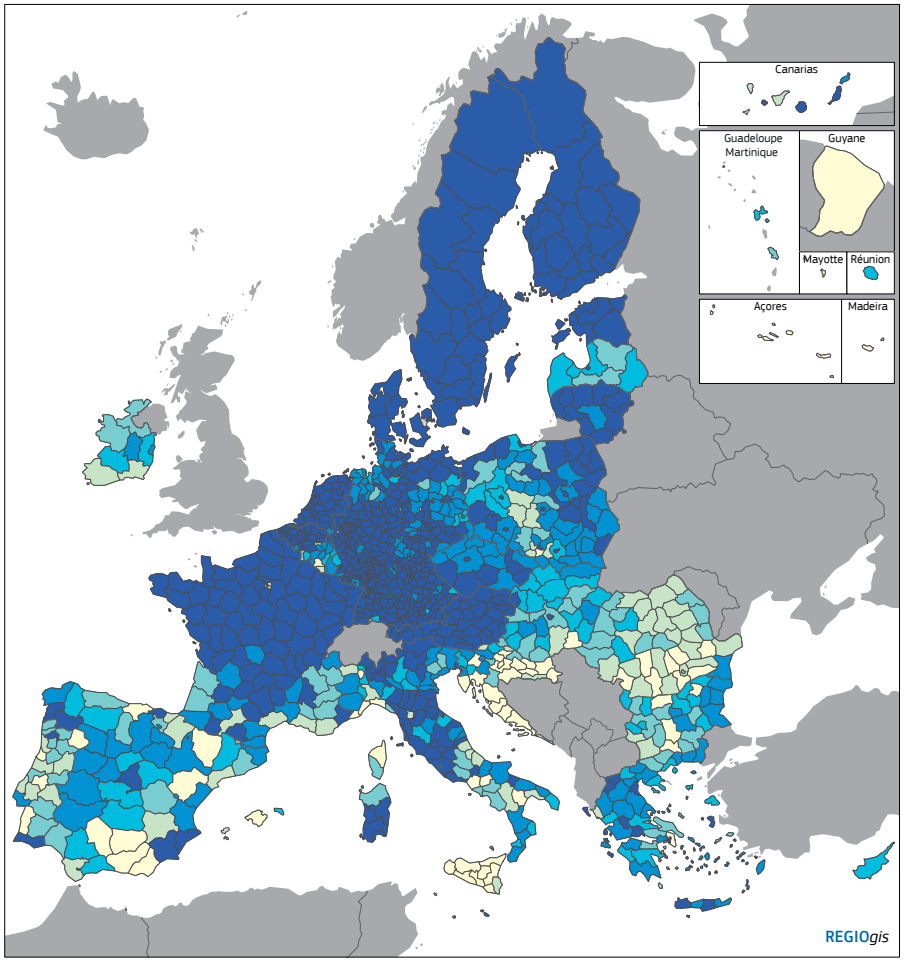
Pollution of fresh water by nutrients declined in the EU over the period 2000–2010, but remained unchanged up to 2019 (the last year for which data are available)[32]. This is largely because of discharges of nutrients from agricultural land, which have remained high. The lack of improvement in water quality across the EU is also evident from country reports produced under the Water Framework Directive, which show that only 40 % of surface water has a good ecological status.

To remedy this, full implementation of the Cohesion Policy investments and the management and mitigation measures specified in the EU's water legislation are needed. This means further reduction of pollutant emissions that reach water bodies, improving the capacity of ecosystems such as wetlands to retain pollutants and purify water, and eliminating differences in the implementation

30 Water scarcity means that the water exploitation index plus (WEI+), which is a measure of water consumption as a percentage of renewable freshwater resources available, is above 20 %.

31 European Environment Agency (2023b).

32 Maes et al. (2020).

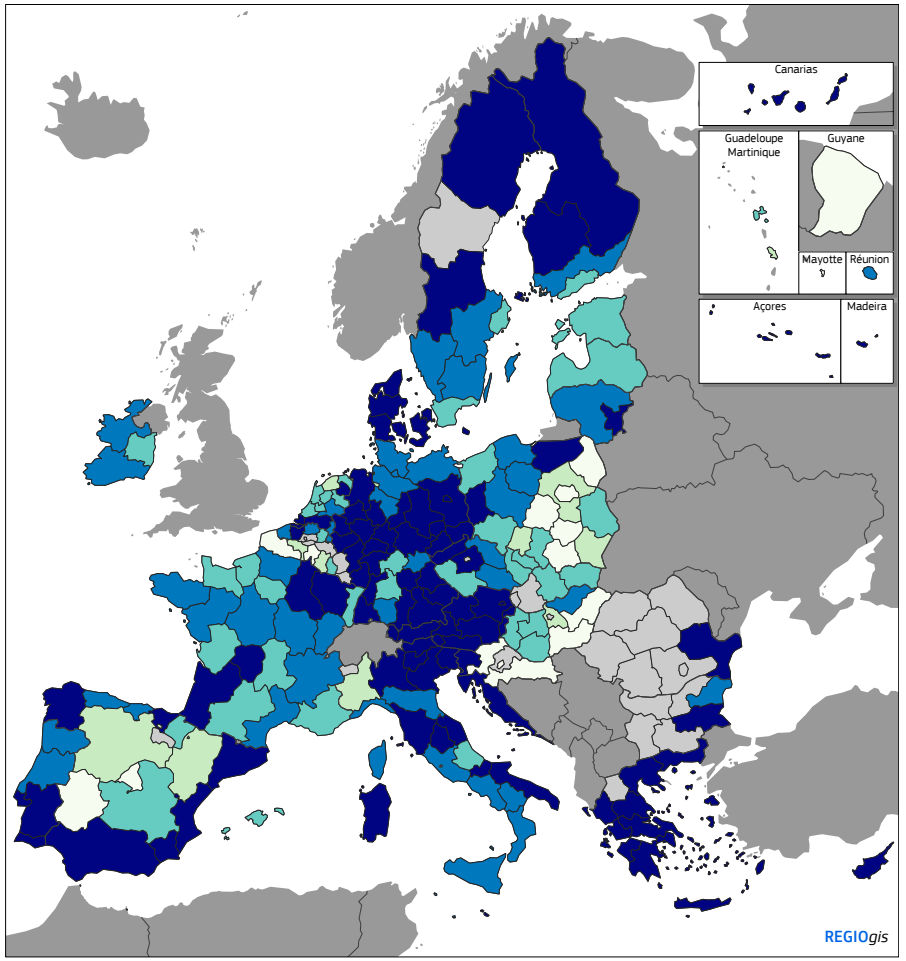


Map 4.8 Urban wastewater receiving more stringent treatment in NUTS 3 regions, 2020

% of generated load
- < 30
- 30 – 50
- 50 – 75
- 75 – 85
- 85 – 95
- >= 95
- no data

EU-27 = 85.5
Source: DG REGIO based on EEA data.

0 500 km



Map 4.9 Bathing water quality in NUTS 2 regions, 2022

% of stations with excellent quality
- <= 40.0
- 40.1 – 60.0
- 60.1 – 80.0
- 80.1 – 90.0
- > 90.0
- no data

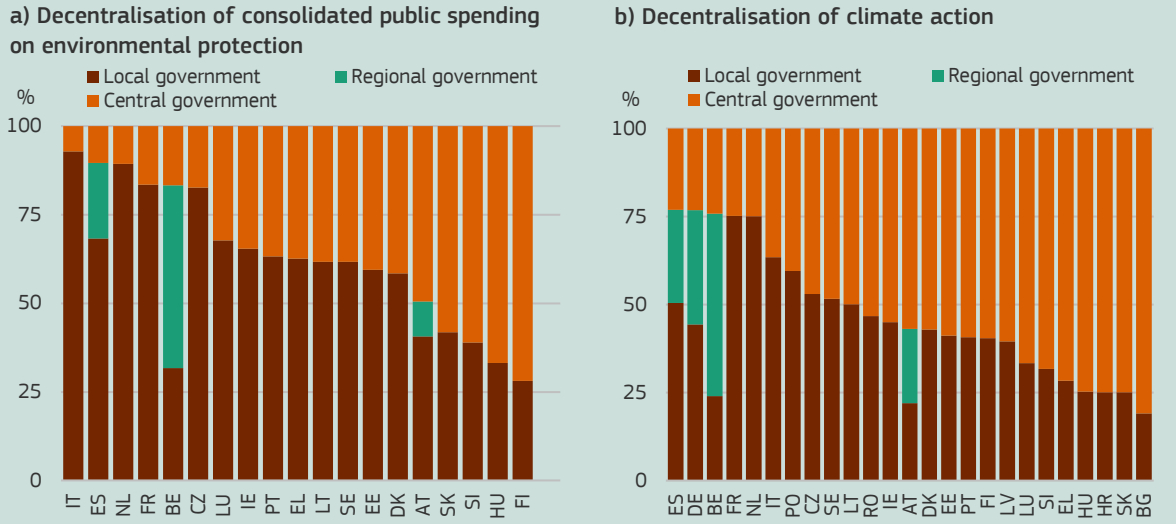
Sampling stations with excellent quality score, in regions with at least five stations.
Source: DG REGIO based on EEA data.

0 500 km

Box 4.4 Decentralisation of public spending on the green transition

Climate and environmental targets are commonly set at EU or national level, but sub-national governments are responsible for managing the green transition. The OECD has recently analysed fiscal federalism in respect of the ecological transition by collecting data on public spending on environmental protection and climate action by governance level[1]. Local authorities are largely responsible for public spending on environmental protection, particularly on waste and wastewater management. They are also responsible for a large share of public climate expenditure, though to a lesser extent. Sub-national governments in the EU accounted in 2019 for 66 % of climate-related public expenditure (1.7 % of GDP), but they face challenges, particularly smaller ones, in aligning with international green agendas because of capacity and political constraints. While ecological fiscal transfers offer a potential solution by linking grants to environmental protection, their use is limited. Local governments, especially municipalities, also have a key role in galvanising public support for ecological transition policies through participatory processes.

Figure 4.9 Share of public spending on environmental protection (left) and climate action (right) by governance level for a sample of Member States, 2022



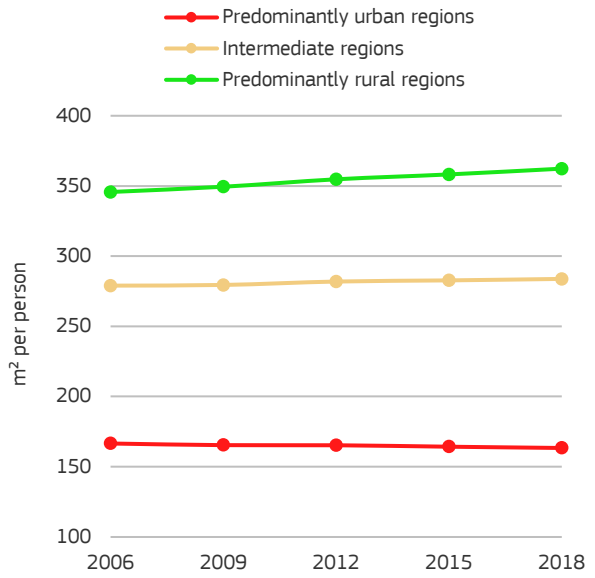
Note: Environmental protection includes wastewater treatment, waste management, pollution abatement and protection of biodiversity and landscape.
Source: OECD.

1 Dougherty and Montes Nebreda (2023).

of the Urban Wastewater Treatment Directive. In the EU, 93.5 % of urban wastewater receives secondary treatment and 85 % more stringent treatment. More investment in wastewater treatment along with reforms, good governance and sufficient administrative capacity remain necessary in many regions across the EU to avoid, in particular, overflows of sewage during periods of heavy rain (Map 4.8).

Continued efforts to improve water quality extend to bathing water as well. Water recreation is an important outdoor activity for many Europeans and hotter weather as a result of global warming is likely to increase the demand for safe water to bathe in, particularly in cities during the summer. Maintaining and increasing the number of places to bathe might, therefore, become an essential component of a climate adaptation strategy.

Figure 4.10 Built-up area trends in urban, intermediate and rural regions, 2006–2018



Source: EEA.

Of 21 551 bathing water sites in the EU in 2022, 85 % were assessed as being of excellent quality. In 20 regions, mainly in Austria, Greece and Cyprus, all sites were of excellent quality (Map 4.9). In several regions in Hungary, Slovakia and Poland, this was the case for under 60 % of sites, but the minimum water quality requirement was met almost everywhere. Two thirds of the sampling stations, however, are in coastal areas, which typically have better water quality than sites inland because of the more frequent renewal and greater self-purification capacity of water around the coasts[33].

3.3 Increasing soil-sealing and soil degradation

Population and economic growth increases demand for housing, infrastructure, and services. Growing built-up areas cover the soil with impervious surfaces, called soil-sealing, which is an important cause of soil degradation in the EU. Soil-sealing often affects fertile agricultural land, puts biodiversity at risk, and increases the risk of flooding and water scarcity. In places where the area of sealed soil expands faster than population, cities can spawl into the countryside. Sustainable land-use planning can minimise these impacts.

The extent of sealed soil is measured by mapping imperviousness, which has been monitored since 2006 by the Copernicus land monitoring service[34]. In 2018, the latest year for which data are available, the total impervious surface area of the EU was 111 895 square kilometres (km^2) or 252 square metres per person, 3.4 % up from 2006 (see Map 4.10, which shows in dark brown the regions where soil-sealing increased by more than the EU average over the 12 years, as well as the regions most affected by soil degradation and so where rehabilitation is most needed).

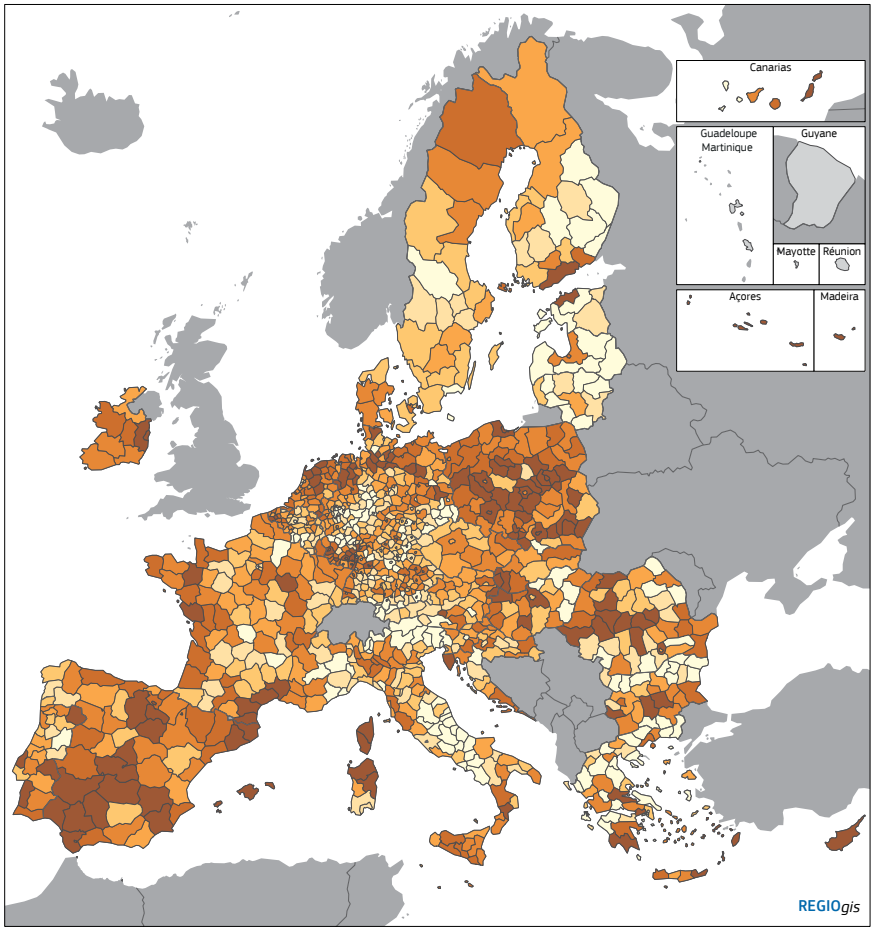
Land in rural NUTS 3 regions areas is less efficiently used for development than in urban regions, in the sense that it involves a larger impervious area per person (Figure 4.10). In predominantly rural regions, impervious land per person amounted to an average of 362 square metres per person, an increase of 4.8 % from 2006. Impervious land per person also increased in intermediate regions, while in predominantly urban regions, where it is less than half that in rural ones, it declined. Urban areas tend to have taller, more densely concentrated buildings and less land used for roads per person, meaning that land is used more efficiently than in other regions.

Most of the increase in impervious area between 2006 and 2018, 1 655 km^2, occurred in intermediate regions, while in rural regions, it increased by 1 002 km^2. As noted above, increasing soil-sealing, especially in rural areas, impairs the natural ability of soil to absorb and store rainwater. As a result, rainfall is more quickly converted into surface runoff, leading to rapid water flow that can overwhelm drainage systems and cause flooding. At the same time, the reduced infiltration of rainwater into the soil impairs the recharge of groundwater and can lead to water scarcity. To remedy this, land use needs to be made more efficient through better regulation, nature-based solutions (such as permeable pavements, green roofs and green urban infrastructure) and natural drainage systems (such as streams, rivers and wetlands) preserved and

33 European Environment Agency (2023c).

34 The Copernicus land monitoring service is one of six services provided by Copernicus, which is part of the EU space programme.

Map 4.10 Change in imperviousness and soil degradation processes in NUTS 3 regions



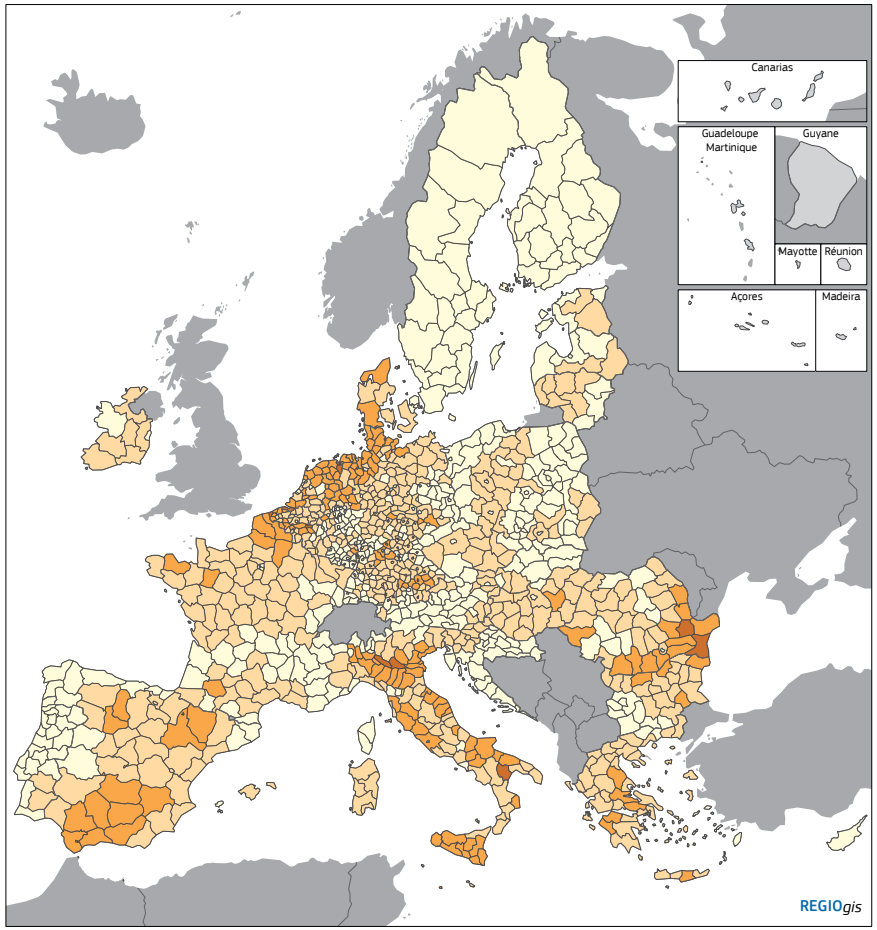
Change in imperviousness, 2006-2018

Total % change

- <= 1.5
- 1.5 – 2.0
- 2.0 – 2.5
- 2.5 – 3.0
- 3.0 – 4.0
- 4.0 – 5.0
- > 5.0
- no data

EU-27 = 3.4
Source: DG REGIO based on EEA harmonised imperviousness time series.

0 500 km



Average number of soil degradation processes

Number

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

Source: JRC.

0 500 km

restored in upstream areas. The latter play a crucial role in intercepting and dispersing surface run-off, preventing flooding and replenishing groundwater.

Next to soil-sealing, soil is also degraded through erosion, excessive use of nutrients, heavy-metal contamination and the loss of its biodiversity and organic carbon, which are more widespread.

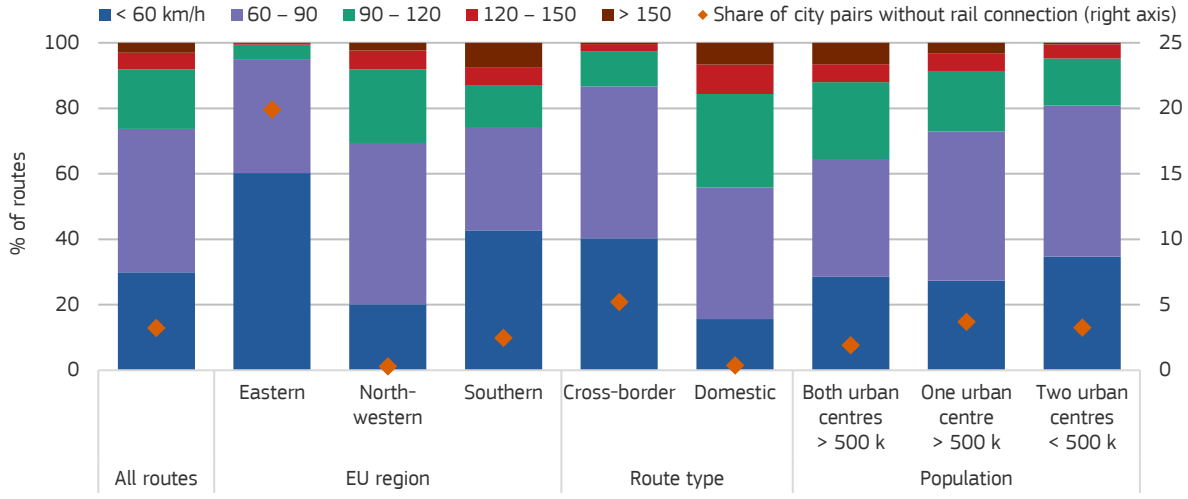
4. Shift towards climate-neutral transport

Transport-related GHG emissions have continued to rise in the EU (as noted in Section 2 above). In 1 in 3 NUTS 2 regions, transport is currently the largest emitter of GHGs. The main options to decarbonise transport are modal shift, for example to rail or active modes such as biking or walking, technological and operational measures to improve energy-efficiency, and a transition to zero- and low- emission energy carriers (i.e. electricity, advanced liquid biofuels and biogas, e-fuels and hydrogen). These options would often also have co-benefits for air quality.

4.1 Rail speed between EU cities[35]

In 2021, the Commission proposed an action plan to boost long-distance and cross-border passenger rail services. This built on efforts by Member States to make connections between cities faster by managing capacity better, co-ordinating timetabling, sharing rolling stock and improving infrastructure to stimulate new train services, including at night[36]. High-speed trains accounted for 31 % of total passenger-kilometres travelled by rail in the EU in 2019, in France and Spain close to 60 %[37]. However, over half of Member States do not have any high-speed railway lines at all. This section looks at the ability of high-speed rail to compete with short-haul flights in terms of travel time. It examines the speed of fast rail connections between large EU cities and compares this with the time taken by air. It focuses on the 1 356 connections between EU cities that are less than 500 km apart and have at least 200 000 inhabitants or are national capitals.

Figure 4.11 Speed of rail connections between urban centres, including by broad geographical area, population size, and route type, 2019

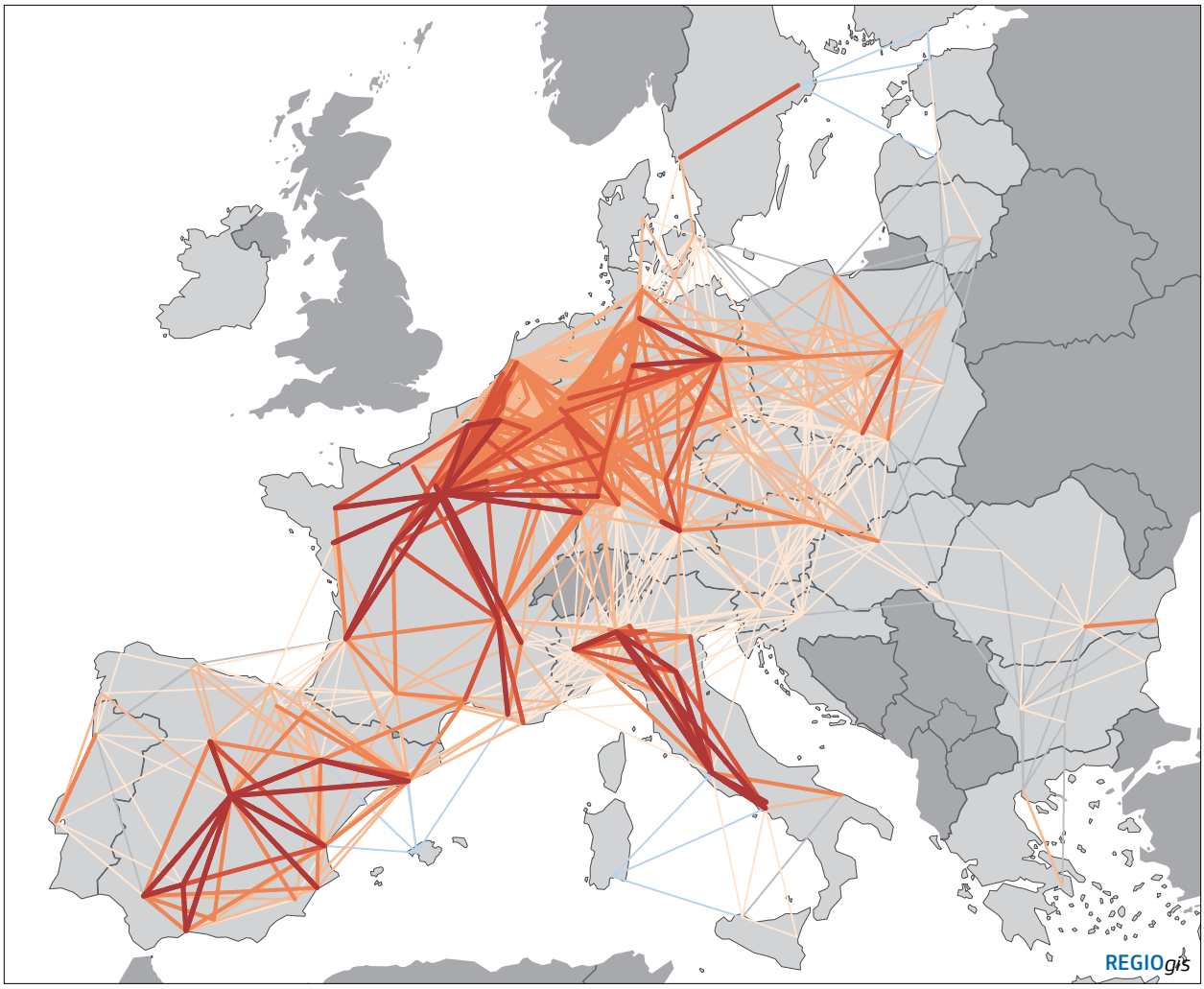


Note: Only pairs of urban centres with at least 200 000 inhabitants located within 500 km of each other are included.
Source: DG REGIO.

35 This section focuses on travel time and does not consider other aspects relevant to transport mode choices such as prices, comfort and safety Subsections 4.1-4.3 are largely based on Brons et al. (2023).

36 European Commission (2020).

37 This figure relates to all high-speed trains including tilting trains capable of travelling at 200 km/h, which do not necessarily require high-speed railway lines.



Map 4.11 Speed of rail connections between major urban centres in the EU, 2019

km/h

- < 60
- 60 – 90
- 90 – 120
- 120 – 150
- >= 150
- no connection within 10 hours
- overseas*

Speeds are based on optimal travel time on a weekday relative to the straight-line distance. Only urban centres located within 500 km from each other were considered. In addition, each pair of urban centres must contain an urban centre that has more than 500 000 inhabitants (or represents the national capital) and the other urban centre has to have at least 200 000 inhabitants.
*Overseas: links between city-pairs involving a sea crossing where neither a fixed railway link nor a train ferry is available.
Sources: DG REGIO, based on data from the International Union of Railways (UIC); national and regional rail operators; and JRC.

0 500 km

For most of the connections concerned, the straight-line speed[38] of the fastest train service[39] is low (Map 4.11). On only 3 % of the routes does the speed exceed 150 km per hour (km/h) (Figure 4.11). The share is largest in the southern EU (7.6 %), where both Italy and Spain have a well developed high-speed rail network. In the north-western EU, the number of high-speed connections, which are mainly in France and Germany, is similar but their share is smaller. Because of higher population density, the rail network is denser, consisting of more short-distance connections where rail speeds are lower. Nevertheless, the north-western EU has the largest share of rail connections faster than 90 km/h, and only a few city-pairs without a rail connection. The rail network is less developed in the eastern EU, with no connections with speeds above 150 km/h and a rail speed below 60 km/h on 60 % of routes, and with 1 out 5 five pairs of cities with at least 200 000 inhabitants without a rail connection.

Despite some progress towards technical inter-operability, rail travel across EU borders is still hindered by many obstacles. There are numerous gaps where national railways are not properly connected to each other[40]. Over 5 % of cross-border city-pairs lack a rail connection as against only 0.3 % of those in the same country[41]. Rail speeds on cross-border routes also tend to be lower than on domestic routes, around 40 % of cross-border routes having speeds of below 60 km/h compared with only 16 % on domestic routes. Moreover, on only 0.4 % of cross-border routes do rail speeds exceed 150 km/h.

The share of routes with speeds above 150 km/h is larger for those that connect large cities with populations of over 500 000 (7 %) than for routes between cities with populations of 200 000 to 500 000 (1 %) or between large and small cities (3 %). The difference is similar for the share of connections with speeds of over 90 km/h (36 % between large city-pairs and 19 % between small ones).

4.2 Comparing travel time of rail and flights between EU cities

Of the 1 365 connections between city-pairs, 297 are served by a direct flight[42]. Comparing the travel time of rail and air trips for each of these routes, for 68 of them the total travel time[43] by rail is shorter than that by air. The routes concerned are mainly between cities in the Netherlands, Belgium, Germany and France, both domestic and international (Map 4.12). While most connect capital cities, they also include connections between other cities. In addition, on some of the domestic routes in Spain, Italy and Poland, rail is faster, but these are all between the capital city and other major cities in the country. On 17 of the routes where rail is faster, the travel time advantage is as much as an hour or more. These routes are mainly in and between the Netherlands, Belgium, Germany and France, but they also include three domestic routes in Italy.

4.3 Why are some trips faster by rail than by air?

Rail trips are more likely to outperform flights on shorter-distance routes (Figure 4.13a). Air trips are, on average, faster than rail for distances of over 300 km, though there are still many routes over this distance where the reverse is the case.

38 The straight-line speed used here is defined as the travel time between stations divided by the straight-line distance. Straight-line speeds are determined not only by the rail operating speed, but also by the time spent in transfers, and any detours needed. As such, straight-line speed is always lower than operating speed. Note that for the smaller set of routes considered in Section 3, information on the actual distances by rail and the time spent in transfer could be obtained, which enabled the actual train operating speeds and the other two components of straight-line speed to be disentangled (see also footnote 19).

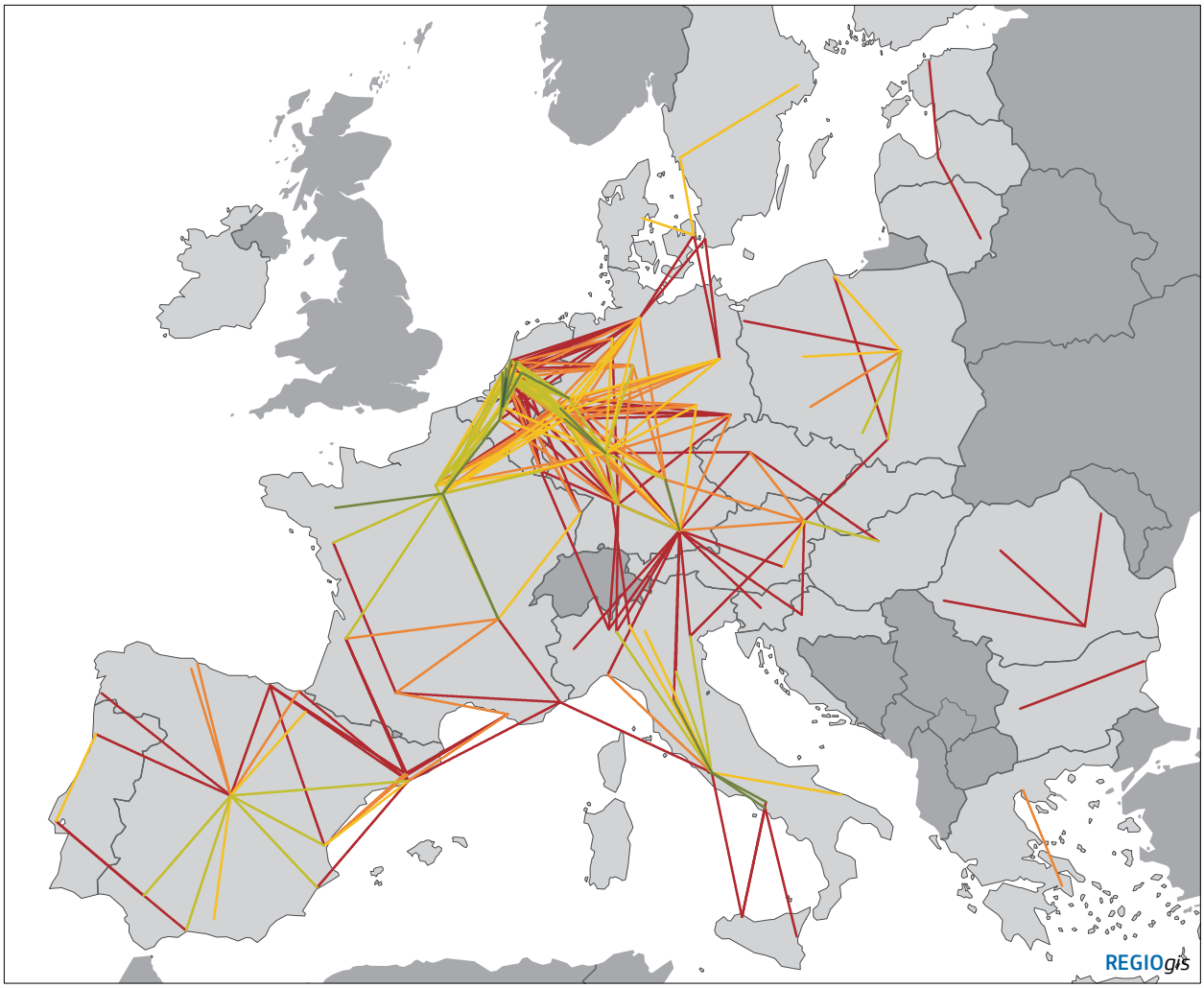
39 The fastest service available for departure during a weekday between 6:00 and 20:00 in 2019.

40 Sippel et al. (2018).

41 It should be noted that these routes, whether cross-border or domestic, may be served by long-distance bus connections, which could be a reason for there being no rail connection.

42 Based on SABRE airline data, these routes involve 57 million passenger trips a year. The difference compared with the 102 million trips from Eurostat data is inter alia because the SABRE data apply a minimum city size and a minimum number of flights and passengers per day. Note that some of the passengers will be connecting to another flight.

43 The total travel time includes the out-of-vehicle time components (See Box 4.5).



Map 4.12 Travel time of a rail-based trip compared with a flight-based trip, 2019

Difference in hours

- <= -2
- -2 – -1
- -1 – 0
- 0 – 1
- 1 – 2
- > 2

Note: Negative values indicate that the rail-based trip is faster than the flight-based trip.
Sources: DG REGIO (based on data from UIC), national and regional rail operators, JRC, and Eurostat.

0 500 km

This indicates that rail has the potential to compete with aviation on relatively long distances, providing that a sufficient train operating speed can be achieved (Figure 4.13b).

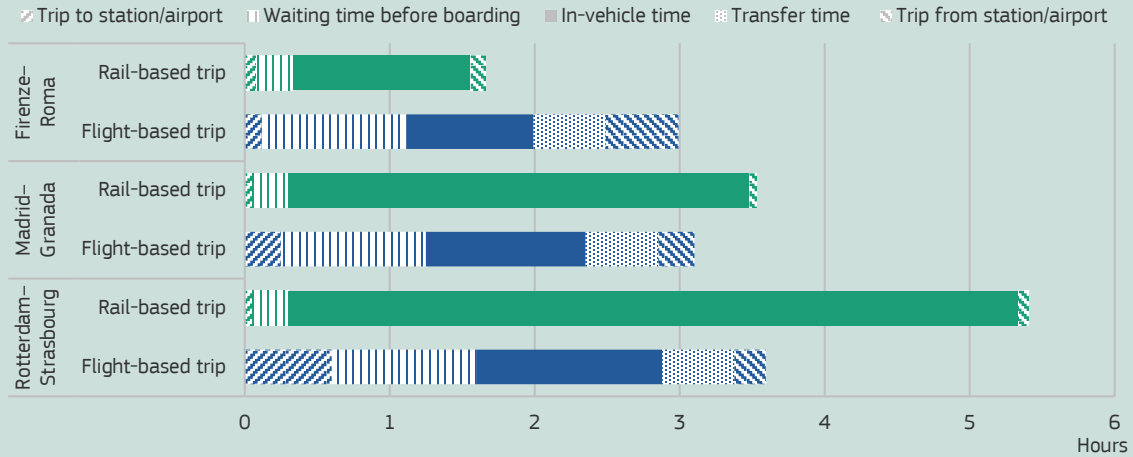
The total transfer time remains under an hour on almost all routes, with a few exceptions where transfer times are between one and two and a half hours (Figure 4.14a). As expected, trips are slower when the transfer times are longer. On all routes

Box 4.5 How can rail be faster than a flight?

Comparing the travel time of rail and air trips needs to go beyond time spent in a train or a plane to take account of the time needed to get to the airport or rail station, waiting times and actual departure and arrival times. People flying spend less time in a plane than rail passengers spend in a train[1], but they spend much more time travelling to and from the airport and in the airport itself. Trains can usually be boarded quickly and the train stations tend to be better connected to city centres than airports. This 'out-of-vehicle' time is either fixed (waiting/boarding) or otherwise independent of the distance of the trip (access to and from the station/airport), which means that rail tends to be faster on shorter distance trips.

This is illustrated in Figure 4.12, which compares the composition of total travel time of rail and air trips, including out-of-vehicle time[2], on three routes that are representative of different journey distances. For rail trips, the major part of travel time is in the train, so the total trip time varies closely with the distance travelled. For air trips, the in-plane time is actually shorter than the other elements, and the total trip time varies much less with the distance. On the shortest of the three routes, between Florence and Rome, the time taken by rail is shorter than by air, mainly because of the long out-of-plane time of the latter. On the medium-distance route between Madrid and Granada, though traveling by rail takes longer than by air, the difference is small. On the longest route between Rotterdam and Strasbourg, travelling by air clearly takes less time because of the considerably longer time spent in the train than in the plane.

Figure 4.12 Composition of city-to-city travel time for rail and air trips on selected routes (number of hours), 2019

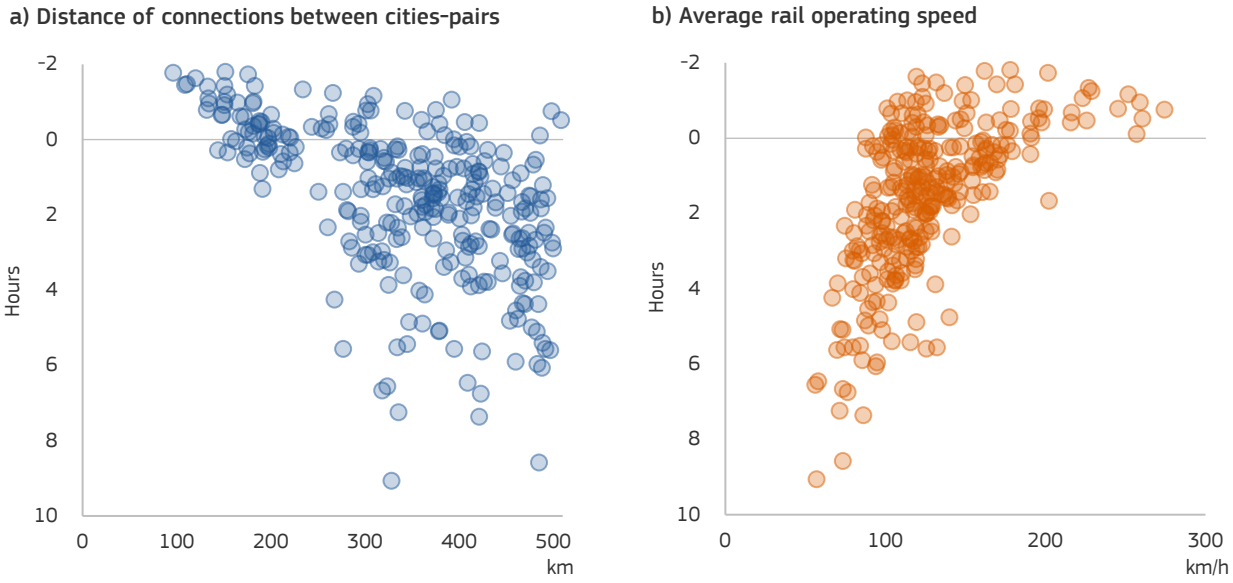


Note: Routes are selected to illustrate trips of different distances. Specifically, they are chosen as the routes closest to the bottom quintile, median and top quintile of the distribution of distances between urban centres. The in-vehicle time includes the taxiing time.
Source: DG REGIO and JRC based on SABRE airline data.

1 The only exception in the dataset is the trip by air from Rotterdam to Antwerp, the in-vehicle component of which consists of a flight between Amsterdam and Brussels.

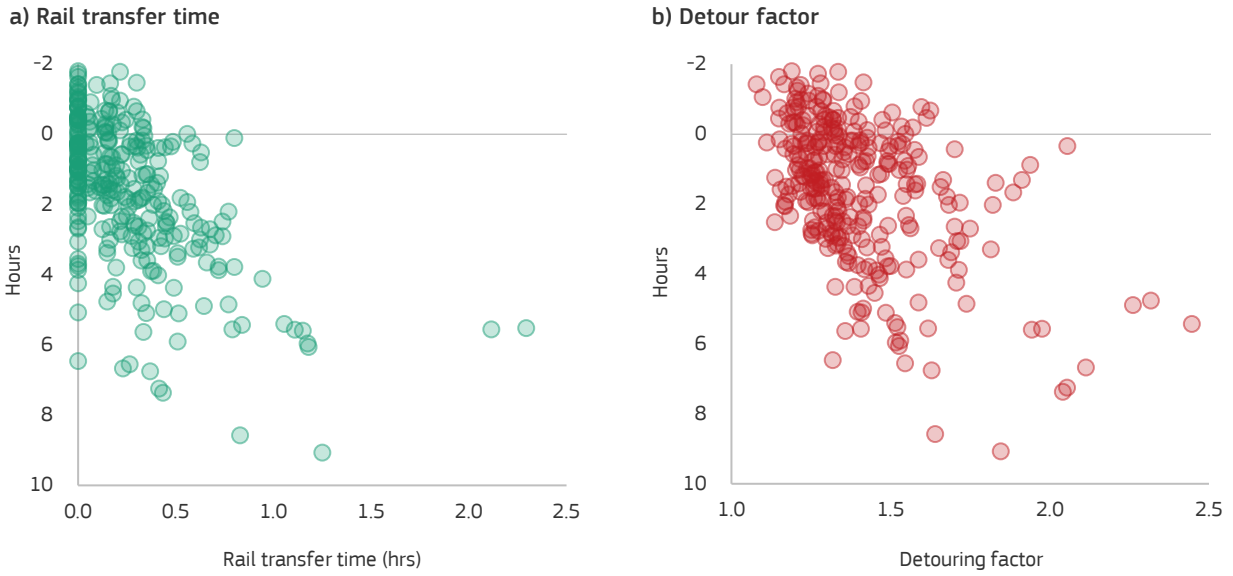
2 The assumptions used for the present analysis are as follows. Time before boarding the first train – 15 minutes; check-in and boarding at the departure airport – 60 minutes; taxiing is included in the flight time; transfer time at the arrival airport (this includes the time needed to disembark from the plane, wait for luggage to arrive and transfer to the location where the transport connection to the city centre departs) – 30 minutes. A flight speed of 500 km/h is assumed. If more than one connection between airports is available linking the same urban centres, the travel time for the connection with the highest number of passengers is taken.

Figure 4.13 Difference in travel time by rail as opposed to air according to distance between city-pairs (number of hours) and average rail operating speeds, 2019



Note: Negative values on the vertical axis indicate that the total travel time by rail is less than that by air.
Source: DG REGIO and JRC based on SABRE airline data.

Figure 4.14 Difference in travel time by rail as opposed to air according to rail transfer time (hours) and the detour factor, 2019



Note: Negative values on the vertical axis indicate that the total travel time by rail is less than that by air.
Source: DG REGIO and JRC based on SABRE airline data.

Table 4.2 Rail operating speed, transfer time and the detour factor of rail trips, 2019

	Rail operating speed (km/h)	Transfer time (hrs)	Transfer time (% of rail trip)	Detour factor
Cross-border routes	117	0.36	7.6	1.42
Domestic routes	138	0.12	2.5	1.37
All routes	126	0.25	5.3	1.40

Source: DG REGIO.

where the transfer time exceeds 30 minutes, rail travel is slower than air travel. The rail distance between city-pairs can be a lot longer than the distance 'as the crow flies'. Higher values for the detour factor are associated with longer relative travel time for rail (Figure 4.14b).

On cross-border routes, travelling by rail tends to be slower than on domestic routes by some 20 km/h on average (Table 4.2). The reasons include a slightly larger detour factor, but mainly the longer transfer time of 3 times more, on average, than on domestic routes.

Accordingly, improvements in rail connections could focus on cross-border routes to reduce journey times. The same goes for routes in eastern Member States where train speeds are lower than in other parts of the EU and there are more missing connections. In north-western and southern Member States, almost all cities are connected and rail trips tend to be faster. Nevertheless, for many routes, rail operating speeds are still too low to offer an appealing alternative to air. Increasing these could persuade more people to take the train and so reduce the number of flights.

4.4 Access to electric vehicle recharging points has increased but lags in rural regions

A transition to zero- and low-emission energy carriers (notably electricity) is needed to reduce dependence on oil and the environmental impact of road transport. This requires the development of an appropriate recharging and refuelling infrastructure network for vehicles using zero- and low-emission energy carriers, in particular a network of electricity charging points, which is sufficiently dense to make access easy. This sub-section examines the current availability of such points in the EU and the number which are 'nearby' defined as within a drive of 10 km.

In 2022, an average of 288 charging points could be reached within 10 km of driving in the EU, up from 122 in 2020, an increase of 135 % in two years (Table 4.3). These were clustered in an average of 87 charging pools[44] as against 46 two years earlier, the average number of charging points per pool increasing from 2.7 to 3.3. As a result, the average distance to the nearest charging point fell from 6.9 km in 2020 to 4.1 km in 2022, or by 40 %.

The charging points, however, are by no means evenly distribution across the EU. While most of the regions in the Netherlands, Flanders and Luxembourg have good access to charging points, as do various regions in Sweden, Germany, Austria and Spain (Map 4.13), this is far from the case in almost all the eastern Member States and Ireland. There are large variations between regions within some countries, such as Belgium and Italy, where the north is better served than the south, and Spain, where coastal regions have better access than those inland. Across the EU, capital city regions and other regions with large cities tend, in general, to be better endowed with charging points than others.

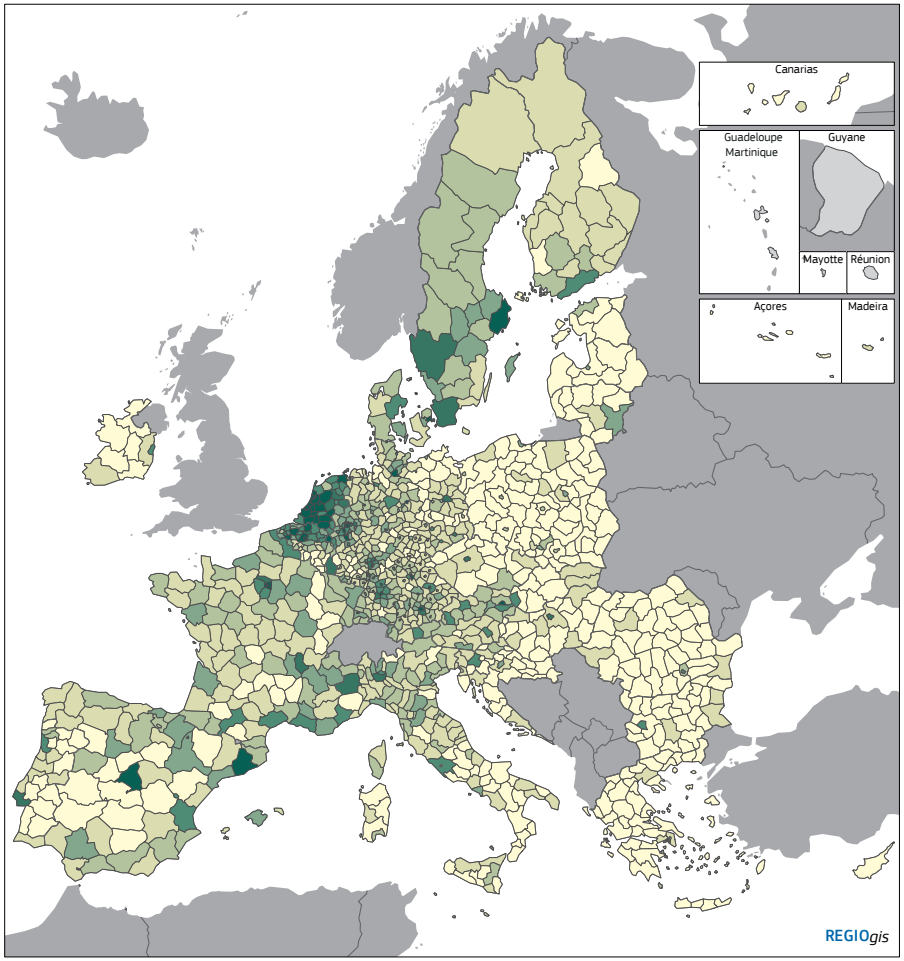
The number of charging points obviously affects the average distance to the nearest one (Map 4.14). This is less than 1 km in Luxembourg,

Table 4.3 Availability of nearby (within 10 km) electric vehicle recharging points and pools in the EU, 2020 and 2022

	Recharging points	Recharging pools	Recharging points per pool	Distance to nearest (km)
2020	122	46	2.7	6.9
2022	288	87	3.3	4.1
Increase 2020–2022	135 %	89 %	24 %	-40 %

Source: DG REGIO and JRC based on data from European Alternative Fuels Observatory (EAFO), Eurostat and TomTom.

44 A recharging pool is a structure in a specific location where one or more recharging points are available (see also: https://alternative-fuels-observatory.ec.europa.eu/general-information/recharging-systems).



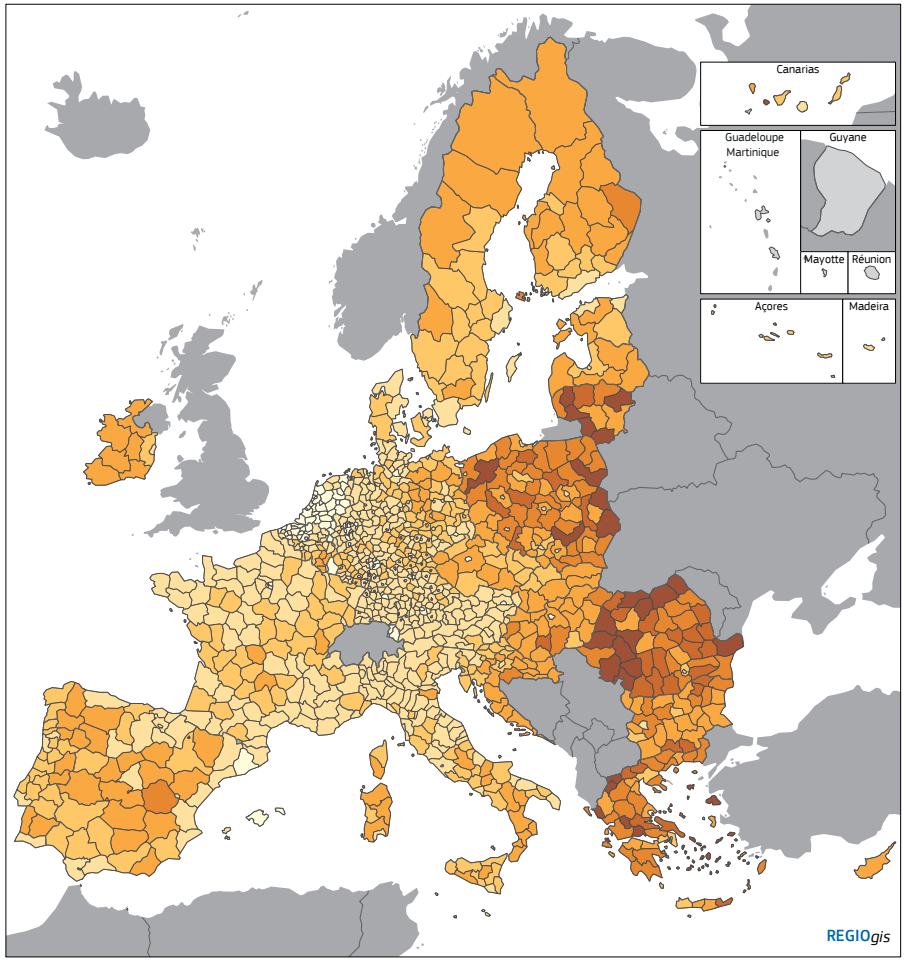
Map 4.13 Electric vehicle charging points within a 10-km drive, 2022

Number of points

< 20	200 – 400
20 – 50	400 – 600
50 – 100	>= 600
100 – 200	no data

EU-27 = 287.8
Population-weighted average of figures by 1 km² grid cell.
Location data as of 31 December 2022.
Source: JRC based on data from EAFO, Eurostat and TomTom.

0 500 km



Map 4.14 Distance to the nearest electric vehicles charging point, 2022

km

< 1	10 – 15
1 – 3	15 – 20
3 – 5	>= 20
5 – 10	no data

EU-27 = 4.1
Population-weighted average distance by road of figures by 1 km² grid cell.
Location data as of 31 December 2022.
Source: JRC based on data from EAFO, Eurostat and TomTom.

0 500 km

Table 4.4 Availability of nearby (within 10 km) electric vehicle recharging points and pools by urban-rural typology, 2022

	Recharging points	Recharging pools	Recharging points per pool	Distance to nearest (km)
EU-27	**288**	**86.6**	**3.3**	**4.1**
Urban	620	182.8	3.4	1.6
Intermediate	82	27.5	3.0	4.4
Rural	23	8.4	2.7	8.4

Source: DG REGIO and JRC based on data from EAFO, Eurostat and TomTom.

most regions in the Netherlands, and some in Belgium and Germany, as well as in a number of capital city regions. At the other extreme, the distance to the nearest charging point averages over 20 km in many regions in Poland, Romania, Greece and Lithuania, which is likely to limit the take-up of electric vehicles.

In urban regions across the EU, there was an average of 620 charging points within 10 km in 2022, over twice the EU average, with the average in intermediate regions, and more especially rural ones, being much lower than the EU average (Table 4.4). The average number of charging points per pool (3.4) was also larger than in intermediate (3.0) and rural regions (2.7), while in rural regions the average distance to the nearest charging station was 8.4 km, 5 times more than in urban regions.

The greater availability of charging points in urban regions reflects the higher demand from a larger population living more closely together. However, the difference in availability is more than demographic differences imply, indicating that this represents less of a constraint on owning an electric vehicle in urban regions than in others.

4.5 Hydrogen refuelling points are currently concentrated in a small part of the EU

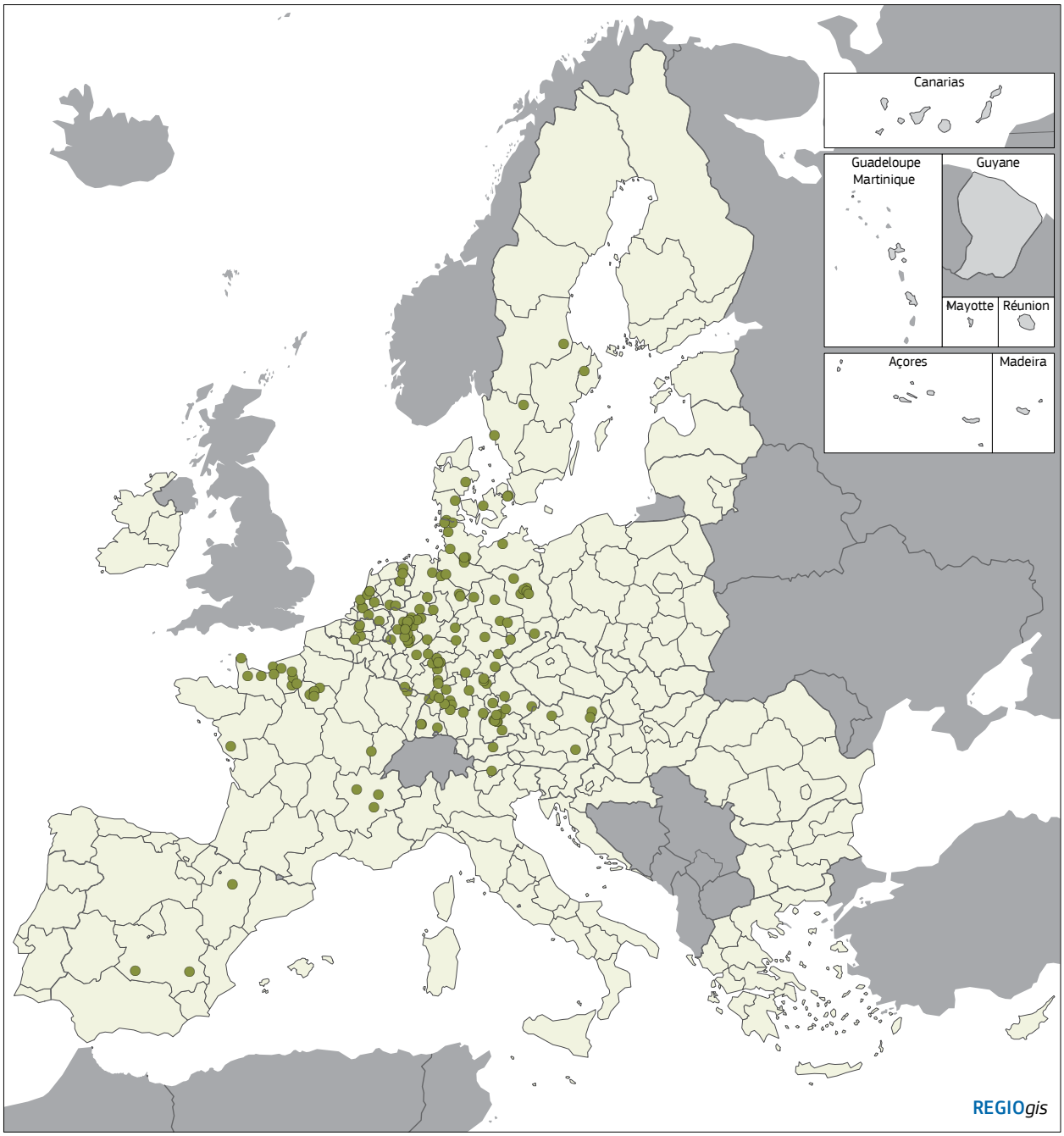
Hydrogen made from renewable energy is also a source of energy with potential to power vehicles in a clean and efficient way. It is envisaged as a significant part of the future fuel mix for transport, at the same time enhancing energy security and reducing dependence on oil, GHG emissions and air pollution[45]. Hydrogen refuelling points currently cover only a small part of the EU, being concentrated in north-western Member States, with 63 % of them located in Germany and another 25 % in France and the Netherlands and none in eastern Member States (Map 4.15). The importance of hydrogen for freight transport is illustrated by the fact that many of the refuelling points are located along inland waterways connecting the large ports of Rotterdam, Le Havre and Antwerp with major cities (Paris, Brussels) and conurbations (the Ruhrgebiet).

5. The challenges of a just transition

Achieving a just and equitable climate transition is a critical challenge. While the shift to sustainability offers the potential for new jobs and economic growth, there are also significant potential costs, particularly for workers in fossil fuel industries and low-income households.

The transition away from fossil fuels will necessitate restructuring in some sectors with inevitable job losses, potentially affecting workers (and their families) with limited skills or opportunities to relocate. In addition, the costs associated with implementing climate-friendly technologies and policies could affect lower-income households disproportionately, exacerbating existing social inequalities, if no access to support to implement energy-efficient solutions is provided to them.

45 https://transport.ec.europa.eu/transport-themes/clean-transport/clean-and-energy-efficient-vehicles/green-propulsion-transport/hydrogen-and-fuels-cells-transport_en.



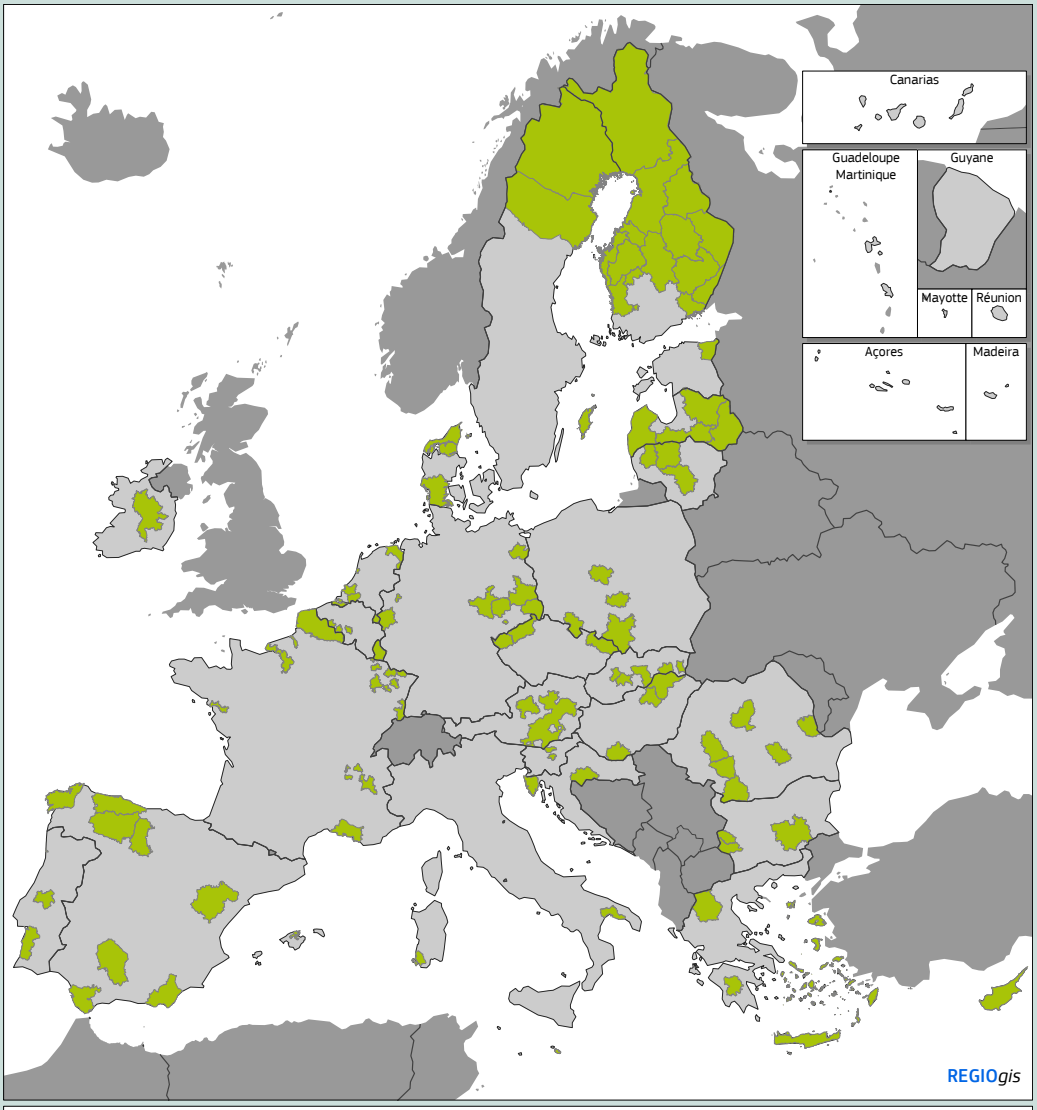
Map 4.15 Hydrogen refueling stations, 2023

- Refuelling stations

Situation in June 2023.
Source: EAFO.

0 500 km

Box 4.6 A just transition to climate neutrality



Map 4.16 JTF territories included in approved territorial just transition plans (Dec. 2023)

JTF territory included in approved territorial just transition plans

Sources: DG REGIO.

0 500 km

The Just Transition Fund (JTF) supports regions that rely on fossil fuels and high-emission industries in their green transition. The fund alleviates the socio-economic costs triggered by climate transition, supporting the economic diversification and reconversion of the territories that are highlighted in Map 4.16. Member States have identified these territories in their territorial just transition plans.

The JTF is one of the three pillars that make up the just transition mechanism. The other two pillars are a dedicated programme under 'InvestEU' and a public sector loan facility.

At the same time, the green transition also provides promising opportunities for job creation. By 2030, an estimated 2.5 million new high-quality jobs could emerge in the EU, particularly in renewable energy and other sustainable sectors[46], with workers having the chance to acquire new skills and to take up employment in the sectors concerned, as well as new employment opportunities for underrepresented groups such as women and young people through reskilling and upskilling.

To ensure a just transition, it is essential that policies are responsive to these changes, and measures are designed to realise the opportunities that arise. This is particularly important in less developed regions, which tend to be less prepared for the transition to a climate-neutral economy and are likely to have more difficulty in reaping the potential benefits. Therefore, the Commission provides support with the JTF (Box 4.6) to EU regions worst affected by the transition to climate neutrality. The JTF supports the economic diversification and reconversion of the territories concerned, as well as upskilling and reskilling of workers, investments in small and medium-sized enterprises, creation of new firms, research and innovation, environmental rehabilitation, clean energy, job-search assistance and transformation of existing carbon-intensive installations.

It is equally essential to prioritise social equity and provide support for workers affected and their households. Investing in retraining programmes through JTF support can help people acquire the skills to take up green economy jobs, while financial support can reduce the burden on low-income households and create a more equitable transition path.

5.1 Progress toward a just transition in fossil and energy-intensive industries

This section presents regional statistics on current employment in carbon-dependent or carbon-intensive sectors in the EU and identifies the areas and activities where the green transition is creating new jobs. It also assesses the territorial impact of extending the ETS to fuels for residential heating and transport. Coal and carbon-intensive regions in the EU that are identified as most severely affected by transition process, receive support from the JTF to support the diversification of their economies in the affected sectors.

Almost 340 000 people were directly and indirectly employed in the coal industry in the EU in 2018. The jobs concerned are highly concentrated, with 60 % in just seven regions (Śląskie and Łódzkie in Poland, Sud-Vest Oltenia in Romania, Yugoiztochen in Bulgaria, Severozápad in Czechia, Köln and Brandenburg in Germany, and Dytiki Makedonia in Greece) (Map 4.17). It is estimated that between 54 000 and 112 000 direct jobs could be lost by 2030[47].

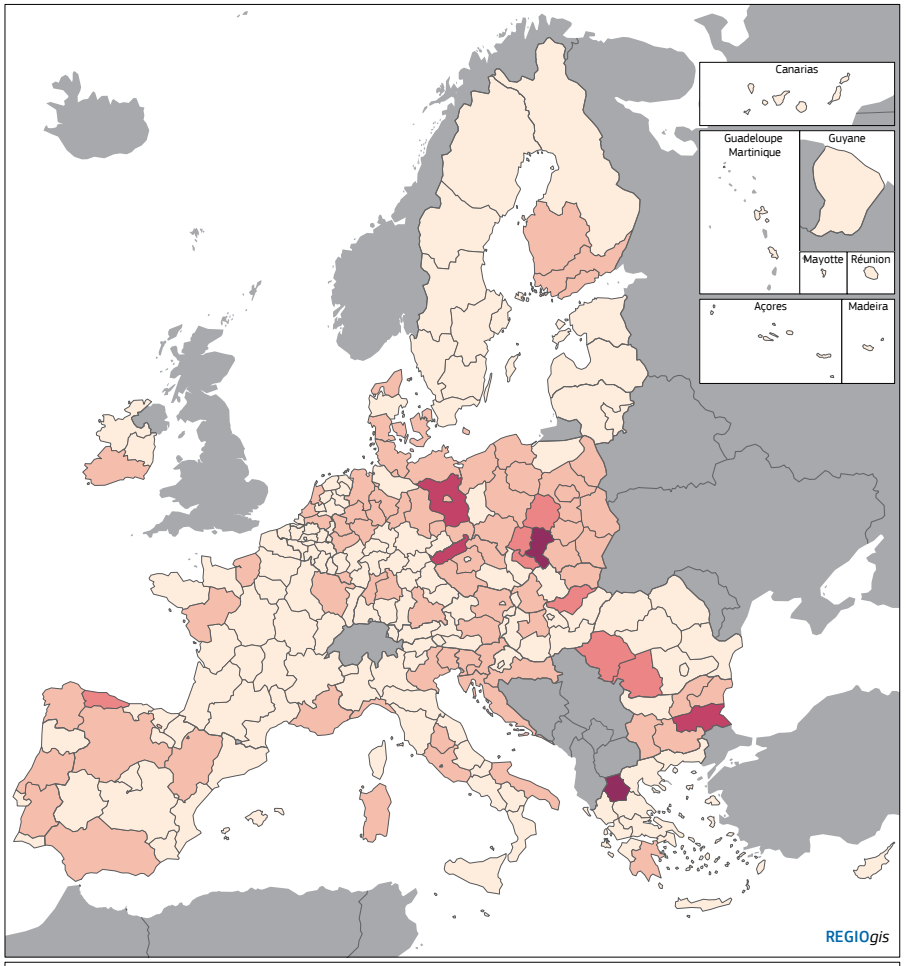
The peat and oil shale industries are smaller. The former is estimated to employ, directly and indirectly, just under 12 000 and the latter almost 7 000, all in Estonia, the only country in the EU with such an industry. Closing down these industries could have a significant impact on local and regional employment and will require economic restructuring.

More people work in carbon-intensive industries. In 2020, nearly 6 million people were employed in the car, steel, minerals, paper, chemicals, coke and petroleum sectors, 3 % of total employment in the EU. The main employment clusters in these sectors are in central Europe (Map 4.18).

The coal industry and carbon-intensive manufacturing face transformational challenges given the EU commitment to becoming climate-neutral by 2050. This means phasing out coal and shifting to low-carbon technologies, such as those based on hydrogen, and using carbon capture and storage where decarbonisation is not yet possible. It also means helping to mitigate the socio-economic and environmental impact of the transition on regions and the people living there. Case studies of fossil fuel phase-out (coalmining in the UK, oil refining in Croatia, and peat extraction in Finland) have shown that carbon-dependent industries are often deeply rooted in

46 Cedefop (2021).

47 Alves Dias et al. (2021).



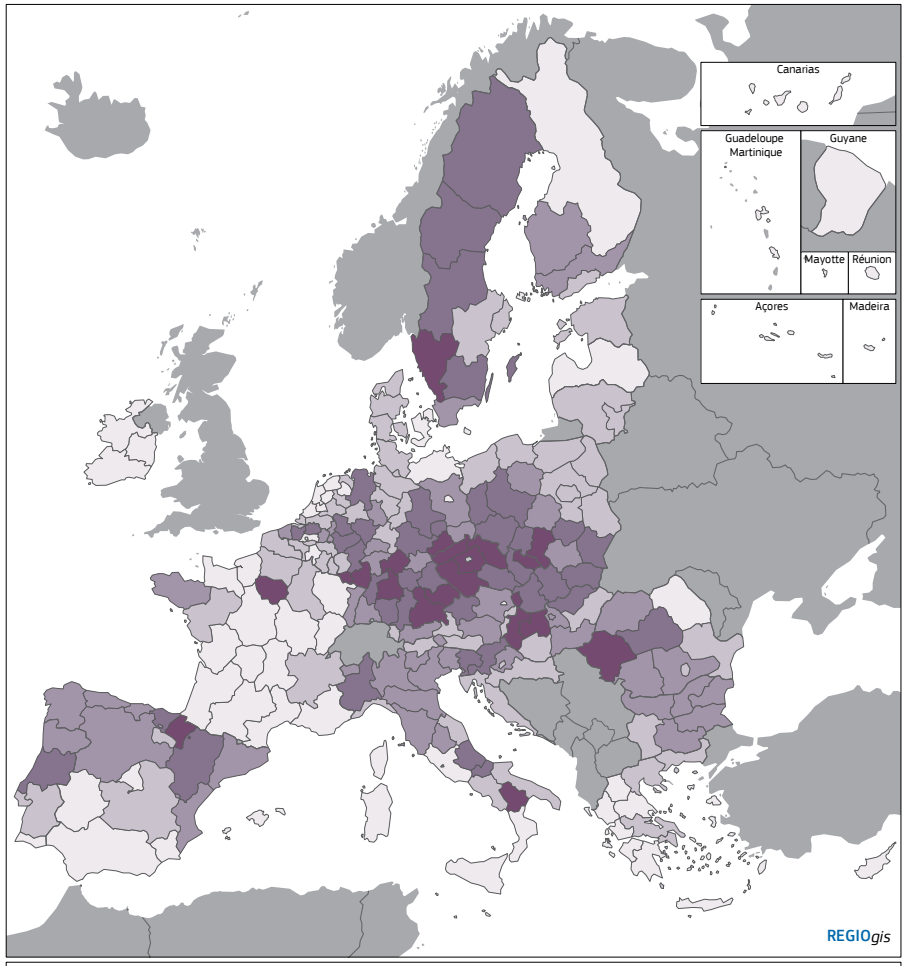
Map 4.17 Employment in the coal industry in NUTS 2 regions, 2018

% of total employment

- none
- <= 0.8
- 0.8 – 2.3
- 2.3 – 4.8
- > 4.8

Direct and indirect jobs in coalmining and coal-fired power plants.
Source: JRC.

0 500 km



Map 4.18 Employment in carbon-intensive manufacturing in NUTS 2 regions, 2020

% of total employment

- <= 1.2
- 1.2 – 2.4
- 2.4 – 3.9
- 3.9 – 6.1
- > 6.1

Direct employment in paper and pulp (NACE17), coke and refined petroleum products (NACE19), chemicals (NACE20), non-metallic minerals (NACE23), basic metals (NACE24), and motor vehicles (NACE29).
Source: Eurostat.

0 500 km

local culture and identity[48]. The industries are concentrated in a few places and job losses have been shown to have long-term adverse physical, mental and social effects on the people and communities concerned. Attempting to retrain the workers losing their jobs is insufficient. There needs to be long-term cohesive educational, financial and social support to ensure a just transition. The support involved needs to be early and targeted, with collaboration with existing local support networks and alignment of interests among key stakeholders. The case studies highlight the importance of place-based measures, centred on partnership.

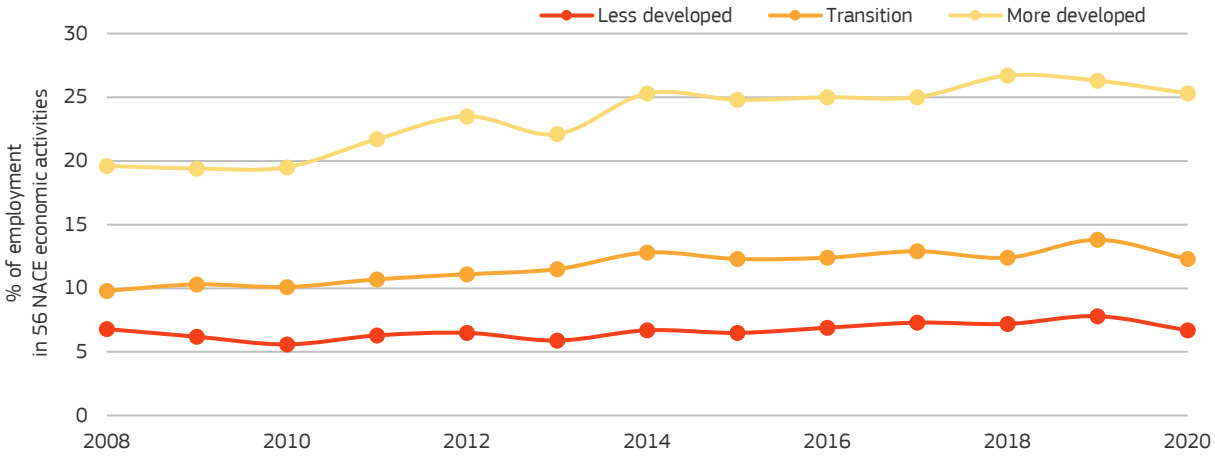
5.2 Competitiveness and sustainability of sectors in the climate and energy transition

The transition to a competitive green economy is underway, but the pace varies between regions. The regional competitive environmental sustainability indicator[49] has been developed to show the share of employment in 56 NACE (nomenclature of economic activities) sectors that are systematically more competitive and sustainable than the EU median (Map 4.19). Sectoral competitiveness is measured by labour productivity and sustainability by GHG emissions per worker. The indicator has been calculated for the years 2008–2020 and shows the shift in employment towards greener and more productive sectors over this period.

In 2019, the average region had 17 % of employment in sectors that were both more competitive and more sustainable than the EU median. The share was largest in southern Germany, northern Austria, southern Ireland, and southern Scandinavia, as well as in capital city regions. Between 2008 and 2020, the share increased by significantly more in more developed regions than in less developed or transition ones (Figure 4.15), widening the difference between them.

Econometric analysis suggests that the transition to more competitive and sustainable regional economies is positively associated with investment co-funded by the ERDF, CF and European Social Fund[50]. This is particularly true in respect of competitiveness and the restructuring towards higher value-added sectors, which is especially evident in less developed regions that receive most funding. Improvements in sustainability, however, are much

Figure 4.15 Trends in the regional competitive environmental sustainability indicator by category of region for Cohesion Policy, 2008–2020

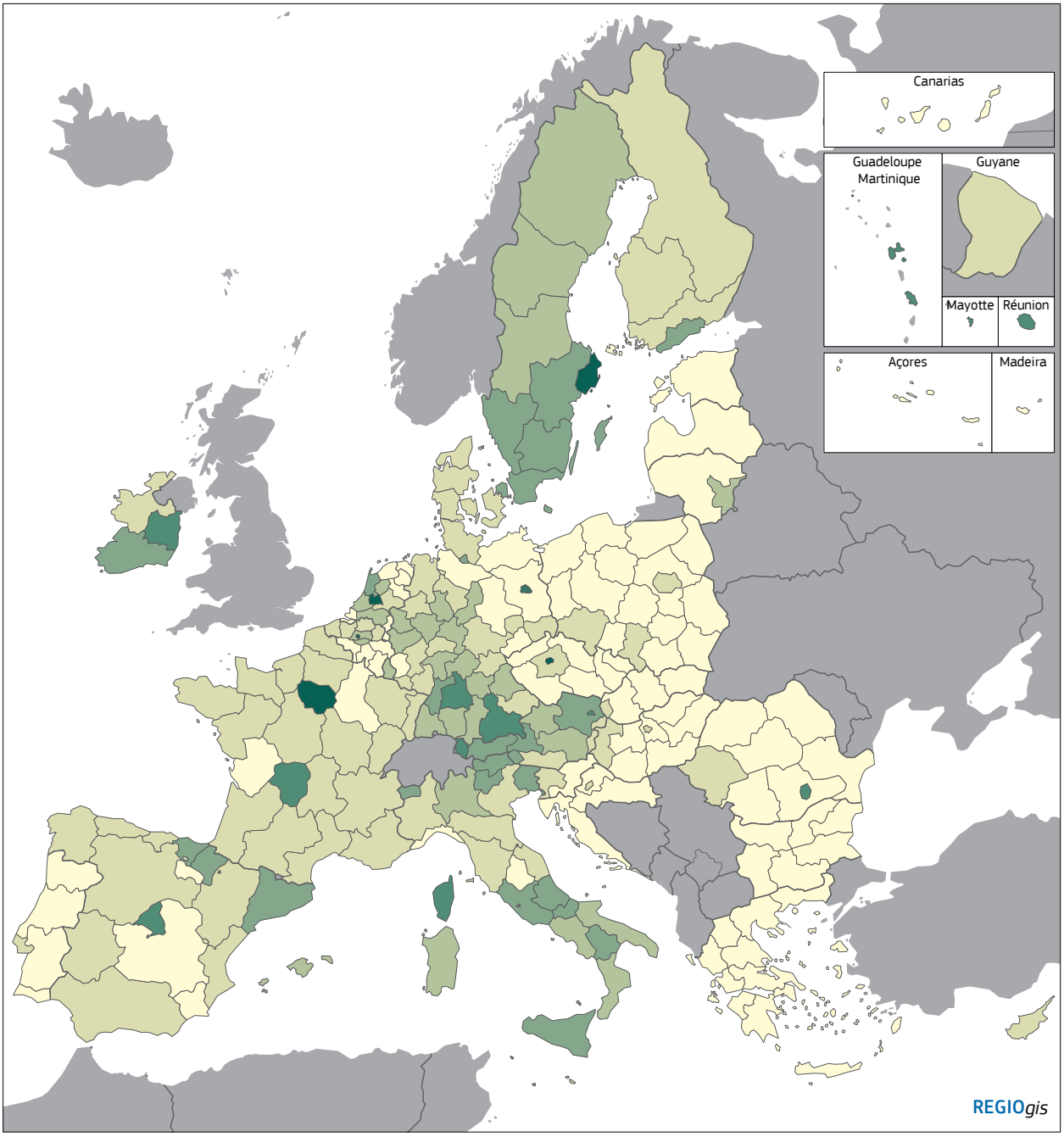


Note: Share of employment in 56 NACE sectors that are systematically more competitive and more sustainable than the EU median (%).
Source: JRC.

48 Kaizuka (2022).

49 Marques Santos et al. (2023) and update for 2019 and 2020 in Marques Santos et al. (2024).

50 For more details see Marques Santos et al. (2023).



Map 4.19 Regional competitive environmental suitability indicator, 2019

% of total employment

- <= 10
- 10 – 20
- 20 – 30
- 30 – 40
- 40 – 50
- 50 – 60
- > 60

Share of employment of 56 NACE sectors that are systematically more competitive and more sustainable than the EU median.
Source: JRC.

0 500 km

less evident, suggesting that this is more difficult to achieve and that the transition to a low-carbon economy requires more time and effort. Factors such as R&D, the quality of government, and the qualifications of the workforce seem to be important in this regard. Adequate policy-making, reforms and investment are essential to implement the transition to a low-carbon economy and adjust to new circumstances in a way that spurs employment, competitiveness and economic growth, with a focus on leveraging circular economy principles and deploying clean technology solutions to drive innovation and efficiency across industries.

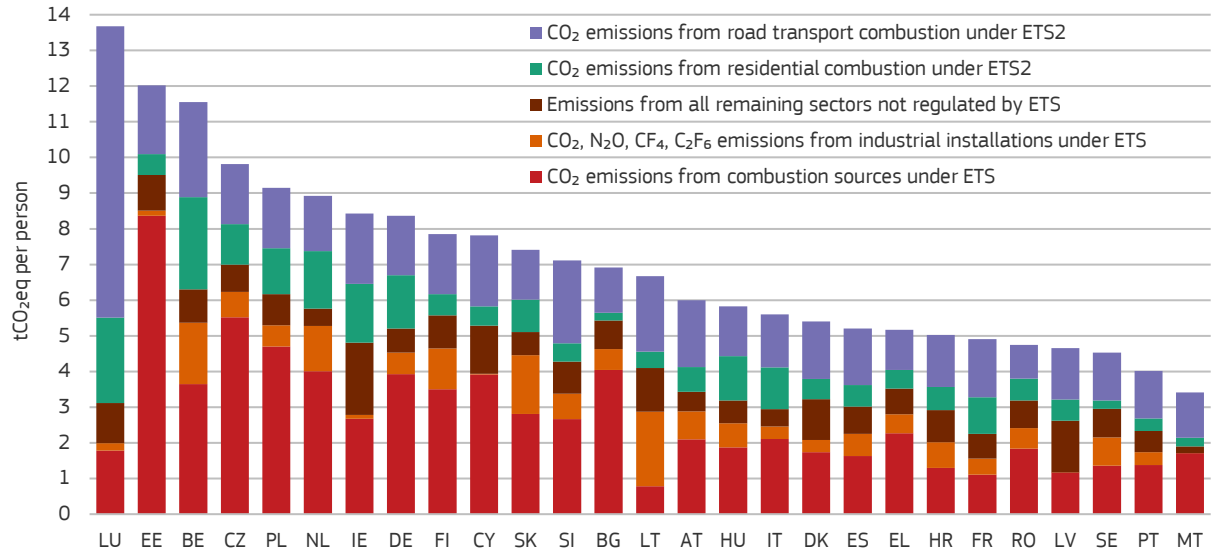
5.3 Longer-term impact of the extension of the ETS and the transformation of industrial and service sectors

The ETS is designed to limit emissions of GHGs from power generation and large industrial plants through a cap-and-trade mechanism. In 2021, the ETS covered 40 % of GHGs emitted in the EU. In 2023, the EU approved a new ETS for fuel combustion in buildings, road transport and a few other sectors. The emissions concerned account for another 40 % of EU emissions and so are equally important for achieving climate objectives. The share of emissions covered varies between countries and regions. The share is largest in Luxembourg (Figure 4.16), mainly because of international through traffic.

While GHG emissions from household energy consumption declined by 30 % between 1990 and 2021, those from road transport, which remains highly dependent on oil and petrol, increased by 18 %.

Higher prices for carbon fuels give an incentive for innovation and help to reduce emissions, but they tend to hit poorer households harder. The extension of the ETS means that climate action will become more tangible for people, as they will be directly affected in heating their homes and using their cars as taxes are imposed or increased from 2027 under the system. Across the EU, households spend an average of between 3 % and 10 % of their income on heating and fuel (Figure 4.17). Although household expenditure on heating fuels in the EU increases with household disposable income[51] – for the 20 % of households with the highest income (i.e. in the top quintile of the income distribution), expenditure is around twice as high as for the 20 % with the lowest levels – it increases less than in proportion. It, therefore, represents

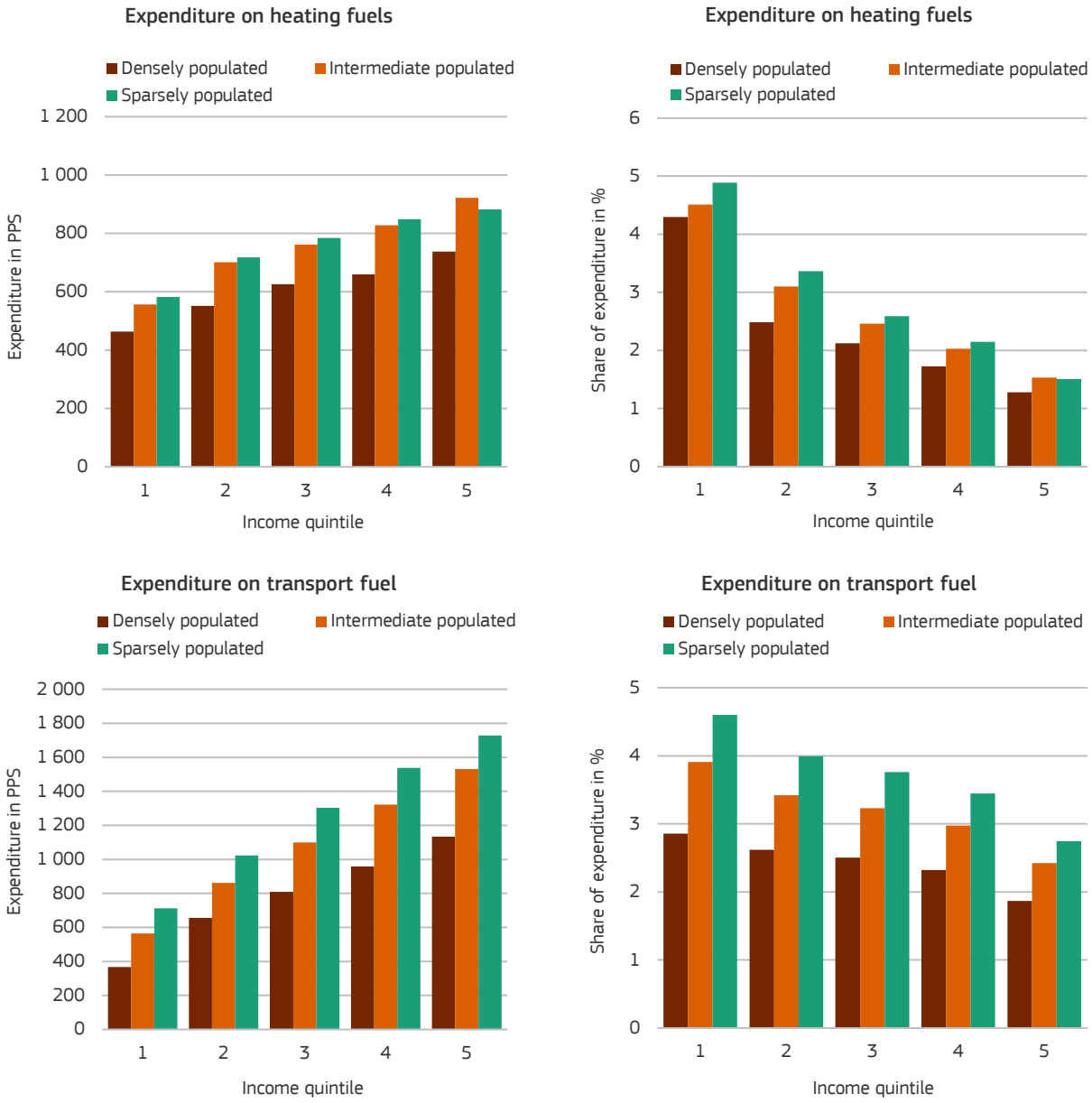
Figure 4.16 Emissions under the ETS and ETS2



Source: EDGAR (JRC).

51 Koukoufikis and Uihlein (2022); Ozdemir and Koukoufikis (2024).

Figure 4.17 Average expenditure and share of household income going on fuel for heating and transport by income quintile, EU, 2020



Note: Data for CZ, IE, IT, PL, PT, RO, FI and SE are not yet available for 2020; for CZ in 2015, population weights were adjusted with European Union statistics on income and living conditions (EU-SILC) weighted total number of households.
Source: JRC based on Eurostat.

a larger share of overall expenditure for the households in the bottom quintile than for those in the top. Fuel price increases, therefore, affect poorer households more because more of their budget goes on heating, posing increased risks of energy poverty. Households living in densely populated areas systematically spend less on heating than those in intermediate or sparsely populated areas, irrespective of income levels.

Total expenditure on fuel for transport is highest for all income groups in rural areas, and lowest in urban areas. The share decreases as income increases. As expected, the share of expenditure for transport fuels is larger in rural areas than others because of the greater use of private cars and motorcycles and a lower availability of public transport.

Extending the ETS to include fuel for heating and transport will therefore have a particularly large impact on low-income households in rural areas. The sharp increase in energy prices in 2022 seems to have led households to seek alternatives for heating their homes–firewood and heat pumps in particular. The price of firewood and pellets[52], therefore, was 54 % higher in the EU in November 2022, when it peaked, than the year before, and in Austria, Denmark, the three Baltic States, and Slovenia, twice as high, while sales of heat pumps in the EU increased by 39 % in 2022[53].

6. Key messages

The green transition has the potential to reduce regional inequalities, but it could equally lead to them widening. On the one hand, it is expected to create new jobs, provided it is supported by appropriate policies, especially in rural, less developed regions that have high potential for the development of wind and solar power and for carbon capture and storage in natural ecosystems. On the other hand, there is evidence that the green transition favours more developed regions, attracting investment and skilled workers there, while posing challenges for employment and households in low-income rural areas, in particular, and potentially exacerbating social inequalities.

Addressing these challenges requires deepening the territorial approach to implementing the green transition in an equitable way. This can be done by supporting vulnerable regions through co-financing investment in renewable energy, energy-efficiency, clean and circular technologies, carbon-free vehicles and the corresponding infrastructure, and retraining and education, taking into account the 'do no significant harm' principle to balance trade-offs. This is particularly important in less developed regions, which tend to be less prepared for the transition to a climate-neutral economy and to have more difficulty in reaping the potential benefits. It is equally important to prioritise social equity and provide support for the workers affected, through retraining so that they have the skills to take up green jobs, and to help mitigate the burden on low-income households. As the green transition unfolds, minimising the impact on energy costs is vital to prevent heightened risks of energy poverty. Also, rural-proofing can help make policies on climate adaptation, energy, transport or employment fit for purpose.

Climate risk management and adaptation to climate change is becoming increasingly important to mitigate the escalating costs of extreme weather events, floods, forest fires and water shortages. Better preparedness and increased climate resilience, such as by protecting and restoring ecosystems, depend on pro-active territorial policies to help vulnerable regions reduce the economic costs of disaster mitigation, infrastructure repairs and the consequences for healthcare, and so ensure their financial stability.

52 According to the Eurostat harmonised index of consumer prices (other solid fuels comprise coke, briquettes, pellets, firewood, charcoal and peat).

53 European Heat Pump Association (2023).

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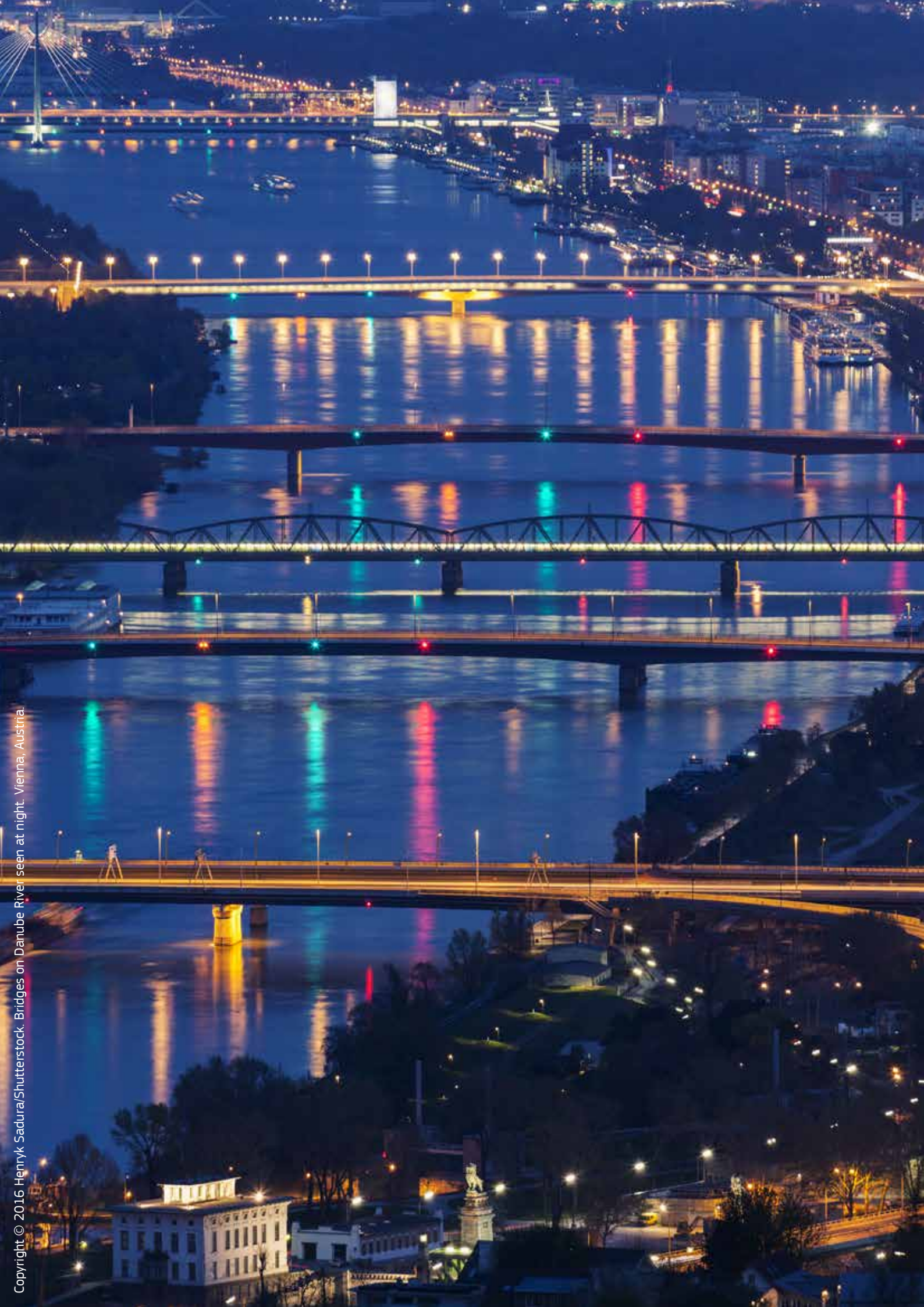


5

REGIONAL INNOVATION AND THE DIGITAL TRANSITION

- Innovation shapes markets, transforms economies, stimulates changes in the quality of public services and is indispensable to achieving the overarching objectives of the twin green and digital transitions.
- Innovation is an important driver of long-run productivity growth and a key determinant of the competitiveness of firms, especially those in the EU competing in an increasingly competitive and fragmented geopolitical context.
- From a forward-looking perspective, the green and digital transitions have the potential to dramatically redefine production processes and value chains globally, with clear implications for economic geography and with more innovative firms finding it easier to adjust and take advantage of the opportunities that arise.
- There is potential for all EU regions to benefit from the digital transition, but the economic structure of more developed regions suggests that they are better equipped to do so.
- This is in line with the existing indicators of the geography of innovation – measured in terms of skills and education, R&D, patent activity, or composite indicators such as the Regional Innovation Scoreboard – which show a clustering around more developed, often metropolitan, areas and a persistent innovation divide.
- There is evidence pointing to substantial untapped potential for cross-border co-operation across all types of EU region in developing the value chains needed for the twin transitions.
- Place-based approaches can unlock the potential of all regions to innovate in line with their strengths and characteristics.
- Education – from early childhood to tertiary – plays a foundational role in fostering innovation. Investment in education is essential for creating the skilled, resilient and adaptable workforce required for sustained innovation and long-term economic development.
- Investment in R&D that fosters innovation in developed regions can have significant benefits for neighbouring ones, while for less developed regions, policies to improve the quality of institutions are equally important for stimulating innovation.
- The development of digital skills and access to a fast internet connection are key to ensuring that all regions can harness the potential of the digital transition. Over the past few years, there has been a significant improvement in broadband connectivity in many regions, but wide disparities across the EU remain as well as a persistent rural-urban gap in access to very-high-capacity networks.

Chapter 5
Regional innovation and the digital transition

1. Innovation and competitiveness of EU regions in a new complex global environment

Innovation plays a pivotal role in driving long-term productivity growth and competitiveness[1]. Innovation shapes markets, transforms economies, stimulates changes in the quality of public services and is essential for achieving the overarching objectives of the twin green and digital transitions. A substantial amount of the European Regional Development Fund (ERDF) (EUR 56 billion for the 2021–2027 period) goes to foster research and innovation (R&I) in the EU through place-based programmes co-managed at the local level ('smart specialisation' strategies, see Box 5.2). These programmes play a central role in strengthening regional innovation ecosystems so that they are better equipped to stimulate and sustain economic development[2].

More skilled and creative workers, increasingly efficient and powerful machines, new products and processes are key dimensions of innovation in an increasingly competitive global environment. Their importance has become evident over time, as EU firms have increasingly had to compete with those from emerging economies rapidly moving-up the value chain. These economies still have the advantage of cheaper labour, less stringent environmental regulations, and a rapid pace of technological advancement[3]. Moreover, in some areas, such as South-East Asia and China, they have reached the technological frontier in a number of sectors[4]. In advanced manufacturing and green technologies, the EU is a world leader in innovation. However, more effort is needed to maintain and further build a strong global position in digital technologies, an area where the US is a leader and emerging economies are becoming stronger[5].

Prospectively, the green and digital transitions have the potential to dramatically redefine production processes and value chains globally, with clear implications for economic geography. In this regard, the creation and diffusion of innovation – and its spatial dimension – are key not only to the competitiveness of the EU in the global economy, but also to its economic, social and territorial cohesion.

Empirical studies support the notion that innovation tends to concentrate in specific geographical areas, underlining the importance of understanding the spatial, social and economic dimensions of innovation. The link between innovation and spatial agglomeration effects has been extensively studied, and the close proximity of firms, suppliers, and related institutions in a cluster has been shown to foster innovation[6]. Agglomerations facilitate the sharing of tacit knowledge and collaboration,

1 European Commission (2022a).

2 In regions across the EU, the alignment of support from the ERDF with smart specialisation strategies is supporting place-based innovation and investment in line with regional business needs and opportunities. This has led to the creation of regional innovation hubs and industrial clusters based on the co-location of research infrastructures, universities, research and technology centres, and industry (e.g. Grenoble, Hamburg and Brno). Thematic smart specialisation platforms and partnerships have also become important means of connecting innovators with similar or complementary strengths in different parts of the EU, including in technology areas that are key to the twin green and digital transitions. Over the last six years, 37 inter-regional partnerships involving 180 regions in 33 EU and non-EU countries have provided such support in areas such as advanced battery materials, and hydrogen and fuel cell technology.

3 World Economic Forum (2019).

4 The EU has a strong overall innovation performance but lags behind China in investment in intangibles and patent activities relating to digitalisation (European Commission, 2022b). While the EU is strong in advanced manufacturing and advanced materials (in terms of both publications and patent applications), its production, design and capacity are less strong in other areas, including artificial intelligence (AI), big data, cloud computing, cybersecurity, robotics and micro-electronics (European Commission, 2021b, 2022b).

5 European Commission (2022b).

6 Porter (1998).

and attract a pool of skills that serve to increase innovation[7]. The formation of such a cluster is also influenced by the 'quality' of the location, by the amenities available and the business environment[8]. The positive externalities generated by innovation clusters tend to have multiplier effects on local employment and income, so reinforcing the benefits of attracting high-skilled jobs and the people to fill them[9]. In sum, the fact that innovation tends to agglomerate in specific areas highlights the importance of understanding its spatial, social and economic dimensions, with a view to developing a balanced policy mix that promotes economic cohesion as well as innovation.

Place-based approaches can tailor policies to foster the potential of regions to innovate in line with their strengths and characteristics. Investment in research and development (R&D) can stimulate innovation in more developed regions, with important benefits for neighbouring regions. On the other hand, for less developed regions, policies targeted at education, skills and training are needed to foster innovation[10]. The quality of institutions is also important for regions at all stages of development to successfully participate in competitive research programmes[11]. Creating collaborative networks between lagging regions and innovation hubs can facilitate knowledge transfer and provide opportunities for shared learning[12]. For regions struggling to keep pace with innovation hubs, it is important to identify economic sectors where they have a comparative advantage and introduce tailor-made policies that help to develop these[13]. Such an approach can involve support for the creation of clusters to unleash agglomeration forces and to focus on linked economic activities with appropriate degrees of complexity[14]. All this implies that a differentiated, place-based approach to fostering innovation is essential for promoting economic convergence across regions and reducing the innovation divide.

This chapter presents an overview of regional innovation and digital performance across Europe and the future potential. Section 2 sets out indicators of innovation, such as education, expenditure on R&D, patent applications and the Regional Innovation Scoreboard. Section 3 gives an overview of digital accessibility across regions. Section 4 indicates how cross-border co-patenting and specialisation in sectors where regions have potential strengths can help them to take advantage of the opportunities offered by the digital transition and reduce the risk of a digital and innovation divide. Section 5 assesses how foreign direct investment (FDI) and access to finance can foster innovation and integration into global value chains.

2. The geography of innovation in Europe: education, R&D, patent applications, and the Regional Innovation Scoreboard

Innovation can take many forms and assessing it requires a holistic approach that covers the main dimensions. Measuring innovation is a widely acknowledged challenge[15]. This is particularly true in respect of the regional context, which highlights the need for better territorial data on innovation. This section provides a snapshot of regional innovation in the EU by reviewing the main indicators: tertiary education, expenditure on R&D, patent applications, and the Regional Innovation Scoreboard, a composite indicator capturing several dimensions of innovation.

7 Rosenthal and Strange (2003).

8 Chatterjee and Sampson (2015).

9 Moretti (2010).

10 Rodríguez-Pose and Crescenzi (2008).

11 Peiffer-Smadja et al. (2023).

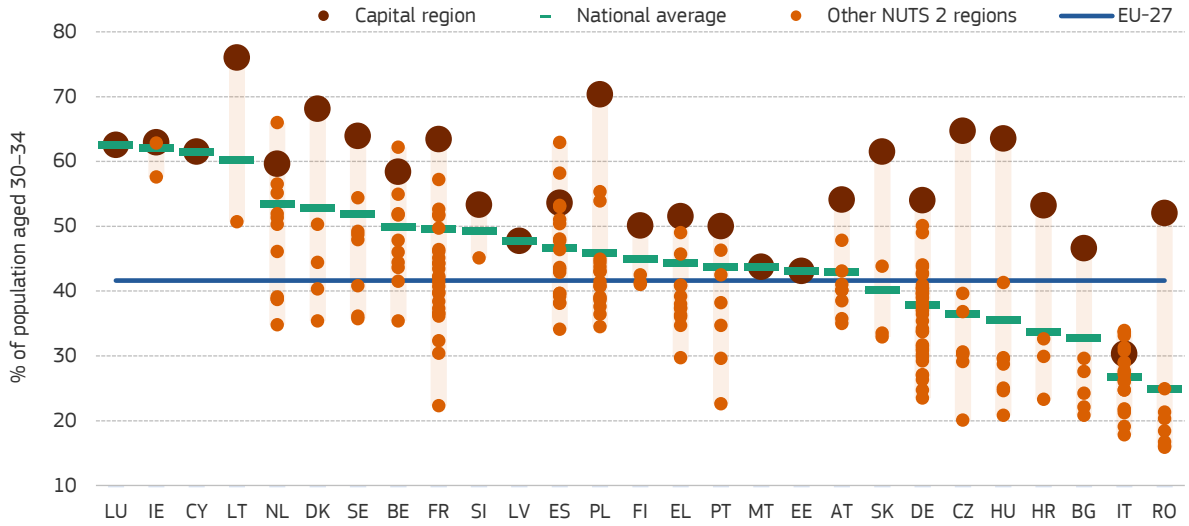
12 Foray (2009).

13 McCann and Ortega-Argilés (2015).

14 Delgado, Porter and Stern (2010); Boschma (2015).

15 OECD and Eurostat (2018).

Figure 5.1 Share of population aged 30–34 with tertiary education, in the EU-27 Member States, and NUTS 2 regions, 2021



Source: Eurostat.

2.1 Regional education systems and attainment

Education plays a pivotal role in fostering innovation. A well educated population is a prerequisite for sustained innovation and long-term economic development. Numerous studies underline the correlation between education, creativity, entrepreneurship and innovative capacity, emphasising the multi-faceted nature of the innovation process[16]. Investment in education is needed to ensure a skilled, resilient and adaptable workforce, and to nurture a culture of innovation conducive to economic development. Investment needs to cover all levels of education, starting from early childhood. The work of Nobel laureate James Heckman has highlighted the long-term impact of early education on cognitive abilities and has found that the economic and social returns of investing in early childhood and care vastly outweigh the cost[17]. A highly skilled and educated population, capable of critical thinking and problem-solving, creates an environment where creativity and innovation can thrive, so underpinning sustainable and inclusive long-term development[18].

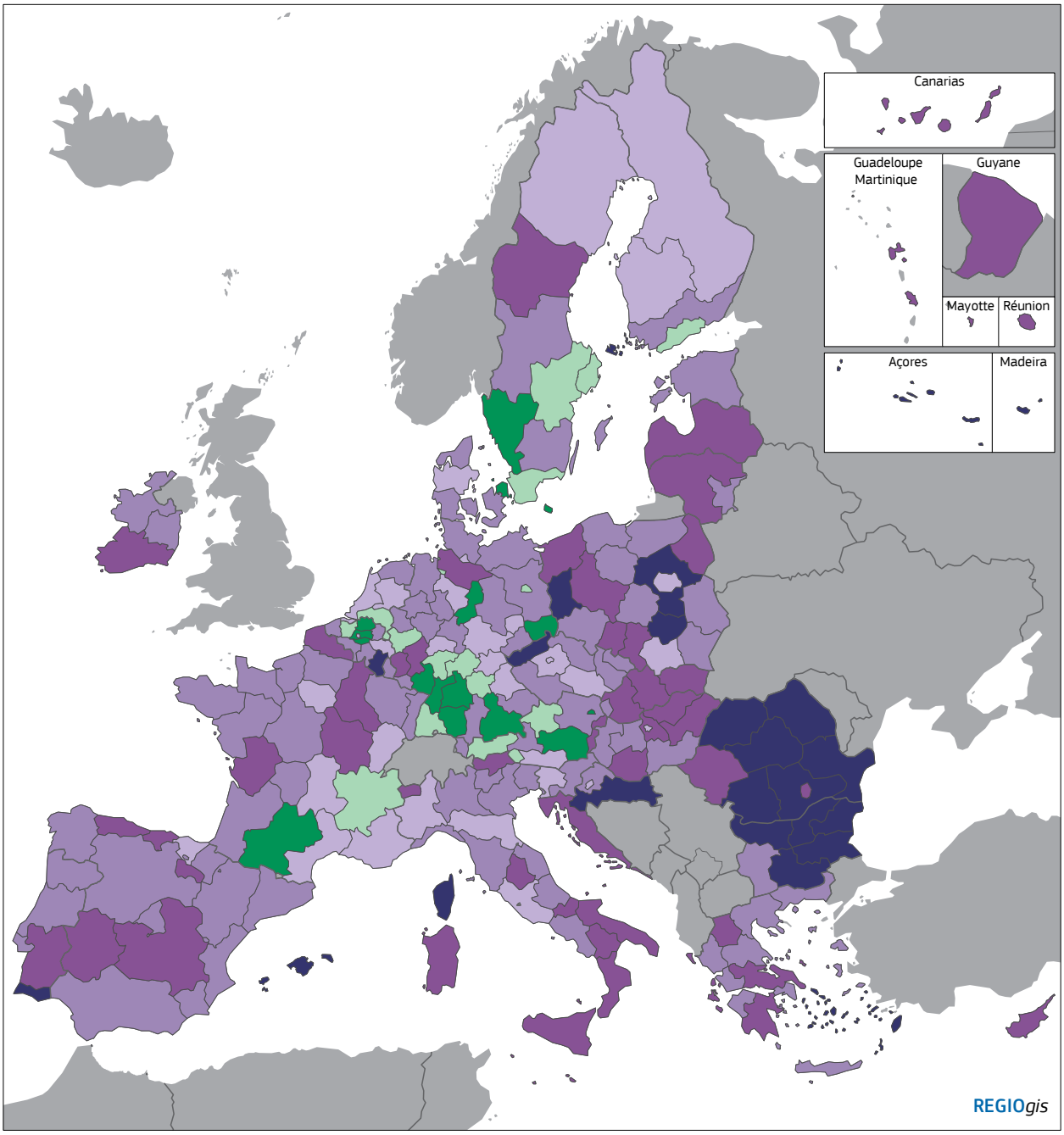
There are wide variations across EU regions in the share of people with tertiary education, reflecting a tendency for them to concentrate in more developed and metropolitan regions. Overall, around 37 % of the population aged 25–64 in more developed regions in the EU had tertiary education as against 25 % in less developed ones. The proportion increased in all regions over the 2011–2021 period, though regional differences have remained[19]. Taking those aged 30–34 only to reflect the most recent developments, in some regions around 70 % or more of people in this age group in 2021 had tertiary education (e.g. in the capital city regions of Denmark, Lithuania or Poland), whereas in other regions, the share was less than 20 % (e.g. Sud-Est in Romania or Sicilia in Italy; Figure 5.1).

16 See Biasi et al. (2021) and the discussion in Section 3 of Chapter 6 on education and the risk of falling into a talent development trap.

17 Garcia et al. (2020).

18 In a review of the literature, Biasi et al. (2021) find that improvements in the accessibility and quality of education have great potential to encourage entrepreneurship and innovation. This happens largely through two channels. First, education helps those who would have been innovators anyway (because of innate traits) to become more successful. Second, and more importantly, education enables individuals who would not have otherwise become innovators to fulfil their potential.

19 European Commission (2023a).



Map 5.1 Expenditure on R&D in NUTS 2 regions as a % of GDP, 2021

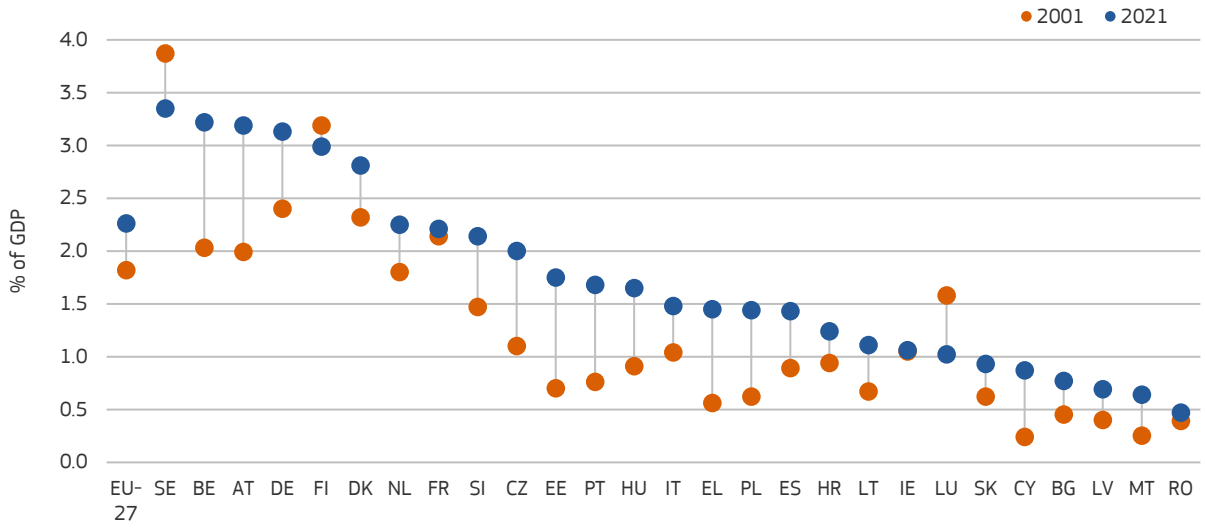
% of regional GDP

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

EU-27 = 2.3
The EU-2020 target is 3 %.
DK: 2019.
Source: DG REGIO based on Eurostat data (rd_e_gerdreg).

0 500 km

Figure 5.2 Expenditure on R&D in EU Member States as a % of GDP, 2001 and 2021



Note: The 2001 figure for LU relates to 2000, for MT and HR to 2002.
Source: Eurostat [rd_e_gerdtot] and DG REGIO calculations.

2.2 Regional R&D expenditure

Spending on R&D in relation to GDP is also concentrated in more developed regions. Though this Is another widely used indicator of innovation capacity, it is really a measure of input into the innovation process, or the effort made, rather than of output. It is also likely to underestimate innovation activity, especially in sectors outside of manufacturing, where non-technological and non-research-based innovation is common and where expenditure on R&D is hard to define and identify (such as in respect of computer software programmes). In 2021, expenditure in the EU amounted to 2.3 % of GDP (Map 5.1) and increased by 0.5 pp over the preceding two decades (from 1.8 % of GDP in 2001). In most Member States, expenditure remained well below that in other developed economies, especially Japan or the US (where it was above 3 % of GDP, which has been set as a target for the EU).

There is also no evidence of convergence in spending within the EU over the past 20 years. Indeed, countries with the lowest R&D expenditure in 2001 recorded the smallest increase, resulting in a widening gap. Expenditure in the north-west of the EU (averaging 2.5 % of GDP in 2021) was almost twice as high as in the east (1.3 %), with the south having only a slightly higher level than the latter (1.5 %).

At the NUTS 2 level, spending was above 3 % of GDP only in more developed regions and above 4 % only in a handful of regions, many of them located in the south of Germany, a centre for advanced manufacturing (Figure 5.2). The highest level of R&D expenditure within countries is in many cases in capital city regions, Belgium, Germany and Italy being notable exceptions.

2.3 Regional patent applications

Patent applications are one of the few tangible means of comparing performance in innovation between regions, though they give only a very rough estimate of actual innovation activity. Innovations registered with the European Patent Office, the most common indicator, relate predominantly to those arising within manufacturing. However, many innovations arising in services, which account for around 75 % of EU gross value added, remain unpatented as they are intangible or non-codifiable (e.g. work organisation or computer programming).

Nevertheless, despite their limitations, as noted above, patents provide one of the only tangible means of comparing technological innovation across regions. Over the period 2018–2019, 124 patent applications per million inhabitants were registered at the European Patent Office (Map 5.2).

Box 5.1 Synergies between Horizon 2020 and Cohesion Policy

Synergies among different EU funds to support innovation are important to foster regional development. As indicated in Chapter 9, a substantial amount of EU Cohesion Policy funding goes to supporting R&I through place-based programmes co-managed at the regional level. A large part goes to less developed regions. By contrast, funding from Horizon 2020, the EU programme for supporting R&D, is highly concentrated in the more developed regions[1]. This reflects the nature of the selection process, which is highly competitive and is aimed at rewarding excellence[2].

Using econometric methods, Peiffer-Smadja et al. (2023) analyse the factors affecting success in respect of Horizon 2020. The results show that critical mass in terms of R&D expenditure, human resources, and research outputs is needed for a region to succeed in obtaining funding. The study finds that regions with low R&D spending could increase their success rate by improving institutional quality, though regions with higher levels could also benefit[3]. The findings highlight the importance of considering a holistic approach that takes account of several factors at the same time (especially, economic development, human capabilities and quality of institutions). In the light of the findings, the authors suggest that success rates of less developed regions could be improved by supporting and facilitating collaboration with more advanced regions, in line with their strengths and areas of specialisation, as reflected in their smart specialisation strategies (see Box 5.2).

Recently, significant efforts have been set in place to build stronger synergies between Horizon Europe and the ERDF. Acknowledging some of the legal and practical difficulties of building synergies between Horizon 2020 and the ERDF, the Commission services in the current multiannual financial framework have resolved some of the legal provisions that hindered the creation of synergies in practice and published practical guidance to implement synergies. In addition, an expert group has been set up that provides analysis and advice on how to overcome persistent difficulties in the implementation of these synergies.

1 Peiffer-Smadja et al. (2023); European Commission (2017); Balland et al. (2019); Protogerou et al. (2010); Enger (2018). Peiffer-Smadja et al. (2023) examined the success of regions in participating in Horizon 2020, measured as the number of successful proposals in relation to the total number submitted. The highest success rates (over 18 % of proposals submitted) are in western and northern regions in France, the Netherlands, Austria and Sweden. Interestingly, German regions, with high R&I performance in terms of R&D expenditure and patent applications, have lower (moderate to high) success rates. The lowest success rates (below 10 % of proposals submitted) are in regions in southern and eastern Member States, in Italy, Poland, Hungary, Slovakia and Bulgaria.

2 Horizon 2020 provided financing of EUR 80 billion for R&I in the EU over the 2014–2020 period, most being allocated following an open, competitive process. This resulted in funding being concentrated on a relatively small pool of beneficiaries: see European Commission (2017); Balland et al. (2019); Protogerou et al. (2010); Enger (2018).

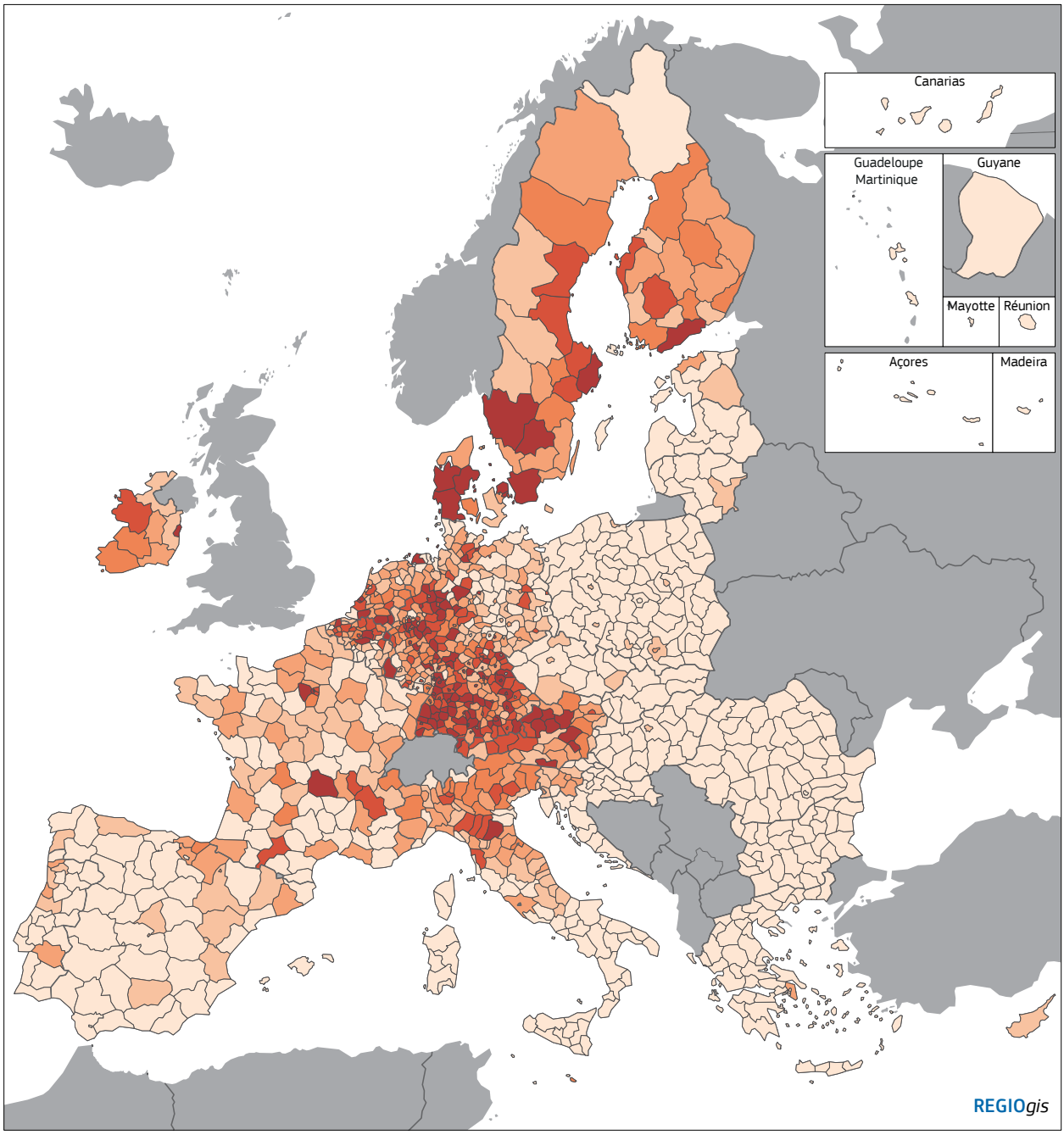
3 For all regions, a focus on the quality of research outputs, such as scientific publications and patents, rather than on the quantity, appears to be important to be recognised as a partner in international R&I projects, particularly those aimed at tackling societal challenges. For more advanced regions, investing in R&D and in science and technology specialists also seems to increase the chances of participating in Horizon projects.

Most applications came from regions in the north-western Member States and in northern Italy. At the NUTS 3 level, the top-performing regions are, in many cases, those hosting large corporations[20]. The spatial distribution suggests an innovation divide between regions in the most developed Member States and others.

Metropolitan areas tend to offer an environment that is particularly conducive to the development of new ideas, products and processes. Applications for patents are accordingly much higher there than elsewhere (Figure 5.3). A vast literature explains the reasons for this – the presence of a creative and skilled workforce and specialised clusters of economic activity, universities and research centres[21].

20 For instance, the three top-performing regions in the EU are Erlangen in Germany (1 209 patents per inhabitant), home to a major Siemens site, Zuidoost-Noord-Brabant in the Netherlands (973), home to Philips, and Ludwigshafen in Germany, home to BASF (961).

21 European Commission and UN-HABITAT (2016).



Map 5.2 Patent applications to the European Patent Office, average 2018–2019

Applications per million inhabitants

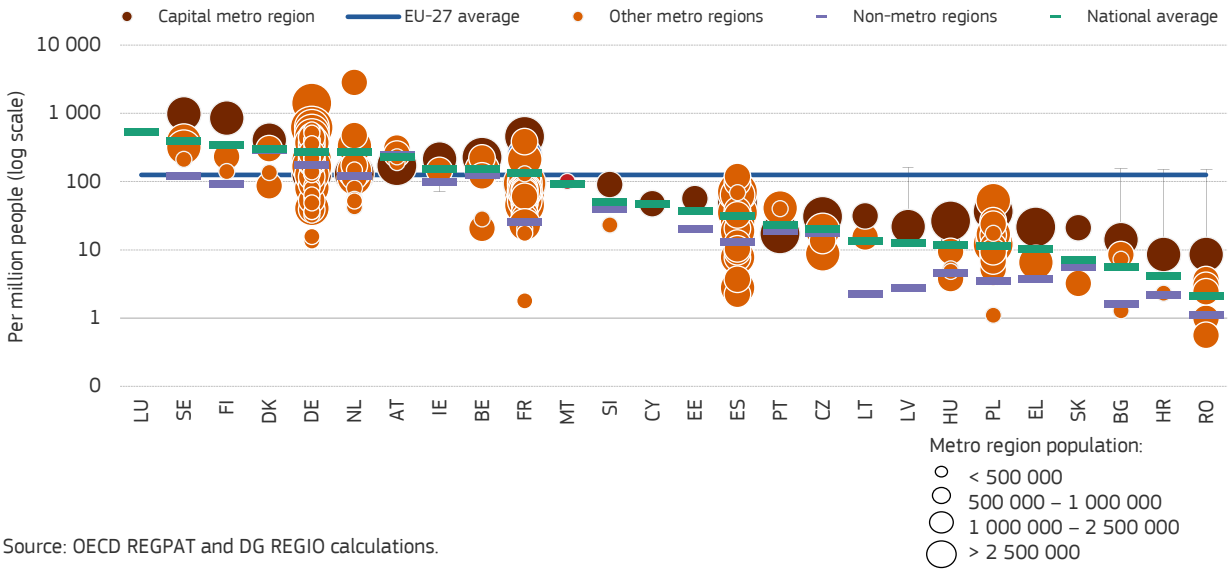
- < 25
- 25 – 50
- 50 – 100
- 100 – 150
- 150 – 250
- >=250

EU-27 = 125.6

Sources: DG REGIO based on OECD REGPAT database August 2023 and Eurostat population data (nama_10r_3popgdp).

0 500 km

Figure 5.3 Patent applications to the European Patent Office by type of region, 2017–2018



Source: OECD REGPAT and DG REGIO calculations.

Capital metropolitan regions, in most cases, have the highest rates of applications in nearly all Member States. The only exceptions are Vienna and Lisbon. Only in a very few cases are applications in metropolitan regions below those in others in the same country. It should be noted as well that a larger number of skilled immigrants also tends to increase patents filed, and return migration of those concerned might boost patenting, and innovation, in the country of origin[22].

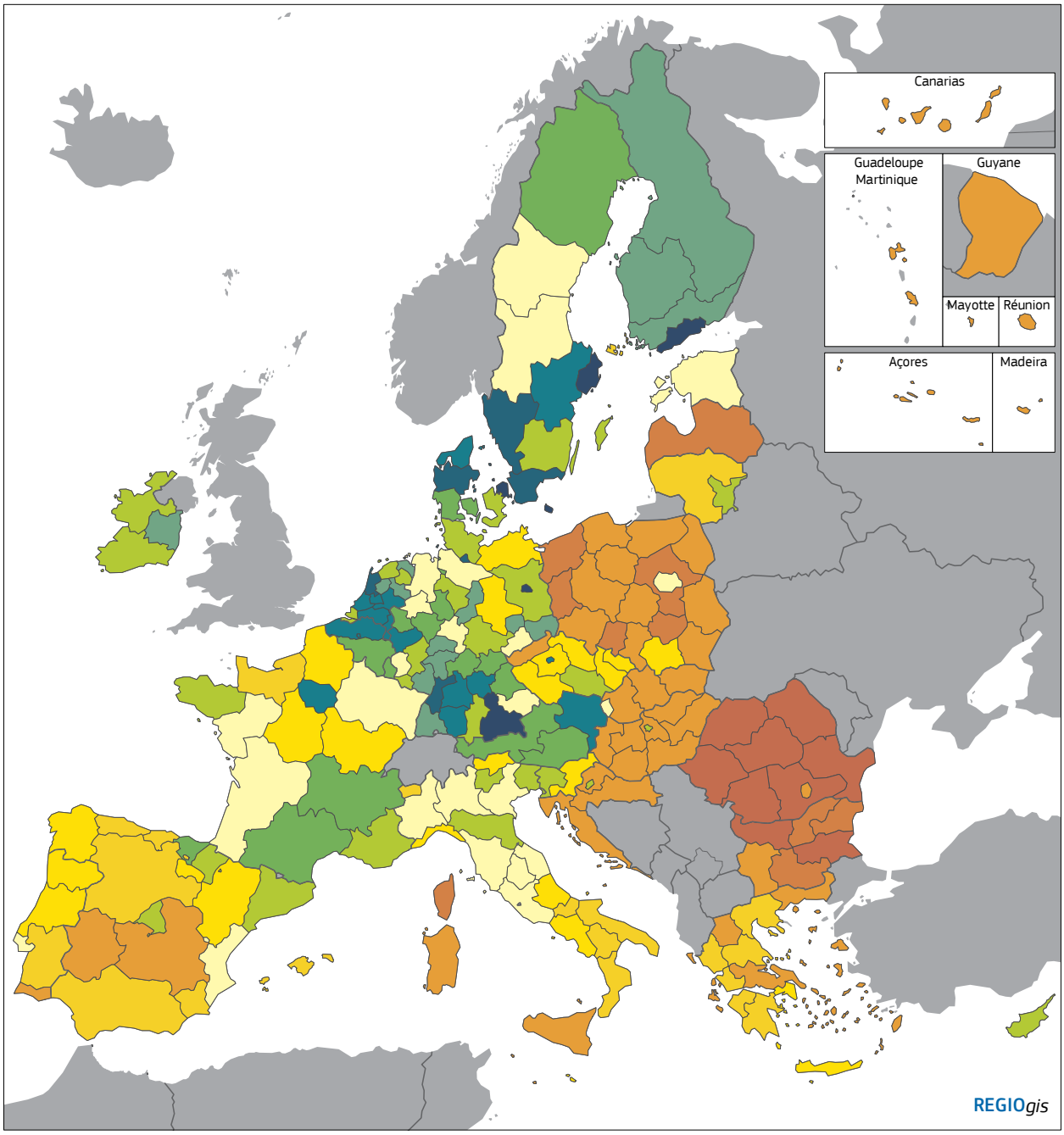
2.4 The Regional Innovation Scoreboard

The Regional Innovation Scoreboard (RIS) for 2023 highlights the key role played by innovation in regional development and a persistent divide in innovation performance[23]. The RIS, an extension of the European Innovation Scoreboard (EIS), measures the innovation performance of regions on the basis of a sub-set of indicators included in the EIS. Despite some regional variation within countries, the ranking of regions largely matches that of Member States (Map 5.3), suggesting that indicator values at the regional level are affected by national characteristics or policies (e.g. most R&D support schemes are national). Most regional 'innovation leaders' are in countries also identified as 'innovation leaders' or as 'strong innovators', and almost all the regional 'moderate' and 'modest' innovators are in countries classified in the same way. However, there are regional 'pockets of excellence' in some 'moderate innovator' countries, including capital city regions in Czechia, Lithuania and Spain, as well as País Vasco in the last. Conversely, there are many regions in 'strong innovation' countries that lag behind.

There is a close relationship between the level of development of regions and the innovation score (Figure 5.4). In less developed regions, an increasing proportion of the population live in 'emerging innovator' regions (i.e. the bottom category) rather than 'moderate innovating' ones – 60 % in 2021, twice as much as in 2016, indicating that the innovation performance of the regions concerned has worsened over time. At the same time, in both southern and eastern regions, there was an increase in the share of people

22 Kerr and Lincoln (2010); Fry (2023).

23 The RIS 2023 follows the same methodology as the EIS in the same year to develop a composite indicator of 21 different indicators of regional innovation. Regions are classified into four innovation performance groups according to this: innovation leaders (36 regions), strong innovators (70 regions), moderate innovators (69 regions), and emerging innovators (64 regions). For a list of the 21 indicators used, see Table 4 (page 17) of the RIS methodological report (https://research-and-innovation.ec.europa.eu/system/files/2023-07/ec_rtd_ris-2023-methodology-report.pdf).



Map 5.3 Regional Innovation Scoreboard, 2023

- Emerging innovator -
- Emerging innovator
- Emerging innovator +
- Moderate innovator -
- Moderate innovator
- Moderate innovator +
- Strong innovator -
- Strong innovator
- Strong innovator +
- Innovation leader -
- Innovation leader
- Innovation leader +

Source: European Commission – Regional Innovation Scoreboard 2023 and European Innovation Scoreboard 2023.

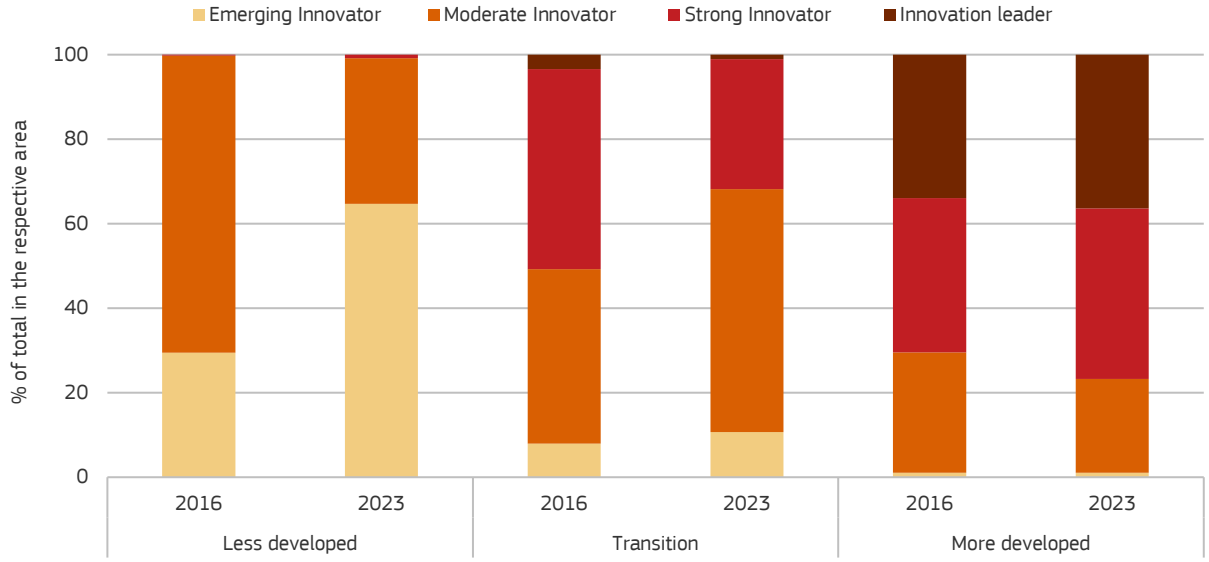
0 500 km

living in 'strong innovator' regions. Nevertheless, innovation leaders have remained largely clustered in the more developed, north-western regions.

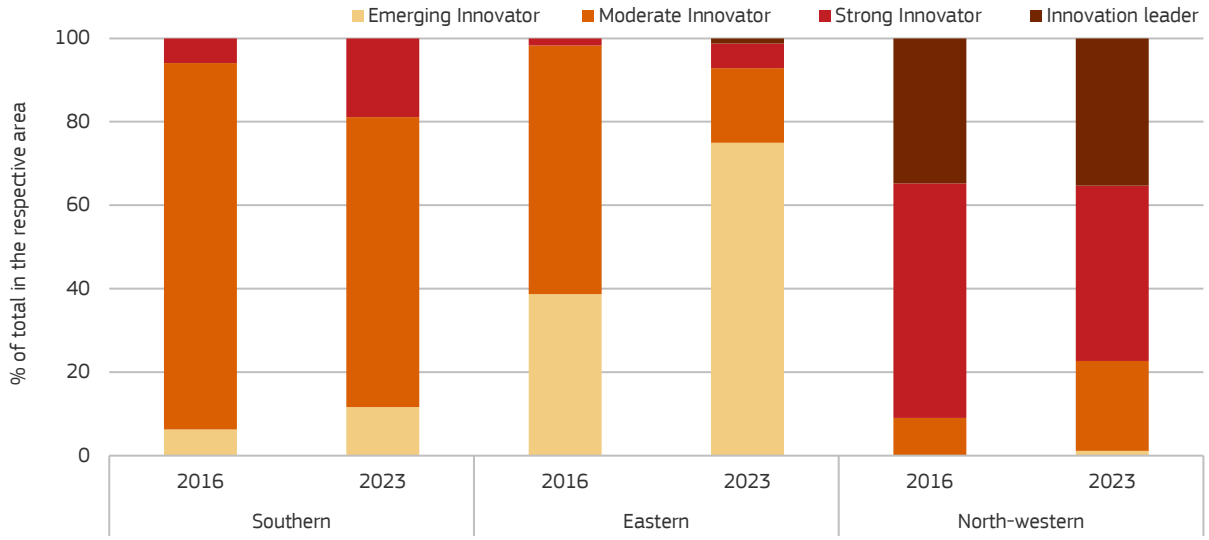
In general, the RIS confirms the wide diversity of EU regions in terms of innovation performance, so highlighting the strong regional dimension of innovation. Because of this, measures supporting innovation, including Cohesion Policy programmes, need to take explicit account of the regional context when considering the most useful kind of support to provide. As it is inherently place-based, the smart specialisation approach helps in this regard.

Figure 5.4 Share of EU population by RIS category, level of development and geographic group of Member States, 2016 and 2023

a) Share of EU population by RIS category and level of development, 2016 and 2023



b) Share of EU population by RIS category and geographic group of Member States, 2016 and 2023



Note: In cases where the RIS score is only available at NUTS1 level, it is assumed that the same score applies to the constituent NUTS2 regions.
Calculations for both years are based on 2021 population data and level of development classification.
Source: Regional Innovation Scoreboard 2023 and DG REGIO calculations.

Box 5.2 Smart specialisation: strengthening industrial and innovation ecosystems

Smart specialisation strategies are part of Cohesion Policy intended to foster regional innovation ecosystems. They do so by building on the 'partnership approach' of Cohesion Policy and enabling regions to develop a regional innovation strategy that builds on their assets and strengths. Smart specialisation strategies are structured around three pillars: location (place-based approach), prioritisation (making strategic choices), and participation (stakeholders' involvement). Smart specialisation has a strong 'regional development' objective. Around 85 % of the overall financial allocation for 2014–2020 (about €40 billion) was concentrated in less developed and transition regions where it is often the main source of innovation support. Periañez-Forte et al. (2021) have carried out case studies to assess the lessons learned during the setting-up of governance structures and have underlined the importance of these for the success of the policy.

In the 2021–2027 programming period, smart specialisation strategies remain the key requirement for Cohesion Policy support for R&I. A total of EUR 34.5 billion is currently programmed for support of R&I investment, in line with 175 smart specialisation strategies in EU regions and Member States.

Thematic smart specialisation platforms and partnerships are key means of bringing together innovators with similar or complementary strengths and priorities in areas that are important for strengthening regional ecosystems while addressing EU priorities, notably in the context of the digital and green transitions. These include hydrogen, bioeconomy, healthcare and AI. At present, there are 38 partnerships covering 191 regions in all 27 Member States and nine non-EU countries.

The interregional innovation investment instrument ('I3') under Cohesion Policy helps to support existing efforts to strengthen value chains and to link regional industrial and innovation ecosystems in less developed regions with complementary ones in more developed regions.

3. Harnessing the potential of the digital transition: digital skills, accessibility, and firm take-up of digital technologies

The last decade has seen a rapid increase in the adoption of digital technologies by businesses, people, and governments alike. In the health sector, for instance, digitalisation became a crucial element in the reorganisation of service-provision in the wake of the pandemic, with regional and local health authorities at the forefront of this process in several countries across Europe. More broadly, companies have increased investment in ICT substantially in recent years and this digital transition has greatly accelerated with the COVID-19 pandemic[24], with significant national and EU investments put forward to also improve the digital skills of students and teachers. The evidence suggests that digitalisation has increased the productivity of businesses, improving their efficiency, and stimulating domestic sales and exports[25]. While the impact on businesses has been positive, the overall impact on local economies and people, both up to now and in the future, is more difficult to assess. Recent studies indicate that while it has been generally positive for the EU, the effect has varied across regions depending on the structure of their economies and skills of the workforce[26].

Access to a sufficiently fast internet connection is essential for ensuring that all regions can harness the potential of the digital transition[27]. The acceleration of digitalisation in both the private and public sectors across the EU, as a result of the

24 European Investment Bank (2021).

25 Rossato and Castellani (2020); Cincera et al. (2020); Eduardsen (2018).

26 Marques Santos et al. (2023); see Box 5.3.

27 Batista e Silva and Dijkstra (2024).

COVID-19 pandemic[28], is evident in the improvement in broadband connectivity in most regions. The performance of fixed networks has improved in all Member States over the past three years but remains highly variable within them, with Greece, Cyprus and Croatia having the lowest speeds (Figure 5.5 and Figure 5.6). Capital city regions generally have the highest speeds, but with exceptions (France, the Netherlands and Germany).

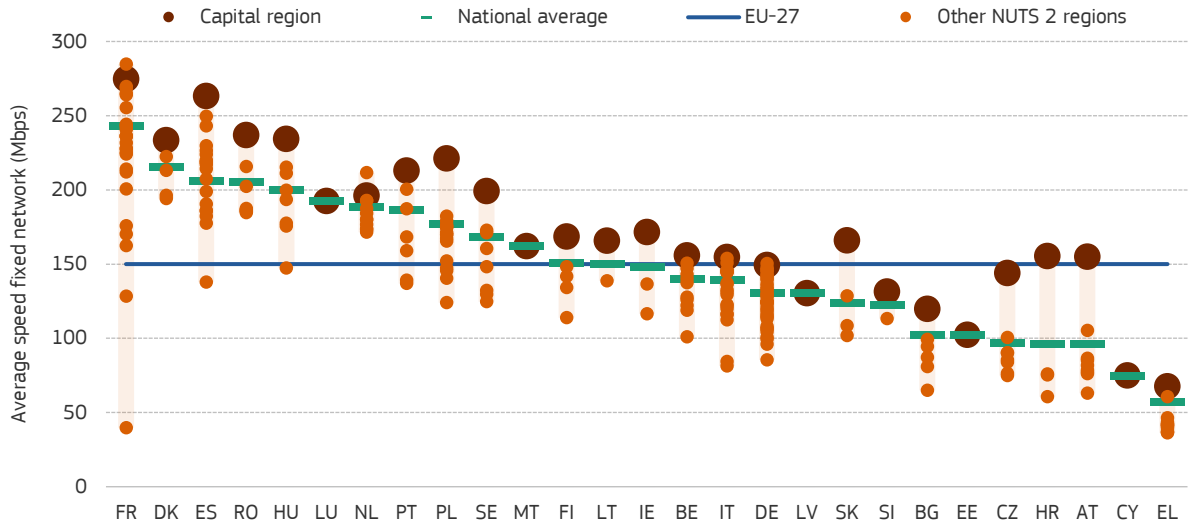
At the national level, France, Denmark, Spain and Romania have average speeds above 200 Mbps, although several regions in these countries have lower speeds, particularly in France). Over the three years 2020–2023, average speeds increased in all Member States. This is especially so in Cyprus and Greece, with over 70 % of the population being able to access good network speeds in 2023 as against zero in 2020. Speeds also increased significantly in Denmark, Spain and France, with around 80 % of the population being able to access network speeds of above 190 Mbps.

Significant differences exist between places within each country. While broadband speeds have generally increased, they have done so more in cities, but with marked differences between them, those in central and south-east Europe generally having much lower speeds (Map 5.4). In several countries, the biggest increase in speed has been in rural areas (in Estonia, France, Italy and Poland, especially), reflecting the effort made to bridge the digital gap between regions across the EU, though gaps still remain, especially in terms of access to very-high-capacity networks for rural areas[29].

At a more detailed level, large variations in network speed are evident between municipalities. (Map 5.5, which shows the average speed in local administrative units – LAUS)[30]. This is particularly so in Spain, France and Romania, where speeds are partly correlated with population density (see Chapter 3). On the other hand, speeds are more similar between municipalities in Greece, Bulgaria and Austria, with low average speeds, and in the Netherlands (with a speed of over 200 Mbps), while in Ireland, Poland and Italy, the variation in speeds across the country reflects the distribution of urban areas.

Besides access to high-speed broadband, the take-up of digital technologies by EU firms is a precondition for taking advantage of the potential

Figure 5.5 Average download speed per Member State and NUTS 2 region calculated for the fixed network, Q1.2023



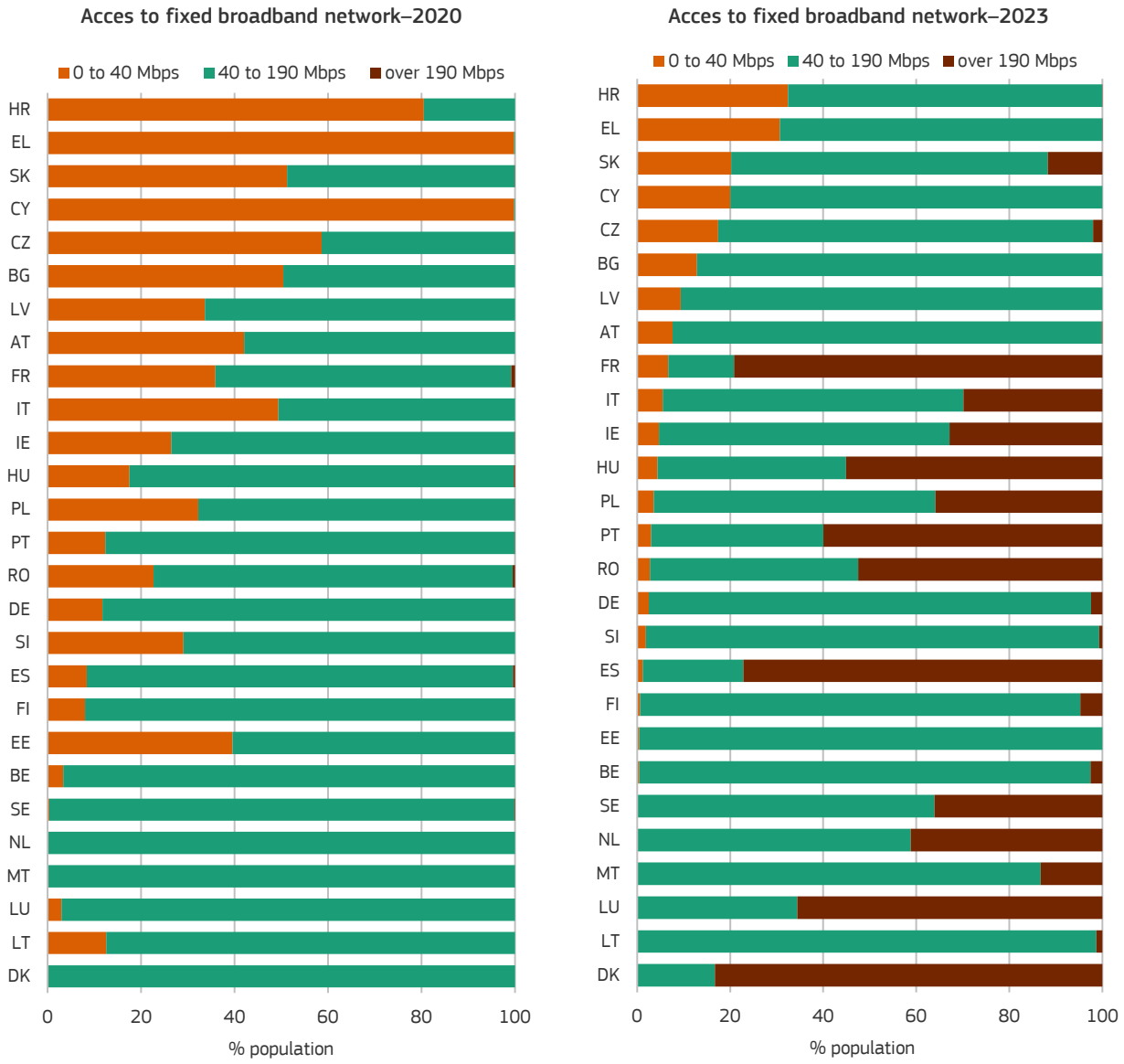
Source: DG REGIO calculations on Batista e Silva, Dijkstra and Sulis, 2024.

28 OECD (2020).

29 The data on broadband fixed network speed is available at the EU rural observatory.

30 Sulis and Perpina (2022); Melchiorri et al. (forthcoming).

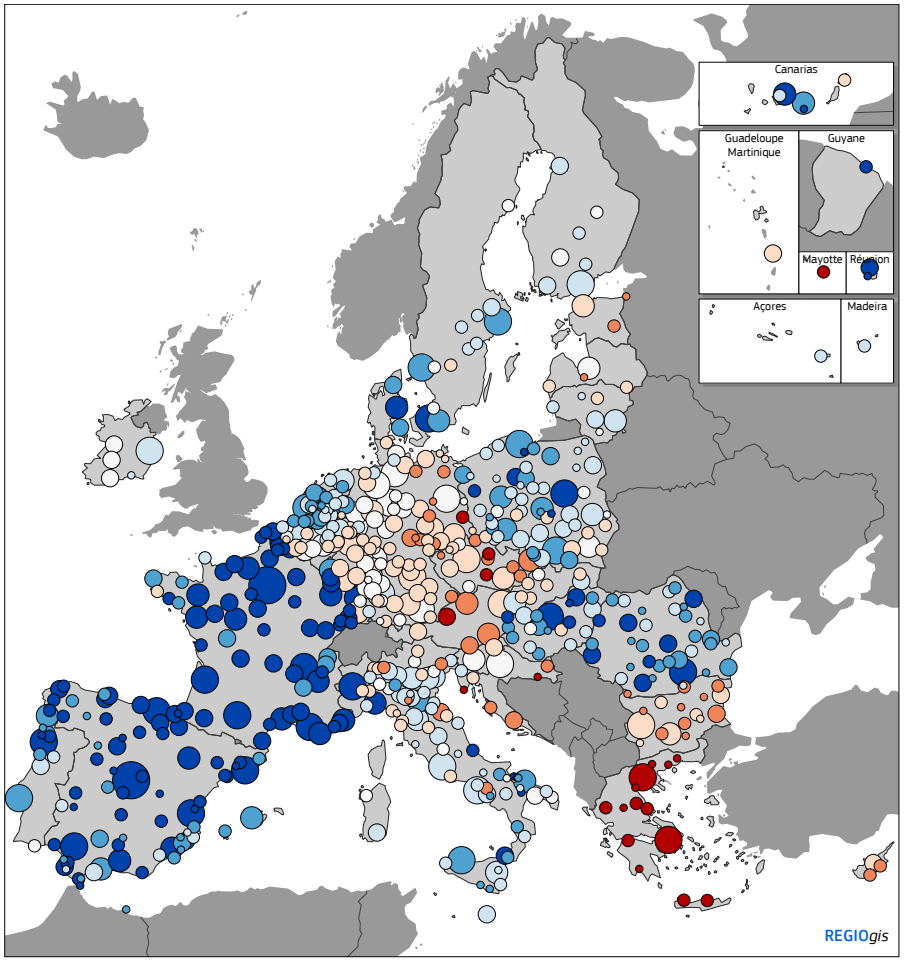
Figure 5.6 Share of population with access to fixed broadband network at different speeds (Mbps) in Member State, 2020 (left panel) and 2023 (right panel)



Source: DG REGIO calculations on Batista e Silva, Dijkstra and Sulis, 2024.

of the digital transition, which can increase efficiency, improve the accessibility of services and help to maintain competitiveness. As part of the digital transition, a goal of the EU is that by 2030, 75 % of businesses in the EU will have taken up three digital technologies, cloud computing, use of big data and AI. In 2021, over 40 % of businesses had adopted cloud computing, while only 15 % were using big data and under 10 % AI (Figure 5.7). The difference may be because of the newness of the latter two and their possibly less general applicability at the time. For all three technologies, however, the take-up was much greater, on average, in north-western Member States than in other parts of the EU, especially in the eastern countries.

As the digital transition in the EU takes place, digital skills will become increasingly important for labour market participation and inclusion. In 2021, over 60 % of EU enterprises that tried to fill vacancies for ICT specialists had difficulties. The EU has set the target that, by 2030, at least 80 % of the



Map 5.4 Internet fixed network speed in Functional Urban Areas, Q1 2023

Percentage deviation from EU median

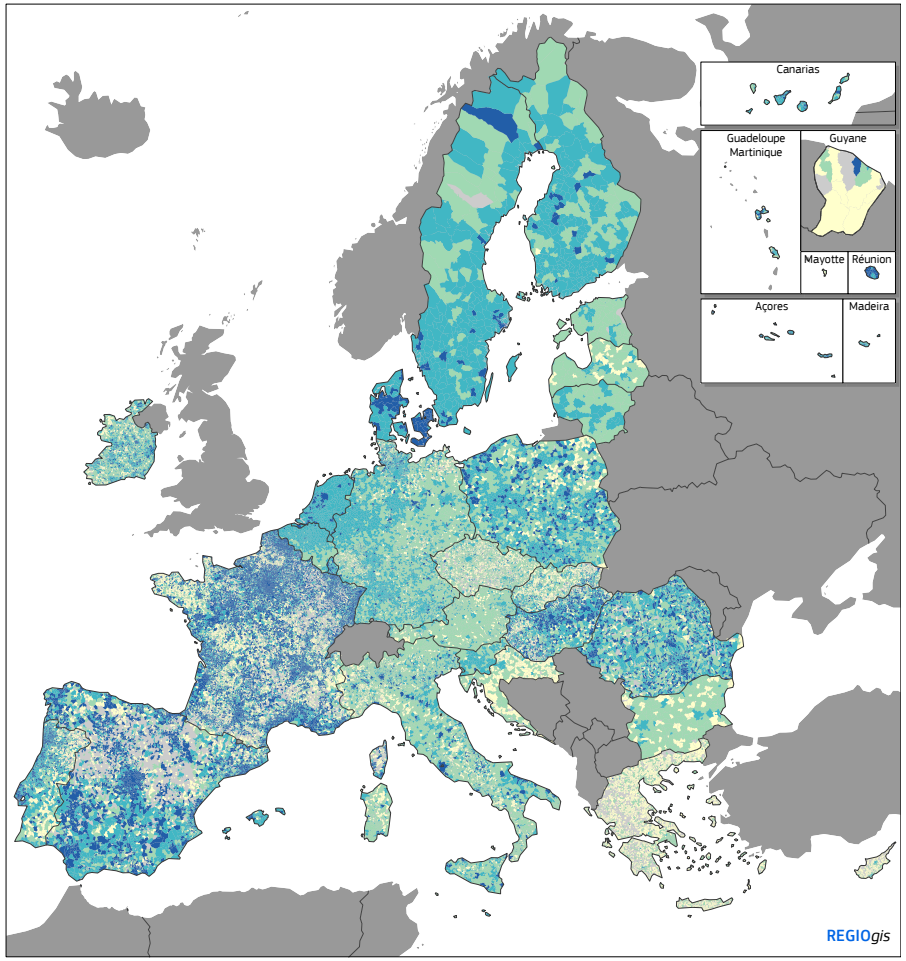
- < -50
- -30- – 50
- -5- – 30
- -5 – 5
- 30 – 5
- 50 – 30
- > 50
- no data

Population size

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

Deviation relative to EU median (weighted).
Source: JRC.

0 500 km



Map 5.5 Average speed for fixed network at municipality level (LAU), 2023

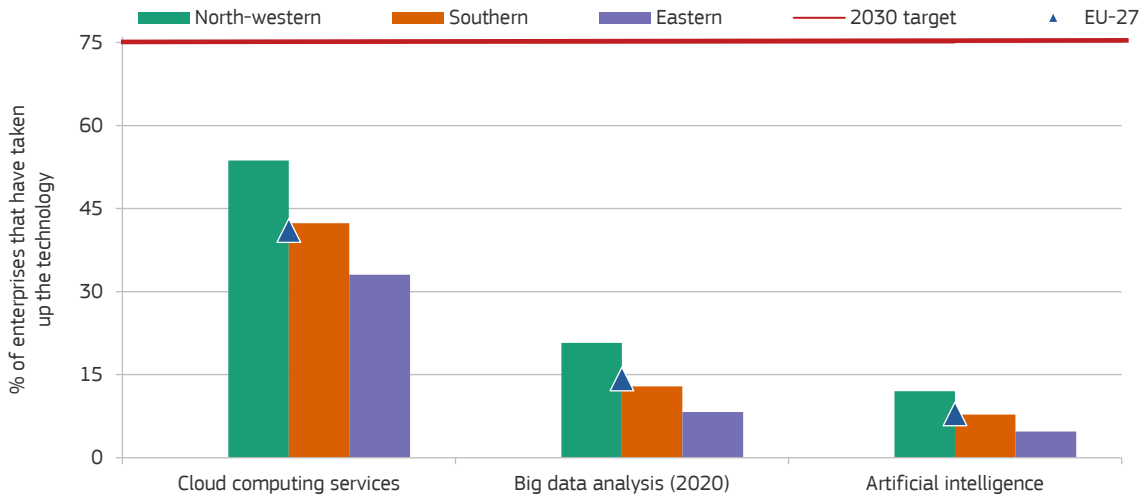
Average speed (Mbps) fixed network

- <= 30
- 30 – 100
- 100 – 200
- > 200
- no data

Source: JRC.

0 500 km

Figure 5.7 EU enterprise take-up of digital technologies, 2021



Note: All EU enterprises outside the financial sector with 10 or more persons employed are covered (Eurostat code 10_C10_S951_XK).
Source: Eurostat [isoc_eb] and DG REGIO calculations.

adult population should have basic digital skills[31]. In 2021, this was the case for only 54 % of people aged 16 to 74, well below the target, with major differences between countries, rates ranging from 79 % in Finland and the Netherlands to only 28 % in Romania. Throughout the EU, people living in cities (61 %) are more likely to have at least basic digital skills than those in towns and suburbs (52 %) and rural areas (46 %). While no data on basic digital skills are available at regional level, there are major differences between regions in the extent to which people use the internet on a daily basis, participate in online social networks, use internet banking and take part in e-commerce[32]. The number of ICT specialists in the EU is estimated to be around 12 million, well below the target of 20 million for 2030 set in the EU's '2030 digital decade'[33]. Here as well, there are major differences across countries, with Greece and Romania among the countries with the lowest percentage of ICT specialists (respectively 2.5 % and 2.8 % of total employment). Meanwhile, Sweden, Luxembourg and Finland are the countries with the biggest share of ICT specialists (respectively 8.6 %, 7.7 % and 7.6 % of total employment).

4. Synergies to harness the potential of the digital transition across regions: the role of cross-border co-operation

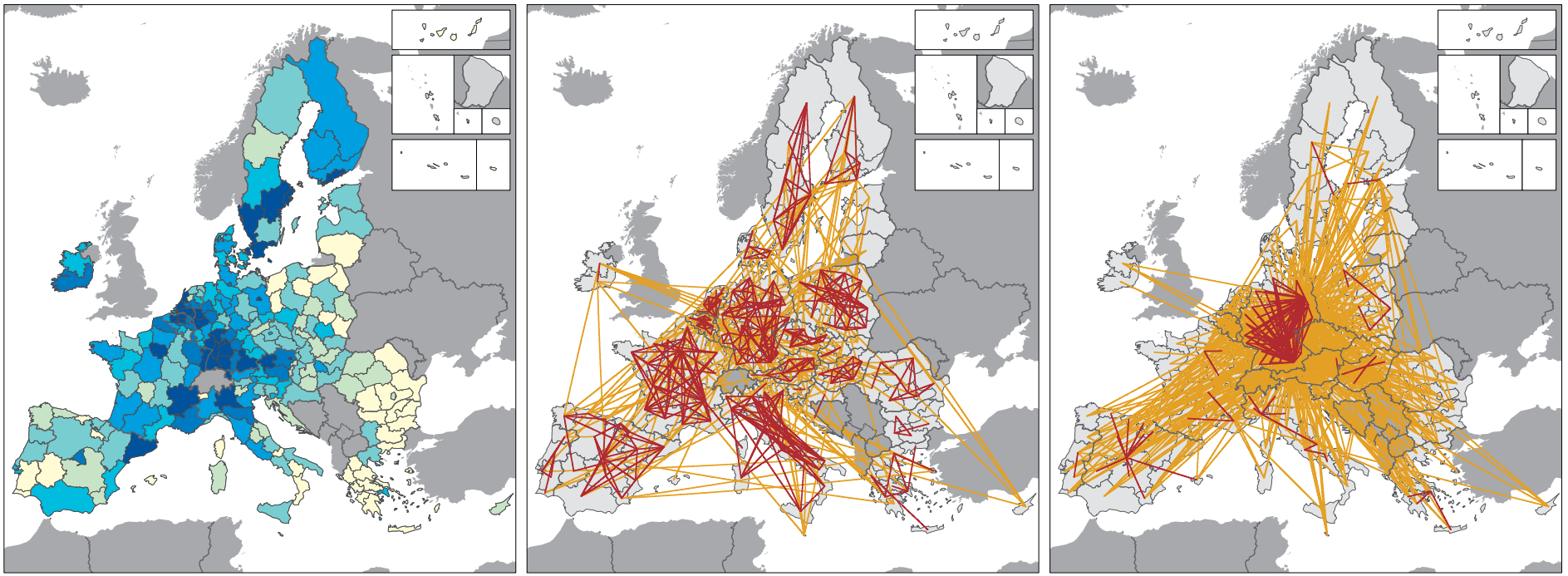
Cross-border innovation activity has increased in the EU over time but there is much room for further growth. A useful indicator of regional synergies in R&I is co-patenting. This has increased dramatically in Europe over the past four decades, rising from 1 000 co-patents in 1980 to over 100 000 in 2020. However, most co-patents are filed between firms or organisations located in the same region – around 75 % over the period 1980–2020. Almost 20 % were between organisations in different regions but in the same country and 7 % involved organisations in different European countries (Map 5.6).

31 See 'digital compass' of the '2030 digital decade' and European Pillar of Social Rights action plan. Overall digital skills refer to five aspects: information and data literacy skills, communication and collaboration skills, digital content creation skills, safety skills and problem-solving skills, which are covered by the revised digital competence framework (DIGCOMP 2.0). To have at least basic overall digital skills, people need to know how to do at least one activity in each area. See Eurostat: https://ec.europa.eu/eurostat/web/products-eurostat-news/-/ddn-20220330-1.

32 In 2022, only 7 % of people aged 16–74 in the EU never used the internet, though with major regional differences. In three regions in Sweden (Sydsverige, Stockholm and Småland med öarna.) only 1 % never use the internet., while in Norte (Portugal), the figure was 18 %, in Calabria (Italy), 19 % and in Kentriki Elláda (Greece), 20 %.

33 European Commission (2023b).

Map 5.6 Inter-regional cooperation in innovation and digital technologies



Inter-countries co-patents, 1979–2020

Actual inter-regional collaborations in digital technologies

Potential inter-regional collaborations in digital technologies

Box 5.3 Job creation and destruction in the digital age: assessing heterogeneous effects across Member States

In contrast to the potentially positive effects on the competitiveness of firms, many authors have argued that technological change can be detrimental to labour market conditions. According to Ford (2015) and Acemoglu and Restrepo (2020), for instance, automation and robots may replace workers and lead to job destruction. On the other hand, according to others, digitalisation may create new job opportunities as new technologies are adopted[1].

Changes in the structure of the labour market induced by digital technologies have been studied empirically using both micro-economic and macro-economic data[2]. Findings on the net effect of digitalisation on employment are mixed. A majority of studies suggest it may increase high-skilled employment (complementarity effect) and reduce low-skilled employment (substitution effect). The net effect Is likely to depend on the economic characteristics of each country, on its knowledge capacity, sectoral composition, and capacity to upskill or reskill the workforce as the structure of activity changes. As a corollary, regions and countries will tend to be affected differentially by the digital transition.

Marques Santos et al. (2023) have examined whether ICT investment was associated with an increase or decrease in labour demand in Member States between 1995 and 2019. They find an overall positive effect on total employment over the period, but not in all Member States. This suggests that studies of different countries may yield different results because of the structural characteristics of economies and that conclusions based on case studies may not hold generally. At the same time, the findings underline the importance of investigating further the spatial and sectoral impact of digitisation and taking account of the specific economic and employment features of places when formulating policy recommendations.

1 Degryse (2016).

2 For a review, see Marques Santos et al. (2023).

Of the latter, the vast majority involved organisations in cross-border regions, notably along the Rhein valley connecting German, Belgian, French and Swiss regions, though also in capital city regions with a track record of patenting activity. The importance of physical proximity for co-innovation is well established, but the strong national bias in inter-regional collaboration in co-patenting limits the potential to co-operate in the EU Single Market. One way of overcoming this bias is to strengthen inter-regional knowledge flows and to promote co-operation in innovation between leading and lagging regions, such as through the implementation of smart specialisation strategies[34] (Section 3). In this way, the untapped potential for cross-border co-operation could be realised (see Box 5.4).

5. Foreign direct investment (FDI) and access to finance as key drivers of innovation at regional level

FDI is an important means of fostering innovation both directly and indirectly. Direct means are when foreign firms bring new products, technologies or processes into the host economy. In these cases, foreign firms often pay higher wages, have higher levels of productivity and innovate more than domestic firms[35], as well as opening new direct links to global value chains[36]. Indirect means are when there are knowledge and technology spill-overs to local firms, or workers move from foreign-owned firms to domestic ones, bringing know-how and new ideas with them.

34 Balland and Boschma (2021).

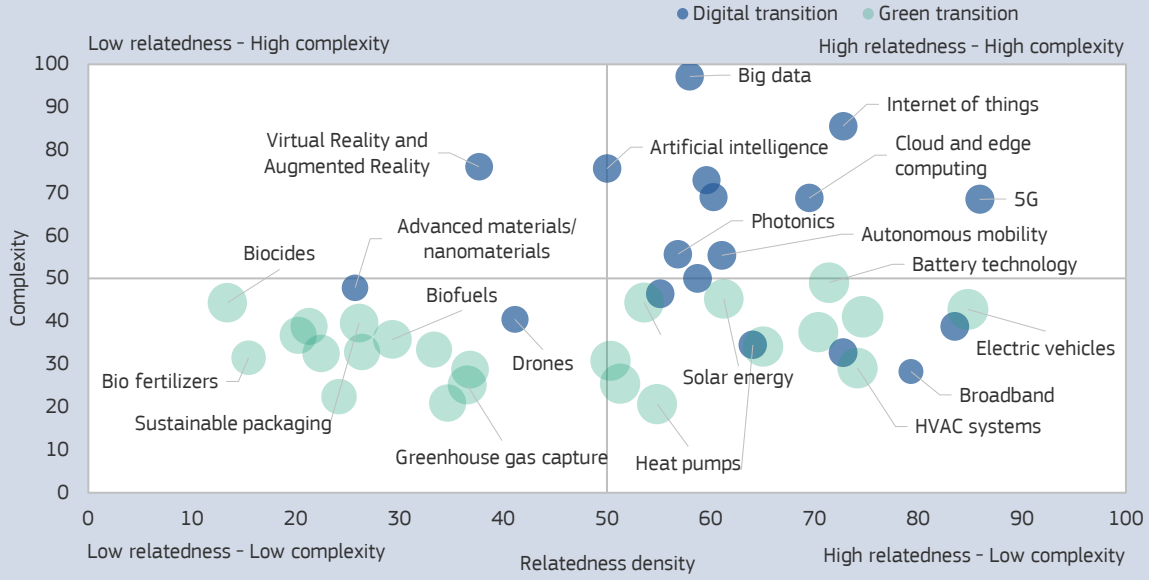
35 OECD (forthcoming).

36 Comotti, Crescenzi and Iammarino (2020).

Box 5.4 Related variety, complexity and the regional potential for the digital transition and cross-border co-operation

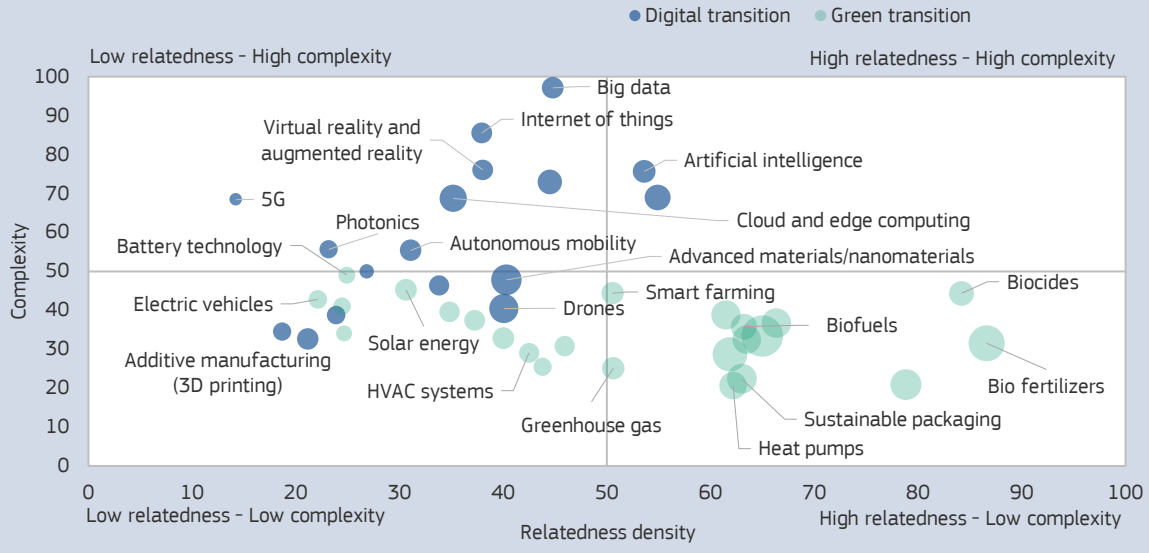
There is significant untapped potential in green and digital technologies. A number of studies have developed a method of identifying the opportunities for regions to diversify, given the capabilities they have accumulated in the past: Balland et al. (2019); Hartmann et al. (2021). They condition which development paths a region is most likely to follow. Using a framework based on the notions of 'relatedness' and 'complexity', Bachtrögler-Unger et al. (2023) determine whether regions have opportunities to diversify into more complex activities linked to the digital transition as well as the technologies needed for the green transition. The results show that more developed regions are more likely to

Figure 5.8 Potential of more developed EU regions to develop twin transition technologies



Source: Bachtrögler-Unger et al. (2023).

Figure 5.9 Potential of less developed EU regions to develop twin transition technologies



Source: Bachtrögler-Unger et al. (2023).

specialise in digital technologies and benefit from the digital transition, but less developed regions are well placed to develop the technologies and activities relating to the green transition.

For both types of region, there appears to be large untapped potential for cross-border co-operation. Figures 5.8 and 5.9 show the technology opportunities from the twin transition for more and less developed regions, with the relatedness of patents to existing technologies on the horizontal axis and the level of complexity on the vertical axis[1]. The blue dots represent digital technologies, the green ones green technologies, their size indicating regional comparative advantage in the technology relative to other regions. On average, more developed regions have high potential in the different technologies. Their highest digital potential is in complex technologies (such as 5G), the lowest in low-complex ones. The picture is similar for green technologies, with strong capability in electric vehicles, battery technology and solar energy. Less developed regions have low patent activity in both areas. While, however, their potential for complex digital technologies is limited, they appear to have high potential in a wide range of green technologies, such as biocides, biofertilisers, geothermal energy, biofuels, waste management and recycling.

There is substantial untapped potential for cross-border co-operation across EU regions in developing the value chains needed for the green and digital transitions. Bachtrögler-Unger et al. (2023) examined whether regions are connected to the right set of other regions to develop the next generation technologies, in the sense of the regions that can give them access to the complementary capabilities needed to develop them. The study compared the ideal collaboration network in which complementarities across regions are fully exploited with the current state of collaboration (as indicated by co-inventor linkages) in the technological areas concerned. shows the three strongest actual collaborations in digital technologies of each region with others and the three inter-regional linkages that represent the largest untapped potential (based on complementarities). Intra-country linkages are coloured in red, cross-border ones in yellow. The actual inter-regional collaborations show a clear national bias, while the largest untapped potential is for cross-border collaborations. This applies for both more developed and less developed regions.

1 Bachtrögler-Unger et al. (2023).

An appropriate place-sensitive approach is important for FDI to have positive spill-over effects. According to a study of manufacturing firms in six Member States, productivity spill-overs can be positive, non-existent, or even negative, depending on how close the firms in a given sector are in technology terms[37]. Embedding FDI can benefit local communities but requires additional elements to ensure firms 'stick' to places[38]. The public sector and the third sector can play an important role in this by setting the right framework conditions and generating incentives to co-create value-added with local firms[39].

Co-ordination across places is needed to foster the positive enablers of FDI in terms of efficient institutions, a skilled workforce, an effective research environment and good connectivity. These factors play a key role in shaping regional attractiveness for foreign investors[40]. However, the choice of FDI location can also be motivated by less desirable institutional settings, such as lower labour

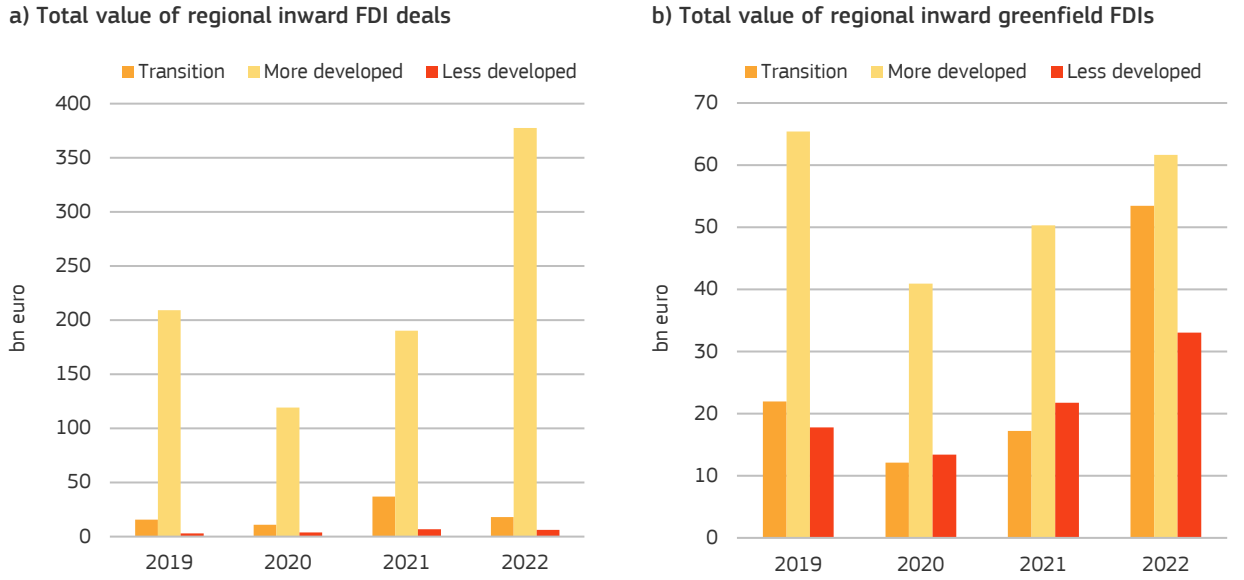
37 Positive spill-overs dominate if domestic firms are using similarly advanced technologies to the foreign firm and operate in the same sector (Fons-Rosen et al., 2018[9]) or in other sectors (Lembcke and Wildnerova, 2020[8]). Negative effects from increased competition dominate if the products of the foreign-owned company are similar to those of domestic ones (Lembcke and Wildnerova, 2020[8]).

38 These elements are broadly related to the ecosystem of the firm, including links with other firms and clusters with both suppliers and customers, complementary firms and even competitors that can attract workers with the right skill set to a region.

39 Bailey and Tomlinson (2018).

40 OECD (2023).

Figure 5.10 Value of regional inward FDI by degree of regional development, NUTS 2, 2019–2022



Note: The left panel includes all forms of FDI, mergers and acquisitions as well as greenfield FDI. The right panel features only greenfield FDI.
Source: Martinez Cillero et al. (2024) based on Orbis M&A BvD and Orbis Crossborder BvD data.

standards[41], lower tax rates or higher tax credits or subsidies[42], or laxer environmental standards, especially for highly polluting industries[43]. This points to the importance of cross-border co-ordination to ensure a level playing field for investment that minimises the risk of beggar-thy-neighbour competition (both domestic and foreign), while at the same time strengthening the positive enablers of investment.

Less developed and transition regions have increasingly attracted greenfield investment over the past few years[44]. Regional data on FDI enable two types to be distinguished M&A and greenfield investment[45]. On average, 53 % of greenfield FDI in the EU over the period 2019–2022 (with an equivalent value of EUR 218 billion) went to less developed and transition regions, increasing from 38 % in 2019 to 58 % in 2022, when transition regions alone accounted for 36 % (Figure 5.10, right panel). Accordingly, greenfield FDI is relatively high in the eastern EU Member States and in almost all regions of Spain and Portugal, but also in Sweden, Finland, Ireland and the Benelux countries[46].

By contrast, FDI in the form of M&A goes mainly to more developed regions (Figure 5.10, left panel). Capital city regions are major destinations, as in France, Austria, Finland, Spain, Portugal, Poland and Greece, but also regions in northern Italy, north-eastern Spain, southern France, southern and eastern Germany, the North-Rhine-Benelux area, and both sides of the Gulf of Finland. The regions with the highest level of M&A over the period are Wien (Austria), Eastern and Midland (Ireland), Limburg and Noord-Holland (Netherlands), Madrid (Spain), Helsinki-Uusimaa (Finland), and Luxembourg.

41 Davies and Vadlamannati (2013); Olney (2013).

42 Desai et al. (2005); de Mooij et al. (2003).

43 List and Co (2000).

44 Gianelle et al. (forthcoming).

45 Mergers and acquisitions (M&A) involve the acquisition of at least 10 % of the equity of a company resident in an NUTS 2 region in the EU by a company resident in another country, which may be outside the EU (portfolio investments are excluded). Greenfield investment consists of the construction by a company in another country of new facilities (sales office, manufacturing plants, etc.) or the relocation or extension of existing facilities.

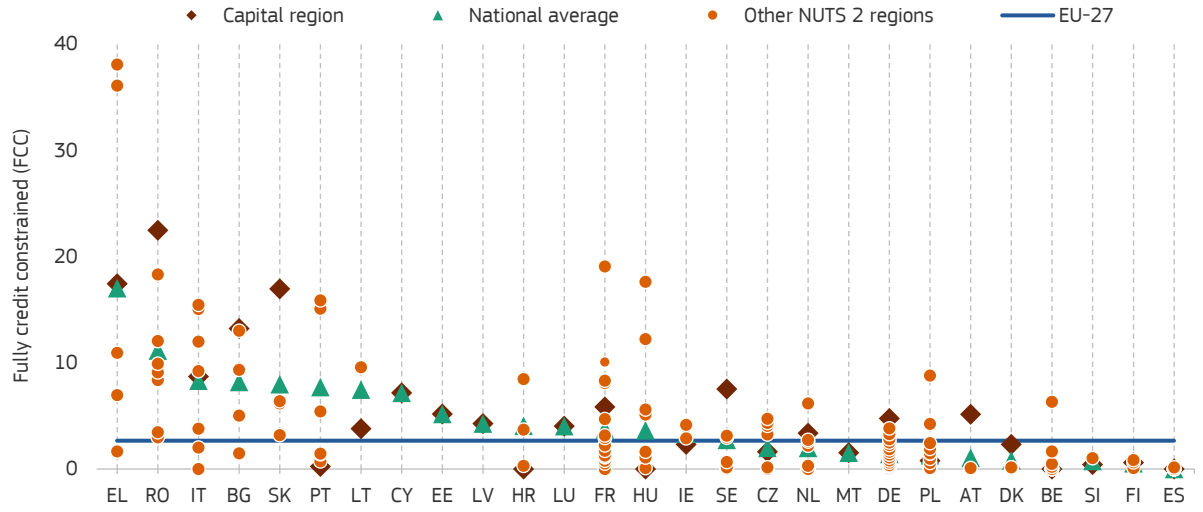
46 The regions with the highest levels of greenfield FDI over the period are Észak-Alföld, Közép-Dunántúl, Dél-Alföld and Pest (all in Hungary), Sachsen-Anhalt (Germany), Alentejo (Portugal), Eastern and Midland (Ireland), and Východné Slovenskom (Slovakia).

5.1 Access to finance and innovation

Access to finance is essential for fostering innovation, but firms in a number of regions find it difficult to obtain bank financing. In comparison with the US, where financial markets are more developed and the risk capital market stronger, the fragmented nature of financial markets in the EU poses challenges. This is especially so for less developed regions, which in many cases may lack liquid capital markets and robust financial infrastructure and accordingly have many firms that are credit constrained[47]. In these cases, targeted support to facilitate access to finance for innovation-related investment can take the form of grants, low-interest loans, guarantees, or equity.

The World Bank Enterprise Survey, conducted in 2019, shows large variations between regions in access to finance. In the survey, a firm is considered to be constrained in accessing external finance if either one of two conditions hold: (1) the firm did not apply for a loan for any reason other than they did not need it; or (2) the firm applied for a loan but was rejected. Firms in many regions in eastern and southern Member States are shown to be constrained in this way (Figure 5.11). The survey also reveals that firms are more constrained in investing in innovation if it is financed through bank loans than if it is financed through equity. The result is in line with equity financing being generally more suitable the higher the risk associated with the investment, encouraging a collaborative approach to risk-taking. Loans and guarantees, on the other hand, tend to be more suitable when the innovation is less risky, giving firms the financial support needed while offering a structured means for repayment.

Figure 5.11 Share of fully credit constrained firms at EU, national and NUTS 2 level, 2019 (%)



Note: the highest point in EL is 72.8 %.
Source: World Bank Enterprise Survey.

47 Financial infrastructure in this context refers to the availability and efficiency of financial services, institutions, and the market generally.

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6

THE DEMOGRAPHIC TRANSITION

- Population growth in the EU has been slowing for decades and the population is projected to decline in the coming years and decades. In 2021 and 2022, the EU recorded, for the first time, a reduction in population, although the COVID-19 pandemic played a role in this and a (temporary) recovery is expected.

- The slowdown in growth has been driven by a natural decline in population since 2012 and inward migration has not been sufficient to compensate for this. Already 40 % of people in the EU live in a region that lost population over the preceding decade and this is projected to increase. In rural regions the share is higher than in urban regions.

- In the EU, a process of urbanisation and suburbanisation has been going on since at least 1960, resulting in an increasing concentration of the population in fewer cities and large towns, and a diminishing proportion in rural areas. This tendency is not expected to go into reverse, though the pace of urbanisation is likely to moderate, especially in countries with already high levels of urbanisation.

- Because of increased life expectancy and the ageing of the baby-boom generation, the population aged 65 and over has increased in virtually all regions, while the number of working-age and young people has declined. These trends are projected to continue, posing policy challenges in terms of labour market shortages, fiscal sustainability, infrastructure provision, and access to essential and social services.

- These challenges are most acute in remote, predominantly rural regions – i.e. those a long way from the nearest city – where depopulation, ageing and a shrinking workforce are most prevalent.

- Some regions, in addition to the workforce shrinking, are affected by a small and stagnant share of the population with tertiary education, making it difficult to compensate for the loss of labour through higher labour productivity. These regions, which can be thought of as being in a 'talent development trap', are found in various parts of the EU, with some concentration in eastern Member States.

- Such regions tend to have relatively low GDP per head and employment, to be rural in nature with a large agricultural sector, and to have poor access to services and the internet. Targeted policy responses, such as the Harnessing Talent Initiative and the Talent Booster Mechanism, are needed to increase their resilience and attractiveness.

Chapter 6
The demographic transition

1. Demographic change in EU regions

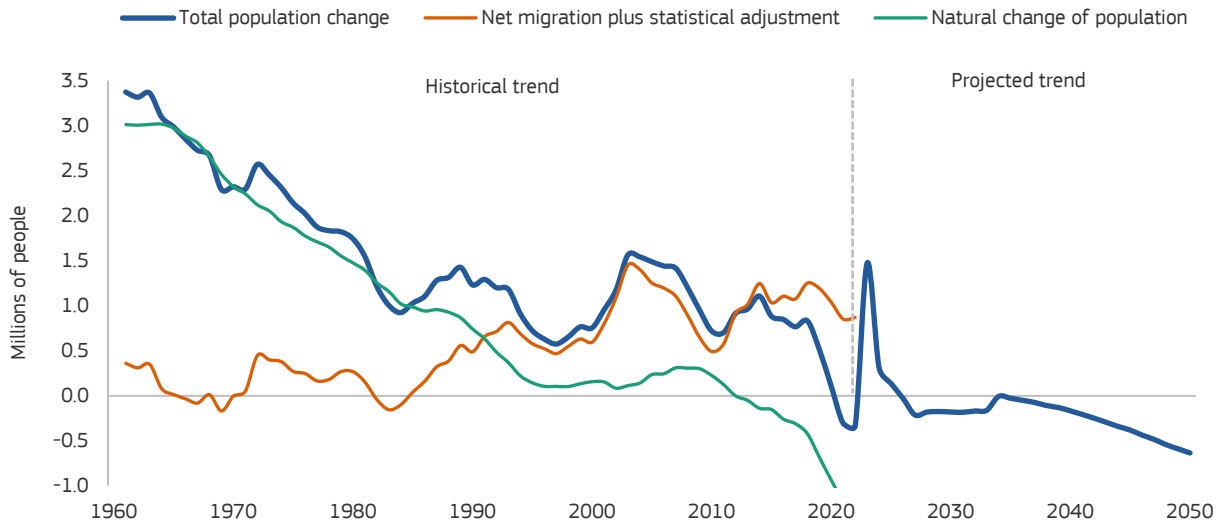
1.1 After decades of growth, the EU population has started shrinking, due to natural decline

The total population in the 27 present EU Member States has been growing since at least 1960. Up until the early 1990s, there was natural population growth in the EU, with births exceeding deaths. On average, between 1960 and 1992, natural growth added 1.8 million people a year to the population. However, natural growth was steadily declining over this period (Figure 6.1). Net inward migration (immigration less emigration) was small, adding only about 200 000 people a year on average to the total, and in some years more people moved out of the EU than moved in.

Since 1992, net inward migration has contributed more than natural growth to the population. In the 1990s and 2000s, natural growth added only 250 000 people a year to the population as against 800 000 a year from inward migration. From 2012, there was a natural reduction in the population of almost 500 000 a year, but this was more than offset by net migration. During 2020 a sudden surge in the mortality rate, because of the COVID-19 pandemic, led for the first time to a reduction in population despite the positive contribution of migration.

Population projections[1] show that, following a rebound in 2023, the total population is expected to decline from 2026 on.

Figure 6.1 Change in total population, natural change and net migration in the EU, 1961–2022 (three-year moving average) and population projections 2023–2050, millions



Source: Eurostat [demo_gind, proj_23_n].

1 Eurostat's population projections (Eurostat[proj_23_n]) used here result from the application of a set of assumptions on future developments of fertility, mortality and migration to the official statistics provided by national statistical institutes. The projections should not be considered as forecasts but as 'what-if' scenarios that indicate how the population will change in future on these assumptions.

1.2 Drivers of population change vary between urban and rural regions

Since 2010, the EU population has increased on average by 1.5 per 1 000 each year (Table 6.1). This is much slower than in the 2000s, when the rate was 2.9 per 1 000. A natural reduction (of 0.7 per 1 000 a year) was offset by net inward migration (of 2.2 per 1 000 a year). Over this period, the highest growth was in the north-western EU[2] (4.2 per 1 000 a year) with both a natural increase in population and net inward migration[3] (Map 6.1). Population growth in the southern EU was lower because of a natural reduction in population, but still positive because of net inward migration, which was similar in scale to that in the north-western Member States. The population in the eastern EU declined (by 2.6 per 1 000 a year) because of a significant natural reduction and net outmigration.

At the EU level, as well as in all three broad areas, natural change and net migration followed the same pattern over the 2010–2021 period as regards relative developments in urban and rural regions[4]. They were highest on average in the former and lowest (often negative) in the latter (Table 6.2). This reflects the smaller share of women of child-bearing age in rural regions than in urban ones, meaning that, despite having a higher fertility rate, they have a lower birth rate. This, in combination with higher mortality rates because of an older population, contributes to lower natural population growth and in many cases a decline.

The differences in the structure of the population led to substantial differences in demographic trends, with relatively high total population growth in urban regions in the north-western EU (6 per 1 000 a year) and significant decline in rural regions in the southern and eastern EU (of 4–5 per 1 000 a year). There is a natural reduction, on average, in all types of regions in the EU – urban, intermediate and rural except for urban regions in the north-western EU.

There was net inward migration, on average, into all three types of regions at EU level, but much more so for urban than rural regions (3.1 per 1 000 a year, as against 0.9). Net inward migration outweighed a natural reduction in population in north-western rural and intermediate regions, southern urban regions and eastern urban regions. Only in eastern rural regions was there, on average, net outward migration, so adding to the natural reduction and contributing to a significant outflow in regions in countries such as Latvia, Lithuania and Croatia. The averages, however, conceal the fact that there was also net outward migration in some regions in the southern EU (mainly in Spain, Portugal and southern Italy) and in the north-western EU (mainly in northern France and Finland).

Table 6.1 Natural population change, net migration and total population change, 2010–2021

Average annual change per 1 000 residents

	Total population change	Natural population change	Net migration
EU-27	1.5	-0.7	2.2
North-western	4.2	0.6	3.6
Southern	0.4	-1.6	2.0
Eastern	-2.6	-2.2	-0.4

Source: Eurostat [demo_r_gind], DG REGIO calculations.

2 See the glossary for definitions of north-western EU, eastern EU and southern EU.

3 Note that once the analysis focuses on different parts of the EU, migration figures also include movements between Member States and, in the case of regional population change, movements between regions. The data used do not enable the different flows to be distinguished. Hence, we use the term '(net) migration' to refer to the sum of these flows. This corresponds to the operating definition used by Eurostat, i.e. the part of population changes not attributable to births and deaths.

4 See Box 3.1 for a detailed explanation of the urban-rural typology based on population density. If data is available at a granular level, the analysis looks at rural or urban areas; otherwise, the level of analysis is higher and based on predominantly rural or urban regions. The urban-rural typology is particularly useful for studying population dynamics over time, as it is based on population clustering and density.

Table 6.2 Natural population change, net migration and total population change by urban-rural regional typology, 2010–2021

	Total population change	Natural population change	Net migration
Average annual change per 1 000 residents			
EU-27			
Urban	3.9	0.8	3.1
Intermediate	0.9	-1.3	2.3
Rural	-1.6	-2.5	0.9
North-western			
Urban	6.0	2.3	3.7
Intermediate	3.8	-0.2	3.9
Rural	1.3	-1.6	2.9
Southern			
Urban	2.1	-0.5	2.6
Intermediate	-0.5	-2.2	1.7
Rural	-4.7	-5.2	0.4
Eastern			
Urban	1.5	-0.9	2.4
Intermediate	-2.5	-2.5	-0.1
Rural	-4.1	-2.5	-1.6

Source: Eurostat [demo_r_gind], DG REGIO calculations.

In the case of rural and intermediate regions, their proximity to a city matters for demographic change (Table 6.3)[5]. In remote rural regions, the population shrank by 3.6 per 1 000 a year between 2010 and 2021, around 4 times more than in rural regions close to a city, where the natural decline in population was partly offset by net inward migration. By contrast, there was very little net inward migration into remote rural regions, where the natural decline was greater.

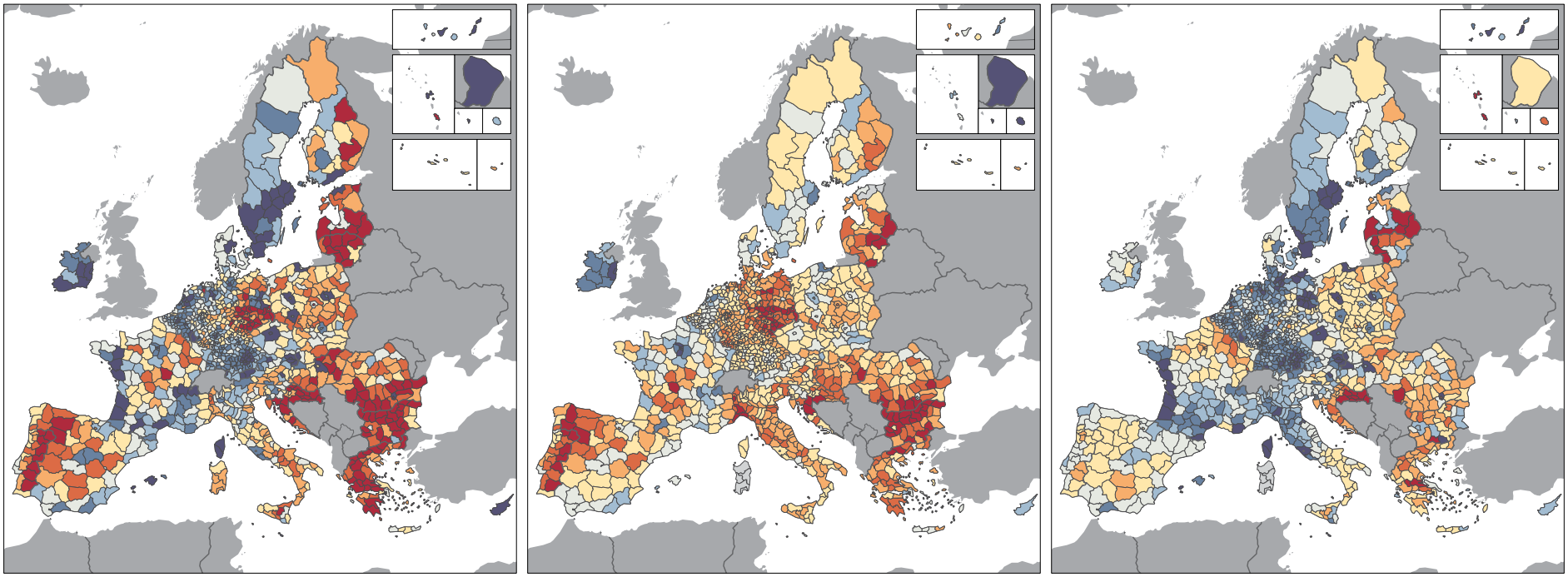
Table 6.3 Natural population change, net migration and total population change by urban-rural regional typology including closeness to a city, 2010–2021

	Total population change	Natural population change	Net migration
Average annual change per 1 000 residents			
Urban	3.9	0.8	3.1
Intermediate	0.9	-1.3	2.3
Close to city	1.2	-1.3	2.4
Remote	-2.6	-2.1	-1.5
Rural	-1.6	-2.5	0.9
Close to city	-0.8	-2.1	1.3
Remote	-3.6	-3.5	-0.1

Source: Eurostat [demo_r_gind], DG REGIO calculations.

5 The analysis here is based on a more detailed version of the urban-rural typology that further classifies intermediate and rural regions as either being 'close to a city' or remote. 'Close to a city' means that at least 50 % of the population is located inside areas within 45 minutes travel time to the centroid of a city of at least 50 000 inhabitants. 'Remote' means 50 % of the population is located outside such areas.

Map 6.1 Total population change, natural growth and net migration by NUTS 3, 2010–2021



Source: DG REGIO calculations based on Eurostat (demo_r_gind3) and Joint Research Centre (JRC) (ARDECO) data.

Box 6.1 Long-term urbanisation trends in Europe

Urbanisation is associated with innovation and economies of scale, leading to higher productivity and socio-economic development. Because of the density of urban areas, they can also offer environmental advantages such as reduced use of land, energy and raw materials. On the other hand, the increasing population density and diversity of urban areas pose challenges of pollution, housing cost, congestion, crime and lack of social cohesion, potentially affecting the well-being of residents.

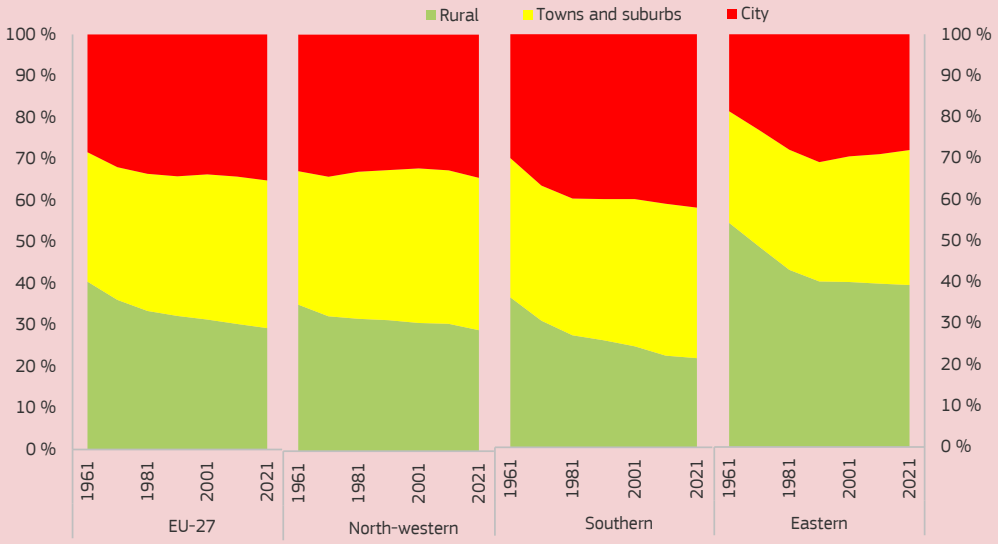
The concentration of population in urban areas is not a recent phenomenon. The urbanisation process in Europe, as elsewhere, was fuelled by industrialisation from the late 18th century on, with a shift from agrarian-based to industrial-based economies and, more recently, to services. This led to the movement of people from rural to urban areas and to the construction of infrastructure there.

Between 1961 and 2021, the EU population increased from 359 to 456 million. This was accompanied by a steady process of urbanisation, with the population living in urban areas increasing from 59 % to 71 % of the total, and consequently the share in rural areas falling to 29 % by 2021 (Figure 6.2)[1]. The increase in the urban population was split between cities (7 pp) and towns and suburbs (5 pp).

However, current levels of urbanisation and trends over the 1961–2021 period differ between broad areas of the EU. Contrary to the population growth in the north-western and southern areas, in the eastern EU the population has declined steadily since 1991, with even the share in cities declining from 31 % to 28 %. In 2021, the eastern Member States remained the least urbanised, with 61 % of the population living in urban areas (cities plus towns and suburbs) as against 71 % in the north-western and 78 % in the southern EU.

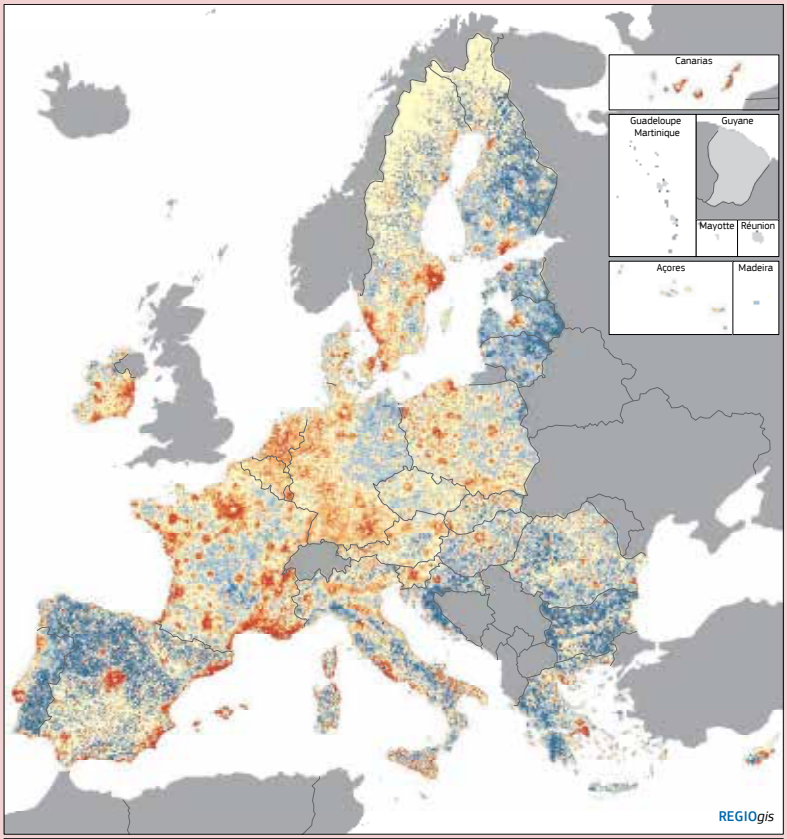
The decline in the rural population was particularly marked in the southern EU (from 36 % in 1961 to 22 %). The increase in the share of the population in cities was largest in the southern EU (12 pp), followed by the eastern EU (9 pp), while it barely increased at all in the north-western EU (1 pp). The population share in towns and suburbs increased most in the eastern (6 pp) and north-western EU (5 pp), while it increased much less in the southern EU (2 pp).

Figure 6.2 Share of population by degree of urbanisation (cities, towns and suburbs, and rural areas), in the EU-27 and per broad area, 1961 to 2021



Source: Batista e Silva and Dijkstra (2024) and DG REGIO calculations.

1 The degree of urbanisation from 1961 to 2021 is calculated using the degree of urbanisation grid tool developed by the JRC (global human settlement layer tools: https://ghsl.jrc.ec.europa.eu/tools.php). This produces a grid-level classification of settlements based on population grids at 1 square kilometre (km^2) resolution, and according to the degree of urbanisation definitions (see Box 3.2). As input, a consistent time-series of population grids at this level of resolution, constructed for this period by the JRC, was used, with 10-year intervals in line with the census years.



Map 6.2 Average population change per decade by area of 5 x 5 km, 1961–2021

The change in population between 1961 and 2021 differs between countries and is affected by geography (Map 6.2). Population growth and decline both tend to cluster in particular areas. In addition, there is a marked urban-rural divide across the EU. The population increased substantially over the period in or around the main cities, as well as coastal areas, especially in the southern EU. Rural areas lost population overall, but especially in the southern and eastern EU, with large, mainly rural, parts of Portugal, Spain, Croatia, Bulgaria, Romania and the Baltic countries.

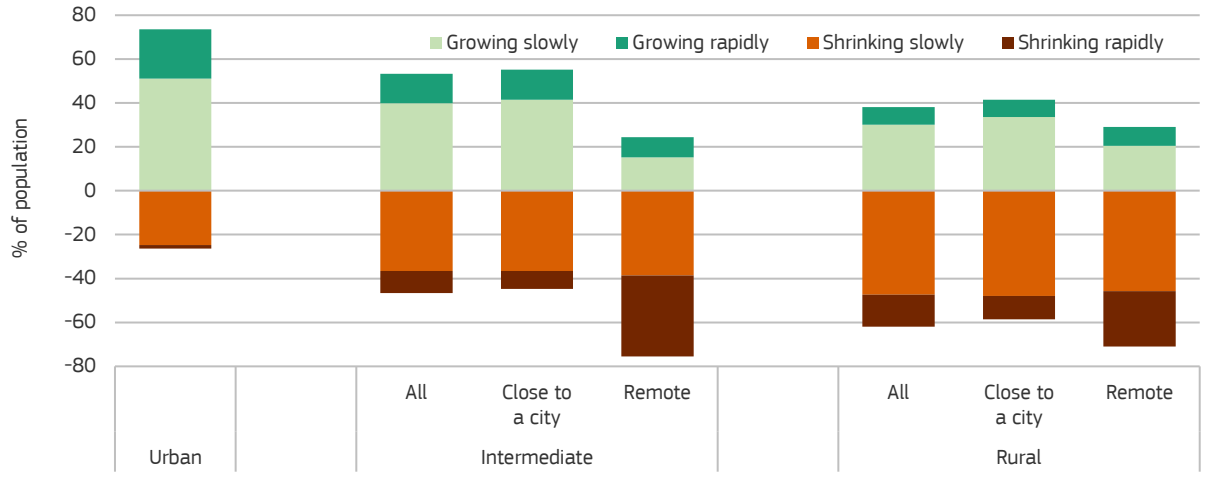
This illustrates an ever increasing concentration of the EU population in cities and large towns, and an ever diminishing population in rural areas. There is no expectation that this trend will go into reverse, though on average the speed of urbanisation is likely to decline, especially in countries with already very high urbanisation levels.

In the case of intermediate regions, the effect of proximity to a city is even more pronounced. In those close to a city, the population increased by 1.2 per 1 000 a year over the period, whereas in remote regions, it shrank by 2.6 per 1 000. Much of this can be attributed to differences in net migration, which was positive in regions close to a city and negative in remote regions, so reinforcing a larger natural population reduction in the latter.

The net outward migration from remote regions (e.g. some outermost regions such as Guadeloupe or Açores) results in part from a lack of economic and employment opportunities there, which together with a lack of access to essential services, such as education and training, childcare and healthcare facilities, makes them less attractive places to live, both for migrants and the resident population (see also Chapter 3). In some outermost regions, however, the problem is rather the reverse: a sizeable inwards migration pressure from outside the EU. Mayotte, Guyane and Canarias are among the 10 EU regions with the highest share of non-EU-born migrants; in Mayotte more than 50 % of the population was born outside of the EU.

In 2022, 42 % of people in the EU lived in a region that lost population between 2010 and 2021. This was the case for only 26 % in urban regions, but for 47 % in intermediate regions and for 62 % in rural ones (Figure 6.3). The share of people living in a shrinking region was particularly large (around 75 %) in remote intermediate and rural regions. Rapid population decline (by at least 7.5 per 1 000

Figure 6.3 Share of EU population in 2022 by direction and rate of population change by urban-rural typology during 2010–2021



Note: Rapid growth/decline is defined as an increase/decline of at least 7.5 per 1 000 a year. Share of population relates to the share on 1 January 2022.
Source: Eurostat [demo_r_pjangrp3] and DG REGIO calculations.

a year) is also more likely to have been experienced in rural regions than in others over the period. In remote intermediate regions, the reduction was as much as 37 % over the 12 years.

The relatively large share of rapidly shrinking regions that are rural and remote is in line with the reduction in population that occurred on average in these regions. Nevertheless, there are also regions with rapid population growth in all the groups, especially the two French outermost regions of Guyane and Mayotte, where the population is projected to double by 2100.

Eurostat population projections for 2040[6] indicate an increase in the share of people living in shrinking regions in all groups by around 18 pp, as compared to 2020.

1.3 The share of the population aged 0–29 relative to 30–59 varies markedly across the EU

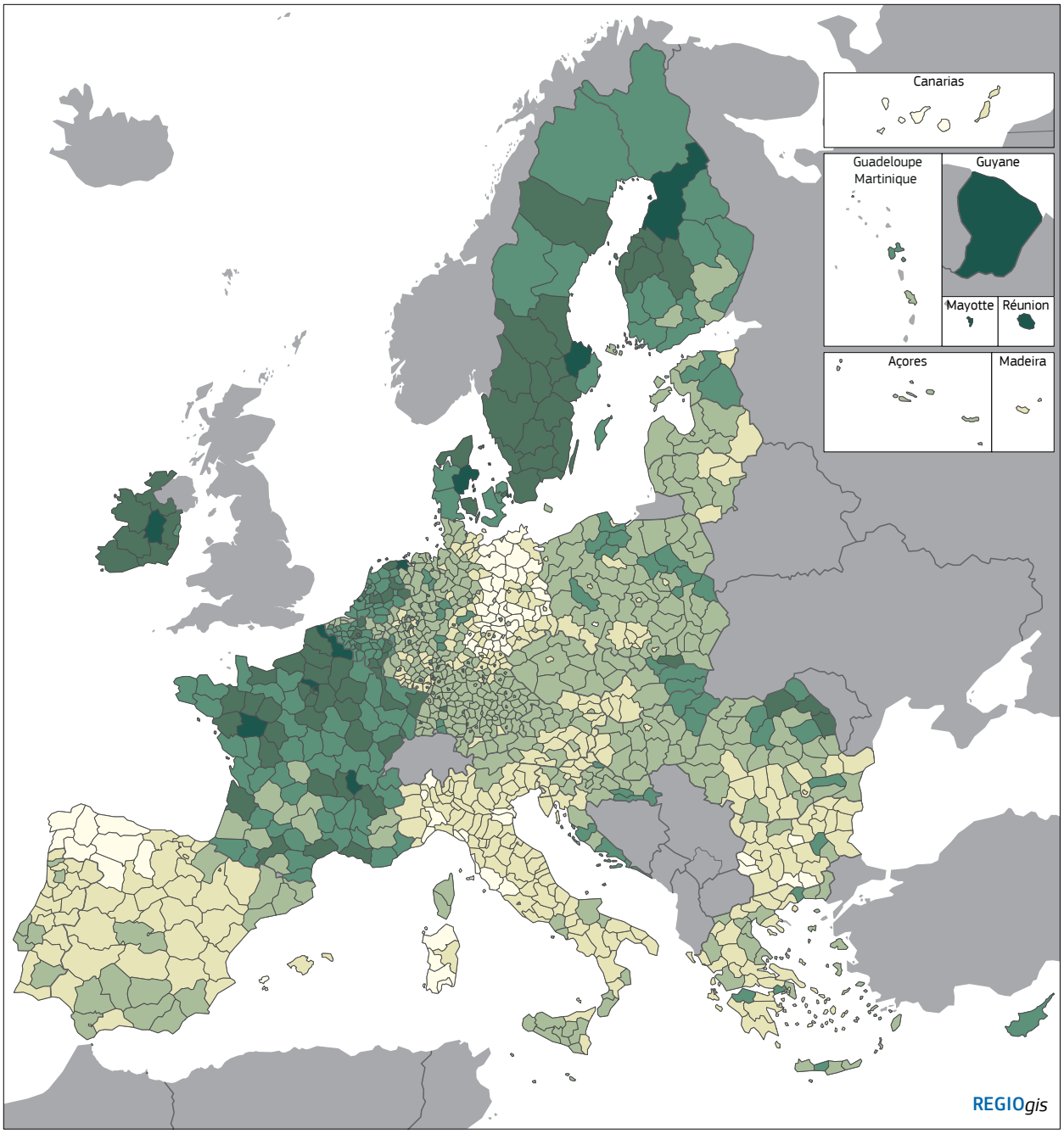
In 2022, the EU population aged 0–29 was 139 million, and that aged 30–59 was 183 million. The difference of 44 million people constitutes a generation gap that is the equivalent of 10 % of the EU's total population. Inward migration is likely to reduce the difference in the future by adding to those aged 0–29, but is unlikely to eliminate it completely. In light of continued ageing and projected levels of fertility, this means that the total population is projected to decline in the coming years and decades, based on the latest Eurostat baseline projections.

The age structure of the population also affects the birth rate[7]. As the younger age group gets older over time, the number of women of child-bearing age will decline, leading to fewer births even if fertility rates remain unchanged.

The difference between the two age groups exists in virtually all EU regions (Map 6.3), though the extent differs. For instance, in many regions in north-western Spain and eastern Germany as well as in a few regions in Italy and Bulgaria, the population aged 0–29 is 40 % or more smaller than that aged 30–59, implying an increasingly negative natural change in population and a rapid growth in the share of population aged 65 or over compared with other regions.

6 Eurostat [proj_19rp3].

7 Birth rate refers to the total number of births in a year per 1 000 individuals in a population. The fertility rate refers to the number of live births in a year per 1 000 women of reproductive age in a population.



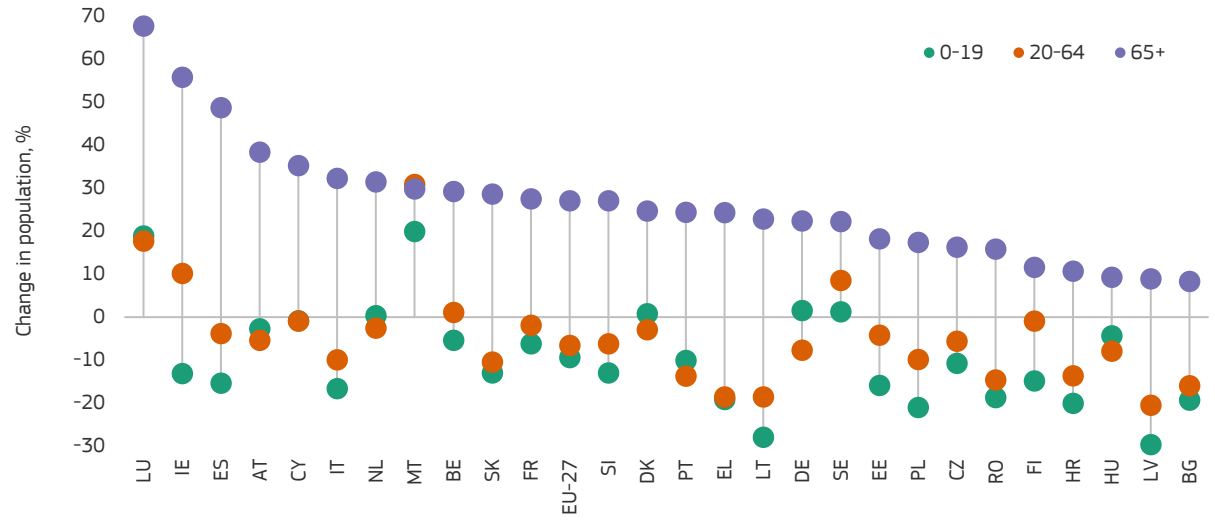
Map 6.3 Population aged 0–29 relative to population aged 30–59 by NUTS 3, 2022

Percentage
- <= 60
- 60 – 70
- 70 – 80
- 80 – 90
- 90 – 100
- > 100

EU-27 = 76.0
Source: Eurostat (demo_r_pjangrp3).

0 500 km

Figure 6.4 Projected change in population by age group in EU Member States, 2023–2040



Source: Eurostat [proj_23n].

By contrast, a few regions in France (including some of the outermost ones), Ireland, Sweden, the Netherlands, Finland and Denmark have more people aged 0–29 than aged 30–59, meaning they are likely to experience a slower natural decline in the population or even an increase.

Despite regional variations, there are clear national patterns, with most north-western Member States, apart from Germany and Austria, having a relatively large share of the population aged 0–29 and southern Member States a relatively small share. Apart from higher outmigration of young workers, as concerns young women, in particular, the gap could be linked to lower birth rates because of differences in family policies, which are well developed in France and the northern Member States, and in the availability and affordability of early childhood education and care services. Difficult labour market conditions for young people seeking stable employment, as well as difficult economic conditions in general, might also play a role, resulting, for example, in women in Spain and Italy having their first child relatively late in life (see also Chapters 1 and 2).

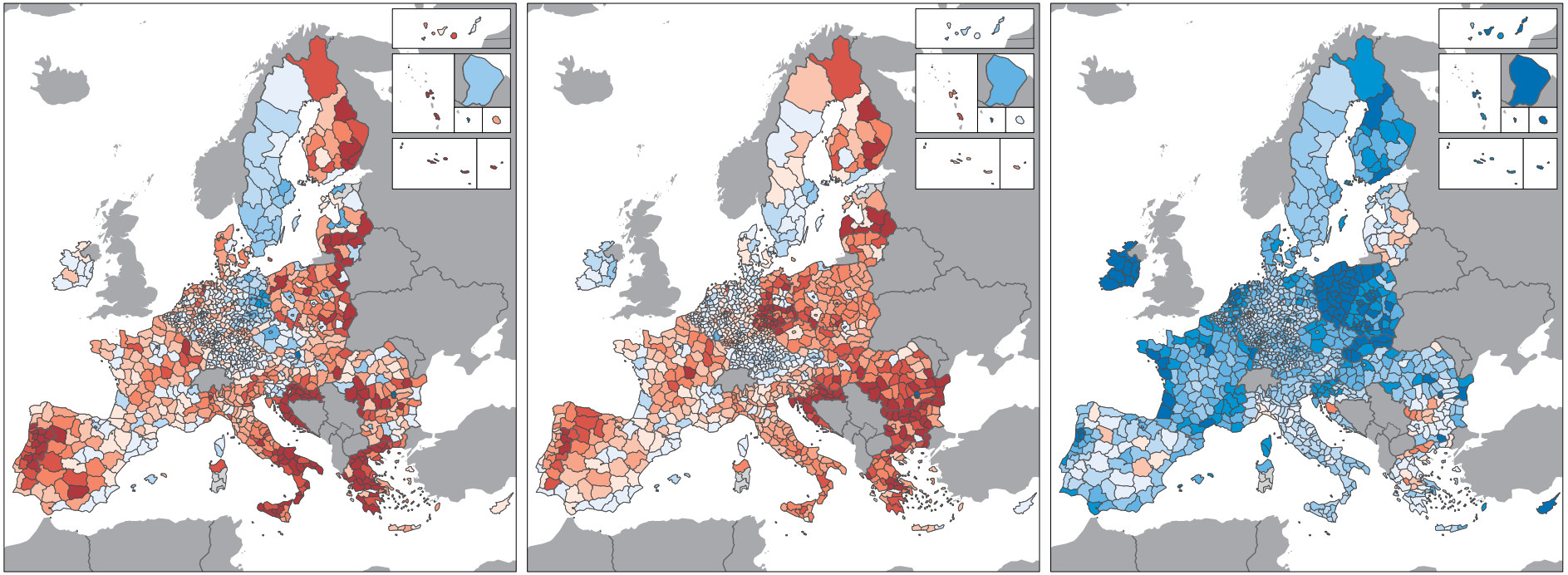
1.4 The older population is growing while other age groups are shrinking

The gradual slowdown in population growth in the EU masks significant differences in the trends for different age groups. Some age groups have started shrinking while others have continued to grow (Map 6.4). In particular, the population of working age (those aged 20–64) declined by 2.5 % over the 2014–2021 period, though by more in eastern and southern Member States, with some regions experiencing reductions of over 10 %[8]. This decline is expected to continue. At EU level, the working-age population is projected to fall by 6.5 % by 2040 (Figure 6.4). Some Member States are more affected than others. In Latvia, Lithuania and Greece, a reduction of around 20 % is projected. Assuming that the activity rates of people in various education groups (primary, secondary and tertiary) within each population subgroup (young, prime-age individuals, older people, female, male, mothers) remain constant, the number of active people is expected to follow a very similar pattern. After rising to a record 205 million in 2022, the number of active people is estimated to decline to 201 million in 2030, 192 million in 2040, and 184 million in 2050[9].

8 For future implications for the size of the labour force in a number of Member States, see European Commission (2023b), Chapter 2.

9 Source: DG EMPL calculations, based on Eurostat and Organisation for Economic Co-operation and Development (OECD) data and EUROPOP2023 population statistics.

Map 6.4 Percentage change in population by age group by NUTS 3, 2014–2021



Ages 0–19

Ages 20–64

Ages 65 and over

The reduction in the working-age population has a significant negative impact on the size of the EU's labour force and poses a risk to economic growth and fiscal sustainability, especially given the projected increase in the population aged 65 and over (see below). Labour market policies can mitigate this decline of Europe's labour force. In a scenario where the activity of women in the EU converged to the target value in the three top-performing Member States for this group, an additional 17.3 million women would enter the EU labour market. Under the same assumption for men, an additional 8.8 million men would join the EU workforce.

There was a slightly smaller decline over the 2014–2021 period in the 0–19 age group at EU level (of 1.2 %), though in many southern and eastern regions the reduction was over 10 %. By contrast, there was an increase in several regions in Sweden, Czechia and the eastern part of Germany, as well as in capital city regions in many other Member States. The projection is for the population aged 0–19 to decline by over 9 % by 2040, though by more in some eastern Member States (Lithuania, Latvia, Poland, Romania, Croatia and Bulgaria) as well as in Italy and Spain. Large and persistent reductions in this age group tend to imply a reduction in the need for schools, which can lead children having to travel longer distances to the nearest one as schools are closed down – especially in rural areas, where distances are already relatively long[10] – posing significant challenges to ensuring fair access (see Section 2).

By contrast, the vast majority of regions in the EU experienced a substantial increase in the population aged 65 and over between 2014 and 2021. This was particularly so in Poland, Slovakia, Ireland and Cyprus, where in most regions the increase was over 25 %. In Finland, the Netherlands, France, Romania and Portugal, there were also some regions with growth this high. On the other hand, in a number of regions in Bulgaria, Greece, Spain, Lithuania and Latvia, the population of 65 and over declined. The projection is for this age group to increase by 27 % across the EU by 2040, though in Luxembourg, Ireland and Spain by 50 % or more. This can be expected to lead to increased demand for healthcare and long-term care and a consequent need for an expansion in capacity and, accordingly, in expenditure. If the domestic working force is shrinking, there may be a need for migrant workers to fill staff shortage gaps in the care sector.

1.5 In rural regions the share of older people is higher and the share of the working-age population lower

While, in the short term, the age structure of the population in the EU as a whole can only be changed by migration from and to the rest of the world, in individual regions it is also affected by movements to and from other parts of the EU. The likelihood of such movements occurring, and their direction, can be expected to depend, among other factors, on people's ages. Those aged 20–39 may be more likely to move from rural regions to urban ones, while among those aged 40–64 and 65 or over migration from urban regions to rural or intermediate ones may also be expected. These migration patterns would mitigate the ageing of the population in urban regions because of younger people moving in and (possibly) older people moving out; in rural regions they would exacerbate ageing as the reverse occurs.

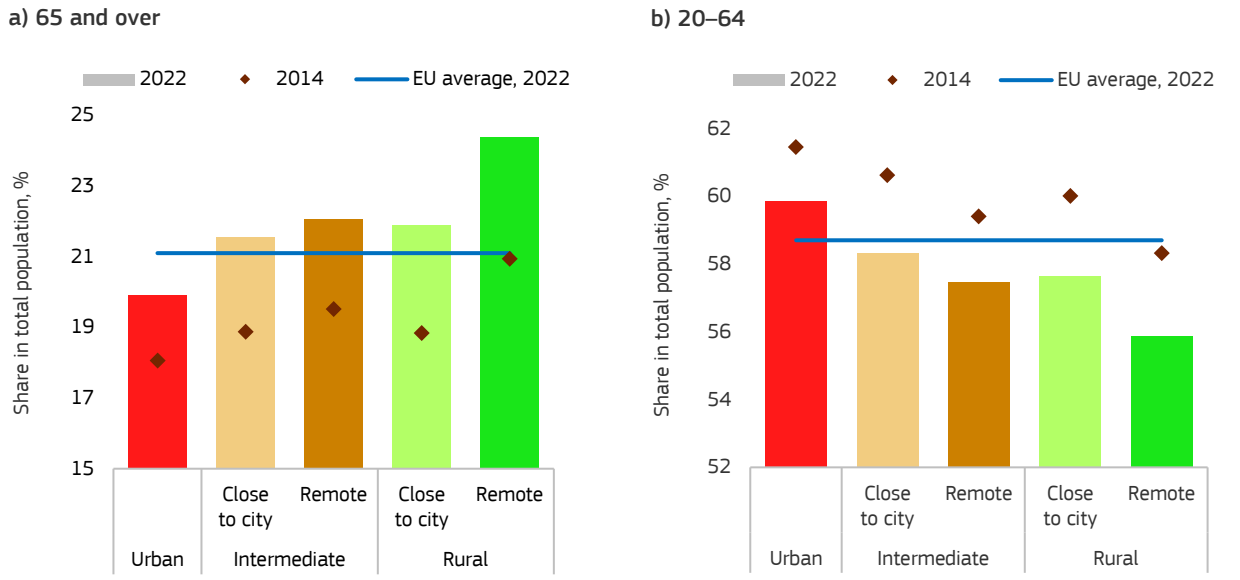
In the EU as a whole, 21 % of the population was aged 65 or over in 2022 (Figure 6.5a). This is 2.4 pp more than in 2014 and the projection is for it to continue to increase, reaching 27 % by 2040[11]. This, coupled with a decline in the working-age population, poses ageing-related challenges, including increased healthcare and long-term care needs and so increased pressure on public budgets, social (including inter-generational) and territorial cohesion, investment, entrepreneurial activity and productivity. The extent of population decline and ageing, and the associated challenges, are likely to vary significantly between urban and rural regions.

In rural regions, the share of the population aged 65 or over tends to be relatively large, especially in remote regions, where it exceeded the EU

10 OECD (2021).

11 Eurostat[proj_23n].

Figure 6.5 Share of different age groups in the total population by urban-rural typology, 2014 and 2022



Source: Eurostat [demo_r_pjangrp3].

average share by 3.3 pp in 2022. The share grew more quickly than in other regions over the 2014–2021 period, and it is expected to continue to do so in the future[12]. The share of the population of working age[13], conversely, is smaller than average in rural regions, again especially in remote ones (Figure 6.5b), and declined by more over the 2014–2021 period. Accordingly, rural regions can be expected to face more serious ageing-related challenges from a shrinking potential workforce and more people aged 65 or over.

Conversely, in urban regions, the share of people of working age tends to be larger than the EU average and the share of those aged 65 or over smaller (by 1.2 pp). The changes in both also tend to be smaller than in rural and intermediate regions, so that urban regions can be expected to be able to cope better with, or possibly avoid altogether, the challenges indicated above.

It is important to note that the extent of these challenges depends on the proportion of the working-age population that is employed, which in 2022 varied from 83 % in the Netherlands to 65 % in Italy. In addition, there is a strong tendency across the EU for employment rates among older age groups to increase[14]. This is partly driven by increases in the age of retirement, but also by more older people choosing to work because of better health, higher education levels, better working conditions, and less arduous jobs than in the past (see also Section 2).

The employment rate in the EU for those aged 60–64 increased from 35 % to 49 % in the eight years 2014 to 2021, while the rate for those aged 65–74 increased from 8 % to 11 %. These rates vary considerably across the EU, the latter from 28 % in Estonia in 2022, and 19 % in Sweden, to 3 % in Romania, implying there is significant scope for more of those aged 65 or over to be employed in the future.

12 Eurostat[proj_19r]. See also the 2024 Ageing Report (European Commission and European Policy Committee, forthcoming).

13 Although the age group 20-64 is referred to here as the population of working age, it should be noted out that the actual age of people in work varies widely across regions. Employment rates differ widely across regions, as do legal retirement age limits, which in some Member States are below age 65. The age of retirement is increasing across the EU, so that a growing proportion of people aged over 64 are in employment. In addition, some of those younger than 20 are also in work, though the proportion is tending to decline.

14 See European Commission (2023a), Chapter 2.

Figure 6.6 Population growth in EU settlements, by settlement type and travel time to cities (annual average growth rates), 2011–2021

Note: Annual growth rates are computed as compound annual growth rates for the period 2011–2021. Values exclude settlements that did not exist in 2011. First-rank cities are the largest city in each country. Towns or villages are 'close to a city' if they are within a 30-minute drive (or less) from a city's boundary, and far from a city otherwise. Towns or villages are close to a large city even if they are also close to a small city.
Source: OECD calculations based on EU GEOSTAT data.

2. Access to high-quality services in the face of a shrinking population and the costs involved

Given the demographic trends noted above, many settlements and regions will experience population decline over the next decade. Already half of the villages and over 40 % of towns in the EU lost population over the 2011–2021 period. These were mainly places more than 30 minutes travel from cities, whereas towns and villages close to cities experienced on average an increase (Figure 6.6)[15].

Places losing population face difficult choices about how to adapt public services to fit their smaller populations and budgets[16]. While policies need to ensure all citizens have access to essential services, outside cities they are required to balance accessibility – in terms of availability and the ease with which services can be reached – against the cost of provision[17].

Recent country case studies on population shrinkage in Estonia and Latvia show that shrinking places might also need to strategically consider 'rightsizing' their built environments to reduce the oversupply and decay of existing housing and other infrastructure[18] as well as to contain the cost of maintenance of older buildings.

2.1 How will demographic change affect school operations and accessibility?

Estimates from a cross-country study[19] show that schools in sparsely populated rural areas tend to be smaller than those in cities and that they already have higher average costs per child[20] – around 20 % higher in sparsely populated rural areas and 10 % higher in villages (Figure 6.7a).

15 The definition of 'close to a city', as applied here to settlements, differs from the one used above in the urban-rural typology, where it refers to the share of the population in a NUTS 3 region living in proximity to a city.

16 Shrinking places may need to find creative solutions for services, involving either providing them virtually or co-operating with nearby towns or cities to provide them.

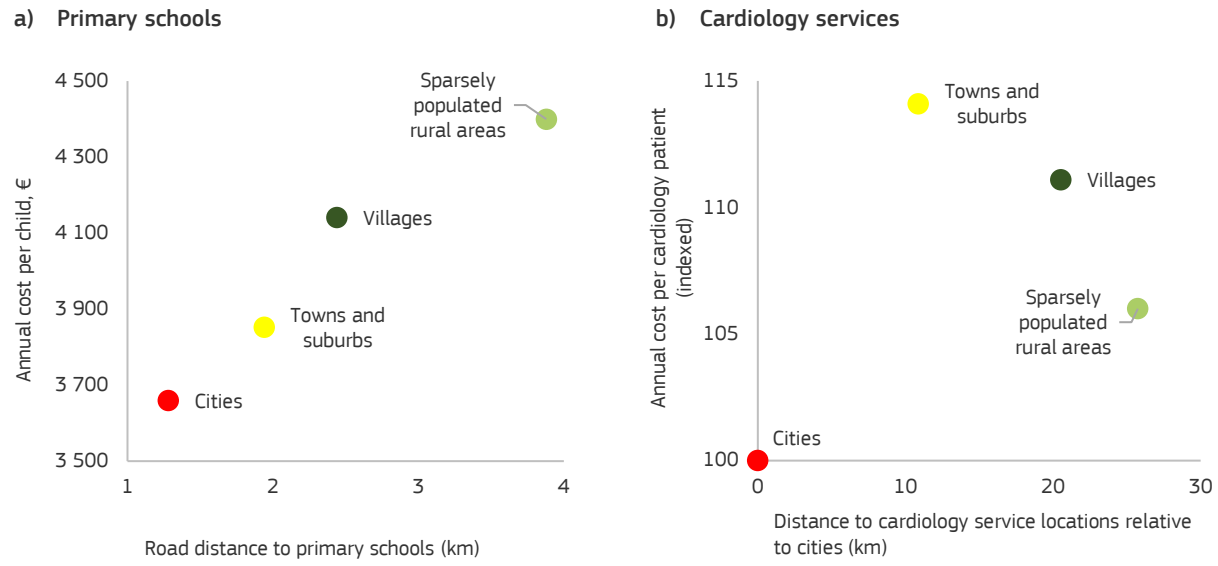
17 The European Commission measures access to services and amenities by certain travel modes within fixed travel time intervals: see European Commission (2021), Box 4.2.

18 OECD (2022).

19 OECD/EC-JRC (2021).

20 The costs per child of small schools are generally higher than for large schools because fixed costs (e.g. for administrative staff and maintenance) are spread across fewer students.

Figure 6.7 Access and cost estimates for specific services by degree of urbanisation, 2021



Source: OECD/EC-JRC (2021).

As population declines and ageing and other demographic trends such as urbanisation take hold, the OECD estimates that keeping primary school networks unchanged over the next decade will increase costs per child by 60 % in villages across the EU by 2035, and double this in sparsely populated rural areas. These costs will be even higher in countries where non-metropolitan areas are losing population more quickly[21]. Moreover, children in sparsely populated rural areas already travel much longer distances to school than those in cities.

The geographical accessibility of primary schools and early childhood education and care facilities also has an impact on labour markets, as it influences parents' decisions to work. For parents of young children, and for single parents in particular, the ease and flexibility of access to childcare determines decisions on taking up employment, as well as the number of hours worked. Analysis of several Member States shows that childcare providers are frequently inaccessible by a short walk, but can usually be reached with a short drive. The geographic accessibility of childcare facilities tends to be much higher in urban settings, probably reflecting higher demand and/or population density.

2.2 How will demographic change affect healthcare and long-term care services costs and accessibility?

Staff shortages are likely to deepen in long-term care, which is labour-intensive but already at a disadvantage in competing for staff with more attractive sectors. The challenge will be particularly acute in rural areas, characterised by an ageing-related increase in long-term care needs and shrinking human resources. Regarding healthcare, work in progress at the OECD has estimated the accessibility of some specialist medical treatment. For cardiology services, a 1 % reduction in the population served by the average centre is estimated to be associated with over 0.5 % higher costs per patient[22]. People in sparsely populated rural areas and villages typically travel over 20 km more to access these services than those in cities (Figure 6.7b). People in towns also travel an average of 10 km more than those in cities to access them. To address the health needs of ageing populations, the OECD recommends[23] that rural and remote places bolster their primary and integrative care systems, which are usually more accessible than specialist centres.

21 European Commission (2021), Box 6.1.

22 OECD/EC-JRC (2021).

23 OECD (2021).

Accessibility is an important consideration in how public services are distributed and their role in territorial cohesion. Inward migration and internal movements within the EU cannot ensure population growth in all places. Population loss is a demographic reality for which many EU regions need to prepare, especially by planning the adaptation of essential service provision to population change[24]. At the same time, a loss of services can accelerate depopulation and foster discontent. National and regional governments should, therefore, help to co-ordinate and fund efforts to limit territorial inequalities in access to services. Shared mobility solutions for rural areas, such as those supported by the Smarta-NET project[25] managed under DG MOVE of the European Commission, can play a role in this.

3. Harnessing talent to address demographic change

The previous section showed that the decline of the working-age population is widespread, with more than half of people in the EU living in regions where it is occurring. In some regions, it is combined with additional structural challenges.

Some regions are faced with the combined challenges of population ageing, a small and stagnant share of people with tertiary education, and outward migration of the young and well educated. This puts them at risk of falling into a talent development trap, which interferes with their capacity to build sustainable, competitive and knowledge-based economies.

3.1 Many regions in the EU are in a talent development trap[26] or at risk of falling into one

Compared with the EU average, some regions have a significantly smaller share of tertiary-level educated people, with young people (aged 20–24) less likely to be enrolled in tertiary education and more likely to move away to enrol somewhere else. Moreover, while the proportion of people aged 25–64 with tertiary education is growing in the EU at large – because more of those in younger age cohorts have this level of education than in older ones – in these regions it is growing more slowly than in others.[27] The regions, therefore, will be less able to compensate for a declining population of working age by having a better qualified labour force capable of raising labour productivity. If the issue is left unaddressed, it is likely to reduce the regions' competitiveness and widen the talent gap with other regions[28].

Tertiary education can make a significant contribution to regional dynamism and attractiveness. However, a lack of career prospects, possibly linked to the lack of demand for qualified workers from companies and institutions in those regions, may discourage young people from investing in education and training or lead them to seek opportunities elsewhere. Accordingly, it is equally important to create economic opportunities, capitalising on a region's strengths, to retain and attract talent and to match available skills to current and prospective market needs.

The European Commission[29] has formulated a method of identifying regions that are in a talent development trap[30] or at risk of falling into one (see Box 6.2). Some 46 regions are identified according to this method as being in a talent development

24 In addition to public services such as education, training and hospitals, places with a declining population face challenges in maintaining existing infrastructure that is too big (and too expensive) for the population that remains.

25 https://www.smarta-net.eu/.

26 See Box 6.2 for an explanation of the talent development trap.

27 Eurostat [proj_19r].

28 Note that, in addition to tertiary education, vocational education and training are also important for a labour force with sufficient relevant skills (see also Chapter 2).

29 European Commission (2023a).

30 This concept is distinct from that of the development trap discussed in Chapter 1.

Box 6.2 Identifying regions in a talent development trap or at risk of falling into one

The method used to identify regions that are in a talent development trap or at risk of falling into one is applied at the NUTS 2 level.

A region is considered to be **in a talent development trap** if:

- the annual average reduction in the population aged 25–64 was greater than 7.5 per 1 000 between 2015 and 2020;
- the share of the population aged 25–64 with tertiary education was below the EU average in 2020; and
- the share of the population aged 25–64 with tertiary education increased by less than the EU average between 2015 and 2020, i.e. 4.3 pp.

A region is considered to be **at risk of falling into a talent development trap** if it is not in a talent development trap but:

- the annual average net outward migration rate of those aged 15–39 was greater than 2 per 1 000 between 2015 and 2020.

trap (Map 6.5, in red). These regions, which are mostly in Bulgaria, Romania, Hungary, Croatia, the south of Italy, Portugal, eastern Germany and the north-east and outermost regions of France, have a working-age population that is increasingly declining and a small and stagnant number of people with tertiary education. Together, they account for 16 % of the EU population.

A second group of 36 regions is identified as being at risk of falling into a talent development trap because of the significant exodus of people aged 15–39 (Map 6.5, in orange). These are mainly in Latvia, Lithuania, eastern Poland, Slovakia, Greece, inland Spain, the north of Portugal, the northern half of France and Finland and account for 13 % of EU population. Together, around 30 % of people in the EU live in the two groups of regions[31].

3.2 Which types of regions are in a talent development trap?

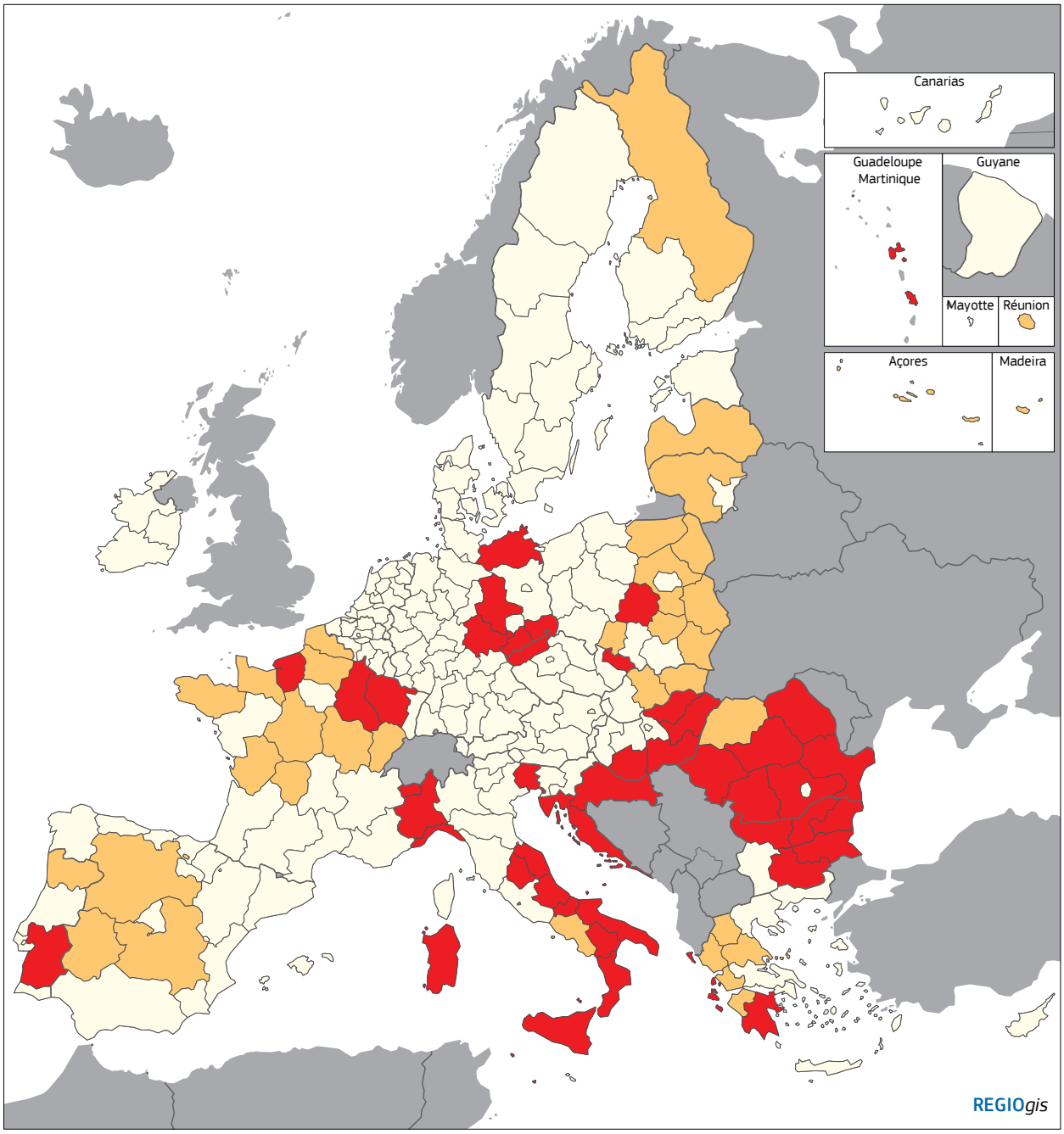
Regions in a talent development trap have lower GDP per head than others (Figure 6.8). This might reflect the small share of tertiary-educated people, which, with the relatively large share of agriculture in GDP, results in lower GDP per person employed and which, in turn, is reflected in lower wages and lower disposable income per head.

Regions at risk of falling into a talent development trap have similarly low levels of GDP per head, wages and disposable household income. In combination with lower employment rates, the low wages and low income relative to other regions are an important driver of outward migration of the population aged 15–39.

The employment rate of the working-age population was 7 pp lower in 2020 in regions in, or at risk of falling into, a talent development trap than in other regions. (This is a substantial difference, which should be seen in the context of a smaller and declining working-age population.) The employment rates of the population aged 25–64 with tertiary education were also lower but the difference from other regions was smaller at only 2 pp. The difference in employment rates, therefore, mainly affects people with only basic or secondary education. The unemployment rates for those aged 15–34 were correspondingly higher in trapped regions, and even higher in the regions at risk of falling into a trap. The share of jobs that are skilled was also smaller in both groups than in other regions, adding to the motivation of young people, who tend to be more highly educated than the older generation, to move away.

Over 80 % of the population in regions that are in a talent development trap or at risk of falling into one are living in a predominantly rural or intermediate region as against 50 % of people in other regions (Figure 6.9). Accordingly, people in such regions have a higher probability of being in a trapped or at-risk region. People in regions at risk are more often in a rural region than those in

31 Note that there is considerable overlap in practice between the two categories. Many regions with a shrinking working-age population and a small proportion of tertiary-educated people also experience net departure of people aged 15–39. These are classified here as being in the first group, i.e. in a talent development trap.



Map 6.5 Regions in a talent development trap and regions at risk of falling in a talent development trap

Category

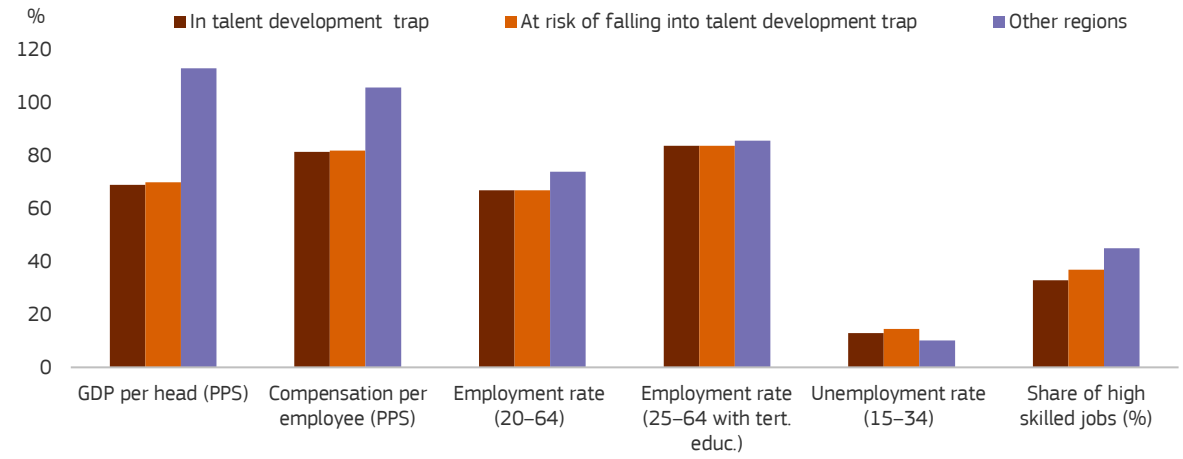
- Shrinking working-age population and lagging level of tertiary education
- Net out-migration of people aged 15–39
- Other regions

A region is in a talent development trap if it has
(a) a shrinking working-age population,
(b) a below-average and stagnant level of tertiary education and/or
(c) net out-migration of people aged 15–39.

Source: DG REGIO based on Eurostat data (demo_r_d2jan, demo_r_magec, lfst_r_lfsd2pop).

0 500 km

Figure 6.8 Productivity and employment indicators in regions in a talent development trap, regions at risk of falling into a talent development trap and other regions, 2020



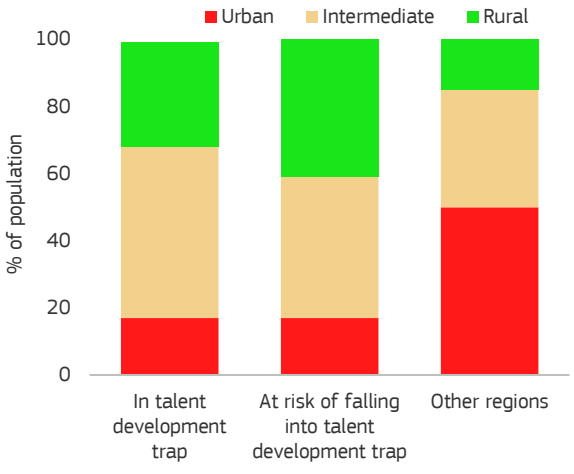
Note: Compensation per employee relates to 2019. GDP per head and compensation per employee are expressed in PPS with EU average=100.
Source: Eurostat [nama_10r_2gdp, nam_10r_2hhinc, nama_10r_2coe, lfst_r_lfsd2pwc, lfst_r_lfe2eedu, lfst_r_lfp2act] and DG REGIO.

a region already in a trap, reflecting the relatively high net outward migration of people aged 15–39.

Regions in a talent development trap or at risk of being so also have a comparatively large share of people working in agriculture – 3–4 times more than in other regions in 2020 – where productivity and growth potential tend to be lower (Figure 6.10).

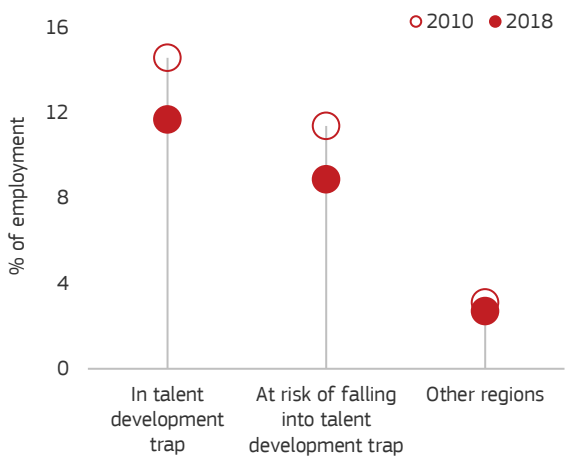
Over the 2015–2020 period, all regions experienced a reduction in the share of agriculture, but this was much larger in those in a talent trap or at risk of falling into one (2.5–3 pp) than in others (0.5 pp). The small proportion of people with tertiary education tends to diminish employment prospects further in trapped regions, leading to more outward migration and a consequent further decline in the working-age population.

Figure 6.9 Urban-rural composition of regions in a talent development trap, regions at risk of falling into a talent development trap, and other regions, 2020



Source: Eurostat [demo_r_pjanaggr3] and DG REGIO.

Figure 6.10 Share of employment in agriculture in regions in a talent development trap, regions at risk of falling into a talent development trap, and other regions, 2010 and 2018



Source: DG REGIO, JRC and Ardeco.

Table 6.4 Quality of government and innovation capacity in talent development-trapped, at risk of being talent development-trapped and other regions, 2020 and 2021

	European Quality of Government Index	Regional Innovation Scoreboard	Population with broadband access, %	Population with bb speed > 100 Mbps. %
In talent development trap	65	60	82	26
At risk of falling into talent development trap	85	71	86	40
Other regions	107	115	92	48

Note: Data on broadband access are for 2021. Data on other indicators: 2020.
Source: Eurostat [isoc_r_brod_h], RIS 2021, Ookla for good (TM), European Quality of Governance Index, DG REGIO.

The quality of governance and innovation capacity are important enabling conditions for sustained economic development. Less developed regions tend to show a relatively poor performance in these areas (Table 6.4). This also holds for regions that are in a talent development trap and, to a lesser extent, those at risk of falling into one. The European Quality of Government Index score and the Regional Innovation Scoreboard are both substantially lower for these regions than for others. Moreover, the population with access to broadband is also smaller and the speed of internet connections slower.

Transport connections also tend to be poorer in regions that are in a talent development trap, or at risk of being so, than in others. Transport performance[32] by car in trapped regions was 62 % in 2021, meaning that 62 % of the population living within 120 km can be reached within 90 minutes (Table 6.5), and in regions at risk of being trapped, 68 %, both well below the average for other regions (82 %). For rail connections, the differences are equally large. In trapped and at-risk regions, only 8 % of the population within 120 km could be reached within 90 minutes by train in 2019, as against 19 % in others.

Poorer transport connections also affect a region's access to services such as education and healthcare facilities. Under 80 % of people lived within a 45-minute drive of a university in regions in a talent development trap or at risk of falling into one, compared with 93 % in others. A similar difference holds for the share of people living within a 15-minute walk of a primary school,

Table 6.5 Transport performance and access to services in regions in a talent development trap, regions at risk of falling into a talent development trap, and other regions, 2019 and 2021

	Road performance	Rail performance	University < 45 min. driving, %	Primary school > 15 min. walking, %	Distance to nearest hospital, km
In talent development trap	62.4	7.9	78.4	56.0	11.7
At risk of falling into talent development trap	67.5	8.1	79.5	58.3	10.7
Other regions	82.2	19.1	95.9	65.7	8.6

Note: Road performance is for 2021, rail performance for 2019.
Source: DG REGIO, based on Eurostat and TomTom data.

32 See Box 3.3 for a more detailed description of the transport performance indicator.

Box 6.3 The Talent Booster Mechanism

Helping regions in a talent development trap, or at risk of falling into one, to become more resilient and attractive is a crucial part of the EU's commitment to leaving nobody and no place behind as development takes place. If traps are left unaddressed, this will widen territorial disparities in the working-age population and skills as times goes on, so hampering the resilience and competitiveness of the EU as a whole.

This is why the Commission has launched the Talent Booster Mechanism to provide support to regions affected by a declining working-age population to train, retain and attract people with the skills and competences needed to address the impact of the demographic transition. The mechanism consists of eight pillars, as follows.

- **A pilot project launched in 2023** to help regions in a talent development trap, selected on the basis of an open call, to formulate, consolidate, develop and implement tailored and comprehensive strategies, and to identify relevant projects to train, attract and retain skilled workers.
- **A new initiative on 'smart adaptation of regions to demographic transition'** was implemented in 2023 to help regions with high rates of exodus of young people to adapt to the demographic transition and invest in talent development through tailored place-based policies. Regions were again selected on the basis of an open call.
- **The Technical Support Instrument** provides support to Member States to implement reforms at national and regional level to address the decline in the working-age population and lack of skills and to respond to local market needs.
- **Cohesion Policy** programmes and Interregional Innovation Investments are intended to stimulate innovation and high-skill job opportunities and so help to improve the possibility of retaining and attracting talent in the regions concerned.
- **A new call for innovative action is to be launched under the European Urban Initiative** to test place-based policy measures, led by shrinking cities, to address the challenge of developing, retaining and attracting skilled workers.
- **EU initiatives** that support the development of talent are to be **signposted on a dedicated webpage** to provide easier access to information for interested regions on EU policies in areas such as research and innovation, training, education and youth mobility.
- **A means will be established for exchange of experiences and dissemination of good practice,** and regions will have the possibility of setting up thematic and regional working groups to address specific employment and territorial challenges.
- **The analytical knowledge** required to support and facilitate evidence-based policies on regional development and migration will be further developed.

which was on average around 57 % in trapped and at-risk-of-being-trapped regions, as against 66 % in others. Equally, the distance to the nearest hospital was almost 12 km for people living in trapped regions, whereas in others it was under 9 km.

Poor transport connections and access to services may simply reflect the more rural and sparsely populated nature of regions in a talent development trap or at risk of falling into one (see also Figure 6.9). Poor connectivity and digital infrastructure may also contribute to a less favourable socio-economic environment that causes net outward migration of the young and prevents a region from attracting tertiary-educated people from outside.

Ensuring that regions in a talent development trap become more resilient and attractive is central to the EU's commitment to leave nobody and no place behind as development takes place (see Box 6.3). As highlighted in the Communication[33], on a demography toolbox, a range of financing instruments are available at the EU level to

33 European Commission (2023c).

support Member States in managing demographic change. In the partnership agreements 2021–2027, 26 Member States have identified demography as a major challenge for their territories to be addressed with the support of Cohesion Policy funds, such as the European Social Fund Plus. These measures complement other policy tools supporting Member States, including relevant regulatory instruments and policy frameworks.

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BETTER GOVERNANCE

- The level of trust in national and local governments across the EU has increased over the past few years, including over the COVID-19 pandemic period, with local and regional governments trusted more than national ones.
- At the same time, legal and democratic institutions that function well are necessary to ensure democratic stability and respect for fundamental rights in Europe and trust in public institutions. The 2024 edition of the European Quality of Government Index clearly shows that wide disparities still exist across EU regions, with less developed regions lagging behind and their performance worsening since 2021.
- Public procurement procedures that involve only a single bidder or no calls for bids at all are potentially exposed to corruption and fraud. Public procurement contracts awarded to a single proposer appear to be more numerous in less developed regions in the EU than in others.
- The digitalisation of public authorities across the EU has the potential to improve transparency, to encourage interaction between governments and people, and so to increase public trust. Online interaction, however, varies markedly between EU regions and according to the latest data is lowest in the less developed regions.
- Policy reforms have made the EU more business-friendly over recent years. Regional competitiveness appears to be higher in regions with lower barriers to accessing finance, less burdensome administration of taxes, and lower perceived corruption.
- In a context in which substantial disparities still persist across EU regions in several respects, tackling the structural obstacles to development entails targeted policy measures at the sub-national level. The European Semester process, which has identified these obstacles in many cases, can play an important role in reducing these disparities.
- National reforms can be adapted to the specific features of individual regions, as for instance in areas such as healthcare and education, where regional and local authorities are at the forefront of provision.
- The European Semester has highlighted in recent years the disparities still in place across regions, often identifying the structural factors preventing convergence. Addressing such factors, and considering the sub-national dimension in the European Semester, is instrumental in reducing such disparities.

Chapter 7
Better governance

1. Good institutions are crucial for economic development

Institutions, that are transparent, accountable, respect the rule of law, and have effective governance structures, have a positive effect on the functioning of governments[1] at all levels and, ultimately, on economic development and the impact of public investment, including that funded under Cohesion Policy[2].

Institutional trust is a multi-dimensional concept and provides a measure of how people perceive the quality of public institutions in democratic countries[3]. The level of trust in national, regional and local governments across the EU has increased over the past few years, including during the COVID-19 pandemic, with local governments trusted more than national ones. In 2023, regional and local authorities of the EU enjoyed the trust of 53 % of their residents, as against only 32 % who trusted national governments[4].

High-quality institutions provide a stable and predictable environment for economic activities. They establish respect for the rule of law, protect property rights, and ensure contracts are enforced. When businesses and individuals have confidence in the legal framework and institutions, they are more likely to invest, innovate, and engage in productive activities.

Good institutions promote effective governance and accountability. Transparent and accountable institutions help combat fraud and corruption, nepotism and favouritism, all of which can hinder economic development. Strong institutions establish checks and balances, promote fair competition, and ensure that resources are allocated efficiently, creating a more conducive business environment. Fraud and corruption – in particular – are a significant impediment to the efficient functioning of local governments. When they are minimised, resources tend to be allocated more fairly and effectively, ultimately benefiting the whole community. Lower fraud and corruption also lead to a more favourable environment for investment and economic development, leading to job creation and increased prosperity[5].

The 2023 Eurobarometer survey on corruption shows that it remains a serious concern for people and businesses in the EU. It indicates that 70 % of people believe that corruption is widespread in their country and 45 % consider that the level of it had increased in the past three years. Some 60 % of people think that their government's efforts to combat corruption are not effective. In addition, 63 % of companies in the EU consider that corruption is widespread in their country and 50 % that corrupt individuals or businesses are unlikely to be caught, or reported to the police or prosecutors[6]. In May 2023, the Commission put forward a proposal to establish stronger rules to combat corruption in both the EU and worldwide[7].

Good institutions provide a framework for effective public administration, including transparent budgeting, procurement procedures, and regulation. By reducing bureaucratic hurdles, along with fraud and corruption, they enable resources to be

1 Acemoglu and Robinson (2010); Ketterer and Rodríguez-Pose (2018).

2 Rodríguez-Pose and Garcilazo (2015).

3 OECD (2022); Brezzi et al. (2021).

4 Source: Standard Eurobarometer 99 (2023).

5 Charron et al. (2014); Gründler and Potrafke (2019).

6 Special Eurobarometer 534 on corruption (2023) and Flash Eurobarometer 524 on business attitudes towards corruption in the EU (2023).

7 European Commission and High Representative of the Union for Foreign Affairs and Security Policy (2023).

allocated to their most productive uses, promoting economic efficiency and competitiveness.

The rule of law guarantees fundamental rights and respect for EU values, supports the full and correct application of EU legislation, and promotes an investment-friendly business environment. It is an integral part of the democratic identity of the EU and essential for its functioning.

While the EU is recognised as having high standards for the rule of law, upholding them requires constant monitoring. Since 2020, the Commission in its annual Rule of Law Report has provided an assessment of significant developments across Member States in respect of four key elements of the rule of law: the justice system, the anti-corruption framework, the pluralism and freedom of the media, and the checks and balances incorporated in institutions. While specific rule of law challenges exists in many EU Member States, the report has become a key driver for change and positive reforms. In fact, 65 % of the recommendations issued in 2022 have been, either fully or partially, addressed. At the same time, concerns about the legal system remain in some Member States[8].

In parallel with the report, the EU justice scoreboard gives an annual overview of comparative data on the independence, quality and efficiency of national judicial systems in Member States. For example, a 2023 Eurobarometer survey[9] showed that the general public's perception of judicial independence had improved since 2016 in 15 Member States. Compared with 2022, it had improved in 11 Member States but declined or remained unchanged in another 12. Another Eurobarometer survey[10] also carried out in 2023, shows that the proportion of companies considering the judiciary to be independent had increased in 11 Member States compared with 2016, though it had fallen in 13 compared with 2022.

Taking a broader perspective, both conceptually and geographically, the Rule of Law Index produced by the World Justice Project[11] provides an aggregate indicator aiming to quantify perceptions on the rule of law around the world, and over time[12]. The 2023 edition covers 142 countries and jurisdictions, including all EU Member States, all of which, except Bulgaria and Hungary, score above 60 %[13].

A significant part of Cohesion Policy funding over the years has gone to strengthening institutions within Member States, helping to finance investment in key areas such as public administration, judiciary, rule of law, and public procurement systems. Funding has been channelled into capacity-building, administrative modernisation, and training programmes to improve the functioning of institutions. For the current programming period, 2021–27, around EUR 13 billion has been allocated to supporting Member States via technical assistance[14], including EUR 2.3 billion specifically for reinforcing the administrative capacity to implement Cohesion Policy programmes, for example through actions identified in strategic roadmaps[15,16]. The Commission also provides technical assistance support to Member States for strengthening the administrative capacity of programme authorities. Technical support is provided

8 European Commission (2023a).

9 Flash Eurobarometer 519 on the perceived independence of national justice systems in the EU among the general public.

10 Flash Eurobarometer 520 on the perceived independence of national justice systems in the EU among companies.

11 https://worldjusticeproject.org/rule-of-law-index/.

12 The index is an aggregate measure of the extent to which countries adhere to the rule of law in practice. It incorporates nine basic concepts, or aspects: limited government powers; absence of corruption; order and security; fundamental rights; open government; effective regulatory enforcement; access to civil justice; effective criminal justice; and informal justice. See: Botero and Ponce (2011).

13 A recent statistical audit performed on the 2021 edition of the index confirms that the rule of law index is a reliable tool, and that the framework is statistically coherent and robust. See: Kovacic and Caperna (2022).

14 Technical assistance is available to help managing authorities (MAs) implement Commission-funded programmes and can be used to pay for: preparation; management; evaluation; monitoring; audit and control; administrative capacity-building of programme authorities, beneficiaries and partners; and information and communication.

15 Roadmaps for administrative capacity building have been developed in 15 Member States.

16 Source: Cohesion Open Data Platform, available at: https://cohesiondata.ec.europa.eu.

to Member States, through the Technical Support Instrument (TSI), to improve the efficiency and quality of public administration and justice and to tackle, among other things, fraud and corruption. The long-term vision for rural areas[17] underlines the importance of access to high-quality public services in rural areas.

In addition, for the 2021–2027 period 'enabling conditions' have been introduced into the legislative framework, notably in respect of the Charter of Fundamental Rights (which includes judicial independence), and on public procurement in relation to the implementation of EU funding. These imply that the Commission may only reimburse Member States for expenditure[18] under the Cohesion Policy funds once these conditions have been fulfilled.

The European Semester process has been instrumental in encouraging Member States to prioritise institutional reforms and to address shortcomings in public administration, anti-corruption measures, and the effectiveness of judicial systems. Over the years, the process has identified many of the structural factors hindering sustainable economic development in the EU, pointing to the need for high-quality institutions, efficient public administration, and a healthy business environment through the establishment of an effective legal framework, and Member States have been invited to tackle these factors through Country Specific Recommendations.

2. Monitoring and benchmarking the quality of institutions

2.1 The European Quality of Government Index (EQI)

The quality of regional government can significantly affect the overall economic performance and stability of regions. A regional government that functions well can create a favourable business environment, attract investment, and promote economic development through policies that support entrepreneurship, innovation, and competitiveness. High-quality institutions can also help to ensure that resources are allocated efficiently,

Box 7.1 The European Quality of Government Index at the sub-national level

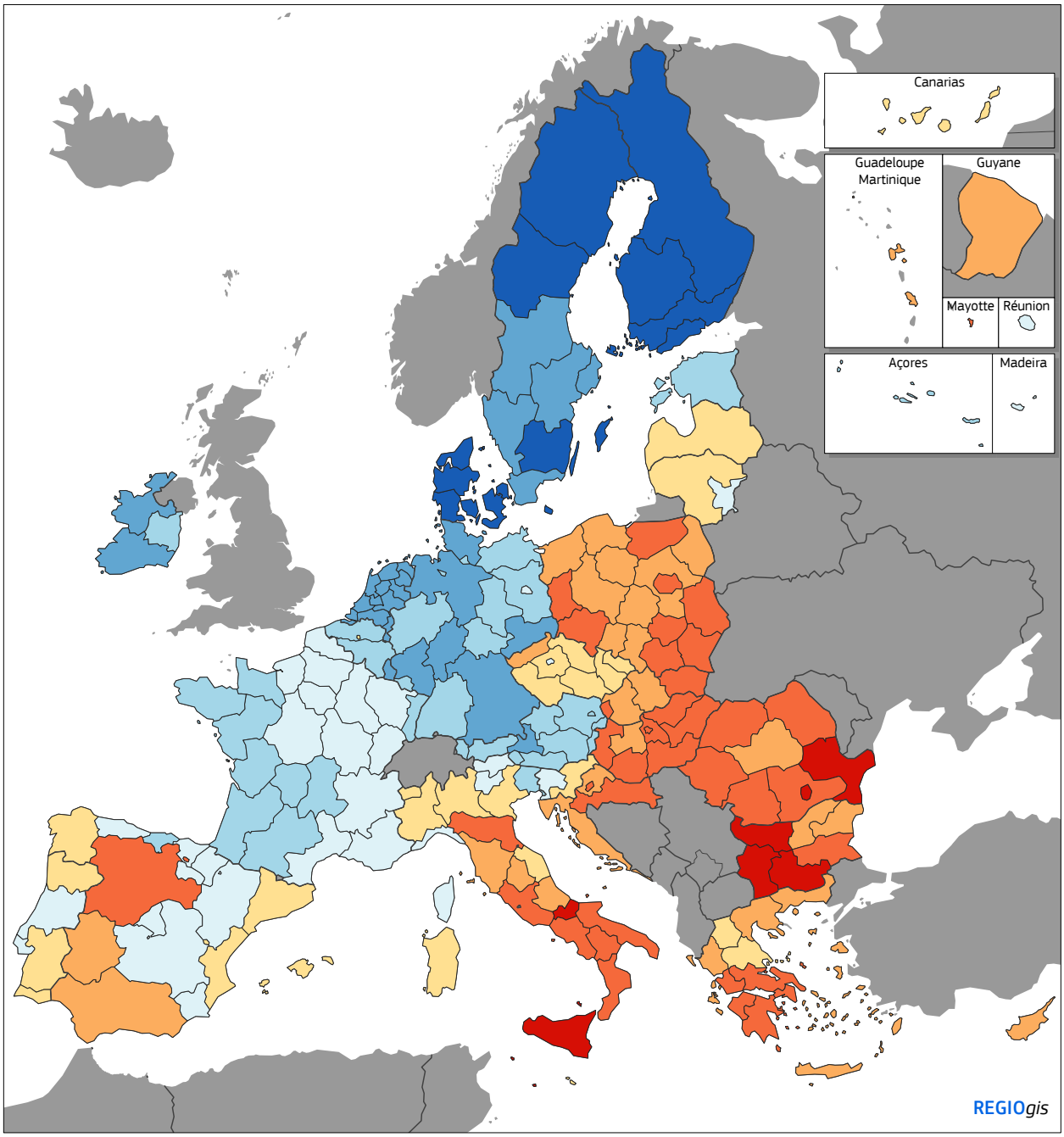
The European Quality of Government Index (EQI)[1] is the first measure to enable governance in regions within and across EU Member States to be measured and compared.

The index has been produced by the Quality of Government Institute at Gothenburg University for the European Commission since 2010. It enables the quality of government to be measured at sub-national level, and its impartiality, efficiency, and freedom from corruption to be assessed and compared across regions (Map 7.2). The index is based on a large survey of individuals who are asked about their perceptions and experience of public sector corruption, along with the extent to which they believe various public services (education, healthcare, and law enforcement) are impartially allocated and of good quality. The aim is to provide researchers and policymakers with a means to better understand how the quality of governance varies within countries and over time. A high-quality government is, therefore, defined as one that combines high impartiality, good public service delivery, and low corruption. The 2024 EQI provides data for 218 NUTS 2 (NUTS 1 for Germany and Belgium) regions in the EU, as well as a time series of regional data for a common sample of regions over the four waves of the survey. The data are standardised with a mean of zero, higher scores implying higher-quality government.

1 For more details on its methodology, see: European Quality of Government Index, University of Gothenburg. https://www.gu.se/en/quality-government/qog-data/data-downloads/european-quality-of-government-index.

17 Rural vision – European Union (europa.eu) https://rural-vision.europa.eu/index_en.

18 When enabling conditions are not fulfilled at the time of submission of a payment application to the Commission for the specific objective concerned, the related expenditure will not be reimbursed from the Union budget until the Commission assesses those enabling conditions as fulfilled.



Map 7.1 European Quality of Government Index, 2024

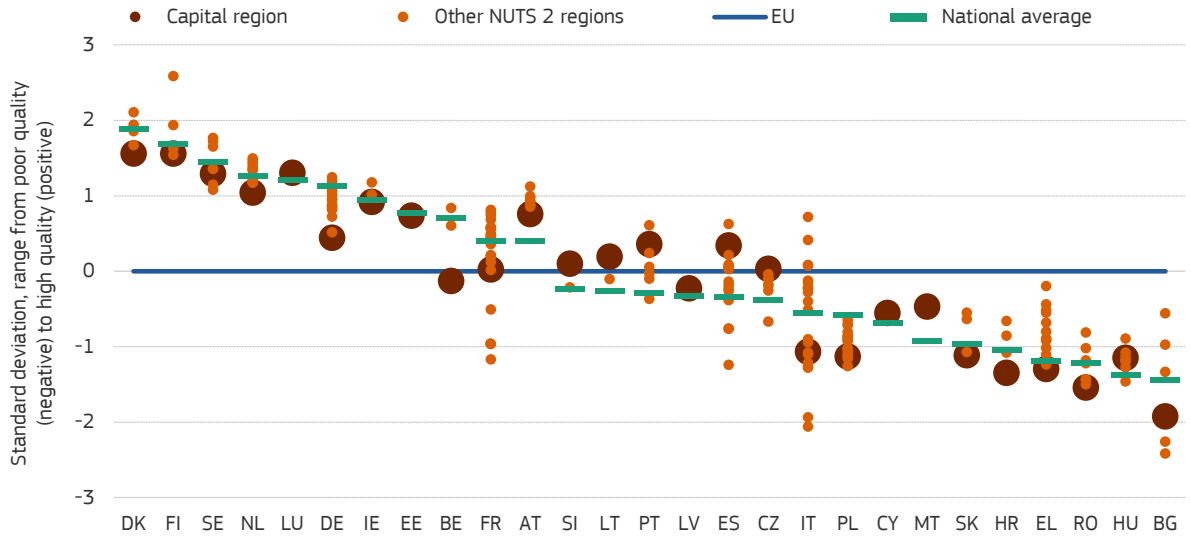
Standard deviation, range from poor quality (negative) to high quality (positive)

<= -1.5	0.0 – 0.5	no data
-1.5 – -1.0	0.5 – 1.0	
-1.0 – -0.5	1.0 – 1.5	
-0.5 – 0.0	> 1.5	

EU = 0
Note: Scores are expressed in z-scores, and the EU average is therefore equal to 0. Positive (negative) values reflect a quality of government that is higher (lower) than the EU average.
All countries at the NUTS 2 level except Belgium and Germany, which are at the NUTS 1 level.
Source: The Quality of Government Institute, University of Gothenburg.

0 500 km

Figure 7.1 European Quality of Government Index, 2024: regional variation by Member State



Source: The Quality of Government Institute, University of Gothenburg.

including for investment in infrastructure, which is crucial for economic development. Regional governments can assist economic integration and co-operation by facilitating trade, investment, and infrastructure links between regions, contributing to their development and integration into global markets[19] (Box 7.2).

Over the past two decades, there has been a surge in research activity to assess the quality of institutions across countries, and more recently within them, focusing on corruption, the impartial application of the rule of law, and the effectiveness of public administration. The EQI at regional level has been published five times since 2010 and has had a wide impact on research on economic geography, and on entrepreneurship and innovation in EU regions (Box 7.1).

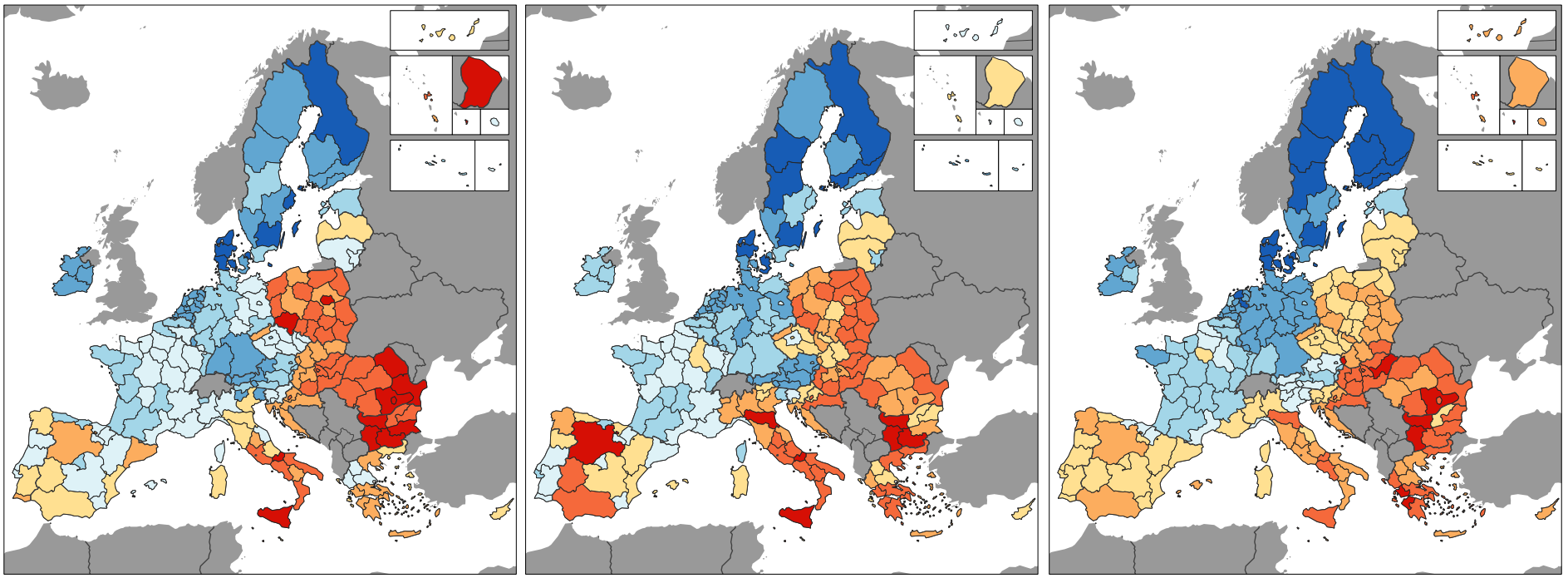
The picture shown by the 2024 index is consistent with previous editions, with the north-western area of the EU performing better than the southern and eastern parts (Map 7.1 and Map 7.2). There are marked differences between regions in Bulgaria, Greece, Italy and Spain (Figure 7.1). In France, the large within-country difference is mainly due to the low scores in the NUTS2 outermost regions.

Over the period 2010–2017, there were significant improvements in the quality of government in the Baltic countries, most of Poland, Germany, the Netherlands, Croatia, and some regions in Romania and Bulgaria (Map 7.3). By contrast, there was a deterioration in some regions in Austria, in Cyprus, in regions in southern Greece, Hungary, some regions in Italy, Spain and Portugal. In the years between 2017 and 2024 (Map 7.4) the quality of government worsened in all Polish regions, as it did in many regions in Hungary. On the other hand, there was an improvement in the index over this period in many regions in Italy, as well as in regions in Bulgaria, Greece and Romania.

On average, less developed regions score significantly below the EU average in all years, and while they improved up until 2017, they worsened over the next seven years. For transition regions, scores fluctuated over the five waves, but worsened relative to the EU average between 2021 and 2024 (Table 7.1).

19 Barbero et al. (2021).

Map 7.2 Dimensions of the European Quality of Government Index, 2024



Quality dimension | Impartiality dimension | Corruption dimension

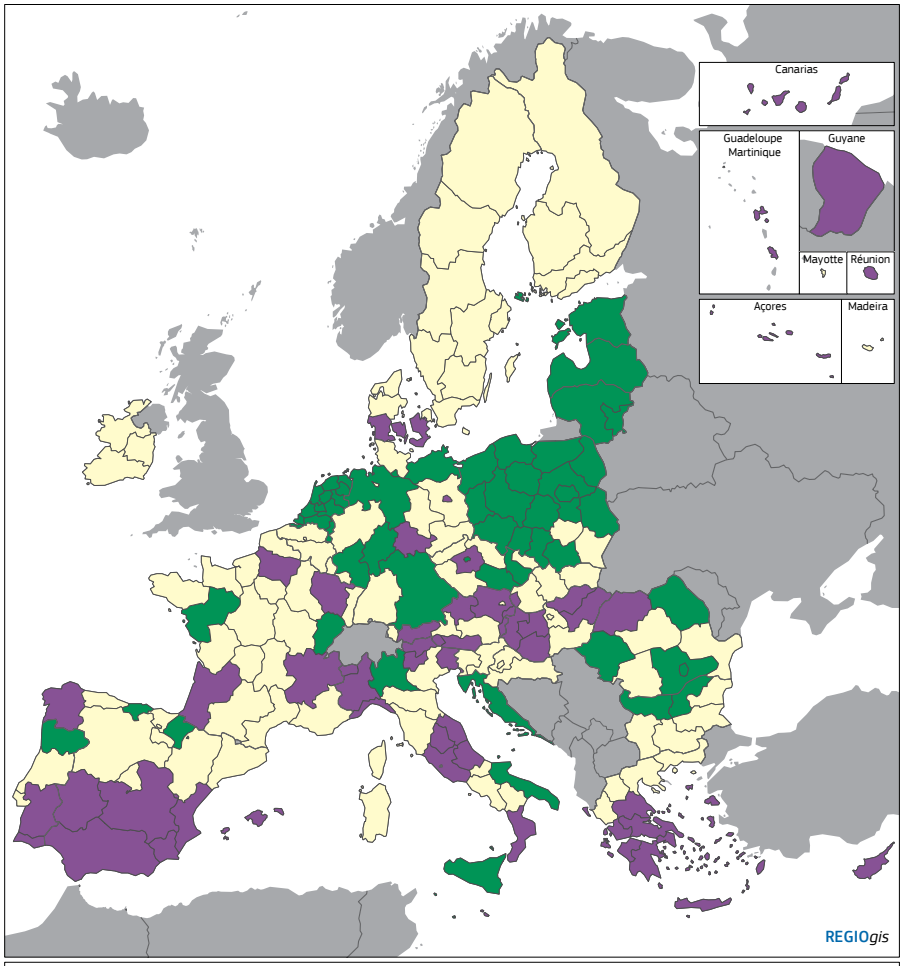
Standard deviation, range from poor quality (negative) to high quality (positive)

- <= -1.5
- -1.5 – -1.0
- -1.0 – -0.5
- -0.5 – 0.0
- 0.0 – 0.5
- 0.5 – 1.0
- 1.0 – 1.5
- > 1.5
- no data

EU = 0

Source: Quality of Government Institute, University of Gothenburg.

0 1,000 km

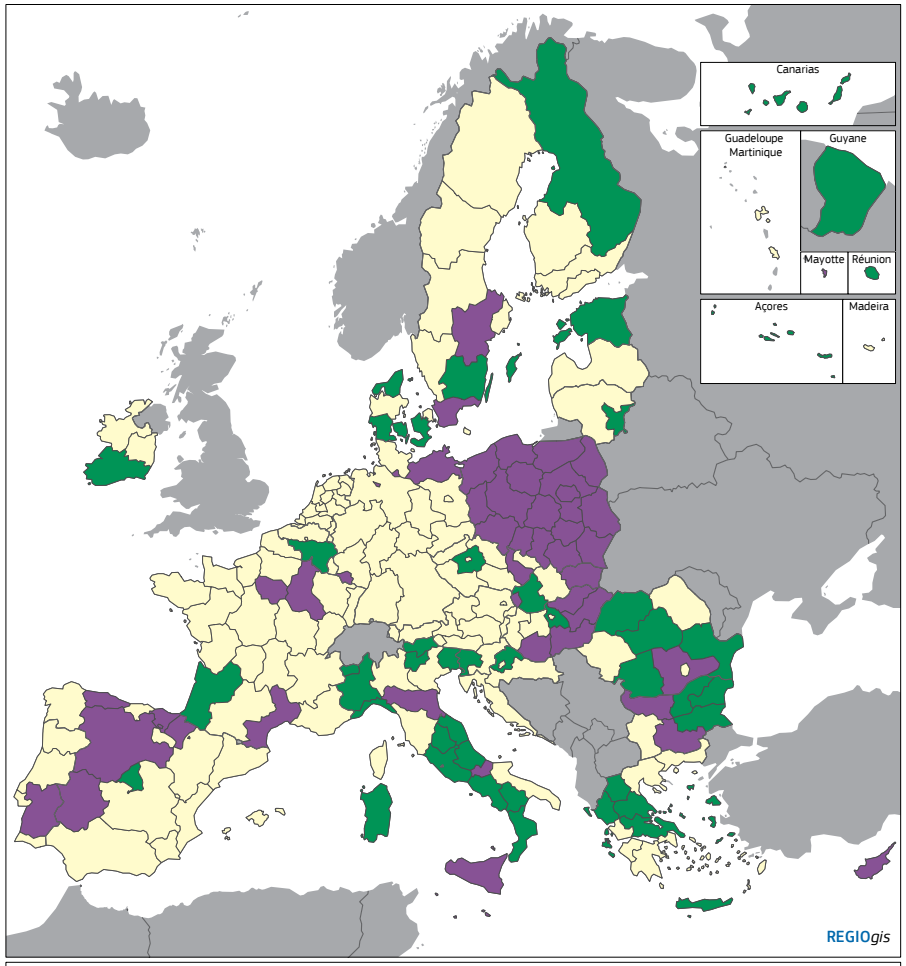


Map 7.3 Change in the European Quality of Government index, 2010–2017

deterioration
stability
improvement

Note: Regions where scores increased (decreased) by more than 0.25 standard deviations in the period are shown in green (purple).
Source: Quality of Government Institute, University of Gothenburg.

0 500 km



Map 7.4 Change in the European Quality of Government index, 2017–2024

deterioration
stability
improvement

Note: Regions where scores increased (decreased) by more than 0.25 standard deviations in the period are shown in green (purple).
Source: Quality of Government Institute, University of Gothenburg.

0 500 km

Table 7.1 Average EQI scores by category of region, 2010–2024

	EQI edition				
	2010	2013	2017	2021	2024
Less developed	-0.98	-0.92	-0.84	-0.89	-0.92
Transition	0.41	0.23	0.25	0.35	0.24
More developed	0.44	0.44	0.54	0.47	0.52

Note: All years (EU average = 0).
Source: DG REGIO based on data from The Quality of Government Institute, University of Gothenburg.

Box 7.2 Quality of government, quality of governance and the return on EU-funded investment

European Commission research using the RHOMOLO macro-economic model of EU regions suggests that **the quality of government significantly affects the return on investment financed by EU Cohesion Policy**. The model estimates that a 5 % increase in the quality of government (proxied by the EQI index) in EU regions increases the impact of Cohesion Policy investment on GDP by up to 7 % in the short run and 3 % in the long term[1].

The quality of government, and of institutions more generally, also appears to affect the governance of policies, which in turn affects their impact. In particular, the capacity to design and implement policy interventions according to intended time schedules and budget allocations and to achieve the expected results cannot be taken for granted. Governance affects the way that policy is implemented and, therefore, the link between means and ends, or the channels by which investment gives rise to outcomes.

A recent analysis using the RHOMOLO model estimates that **around 40 % of the potential impact on GDP of 'smart specialisation' strategies in Italian regions is lost because of the comparatively low quality of governance in some cases**[2].

This calls for a strengthening of administrative capacity at regional level to improve the quality of governance and so increase the impact of Cohesion Policy on regional development and convergence.

1 Barbero et al. (2023).

2 Gianelle et al. (2023).

2.2 Assessing the quality of governance across EU regions with public procurement data

Public procurement, worth over EUR 2 trillion (around 14 % of EU GDP) every year across the EU, is an important lever in transforming the EU economy. The EU legislative framework can mobilise and steer public funding towards green and digital goals, shape the markets by creating demand for future-proof, environmentally sustainable and socially responsible solutions and products and accelerate the green transition[20].

Efficient public procurement is an essential ingredient of good institutions but is one of the government activities most vulnerable to corruption and fraud. The volume of transactions, the financial interests at stake, the complexity of the process, and the close interaction between public officials and business, significantly increase the risk of corruption and the potential incentives to engage in illegal practices. EU legislation contains a minimum set of public procurement rules designed to ensure a level playing field for businesses and to prevent fraud and corruption.

20 European Commission (2023b), p. 43.

A recent report from the European Court of Auditors concluded that the level of competition for public contracts to deliver works, goods and services had declined over the past 10 years in the EU Single Market and that the Commission and Member States have not made systematic use of data available to identify the root causes of this[21]. Insufficient administrative capacity may adversely affect the degree of competition in public procurement procedures. Over half of all respondents of a recent EU-wide survey conducted by the Court of Auditors indicated that this could be the case[22].

The Single Market Scoreboard uses 12 indicators to monitor how Member States perform each year in this regard. The proportion of single-bidder contracts – those awarded on the basis of a single tenderer's offer – is an important indicator of public procurement standards, since it implies an absence of competition in public purchasing. Over the 2011–2021 period, the proportion of public procurement procedures in the EU Single Market where a single bidder was awarded the contract increased significantly, from 23.5 % to 41.8 %. At the same time, the number of bidders per procedure almost halved, from an average of 5.7 to 3.2[23]. In 2021, however, the share of public procurement tenders with a single bidder declined slightly, breaking the continuous upward trend in preceding years[24].

The proportion of contracts awarded directly without any call for tenders being published is also an indicator of public procurement standards and shows a similar tendency. Such a direct procedure means that a public authority does not publish a call for tenders but approaches one or more companies directly, asking them to submit an offer, so making the process non-transparent and potentially reducing the chances of obtaining good value for money.

In 2021, direct procedures accounted for 15.8 % of all procurement procedures in the EU Single Market reported by Member States on the Tender Electric Daily (TED) system, varying from 3.1 % in Greece to 42.3 % in Cyprus.

Data on this are available at regional level and have been monitored by the European Commission since 2017[25]. The Government Transparency Institute database contains details of public tenders at regional level published in TED[26,27]. This section reviews the most recent figures on public procurement contracts awarded following a single offer and those awarded directly without any call for tenders. These are for the period 2021–2022, so they still reflect, to some degree, the effect of the COVID-19 emergency situation, and more recent data would be needed to assess the impact of the pandemic.

These data show that single-bidder contracts were most common in regions in the eastern EU, Italy and Spain (Map 7.5). The share was above 70 % in Åland in Finland, Peloponnisos, Dytiki Makedonia and Ionia Nisia in Greece, and Vzhodna Slovenija in Slovenia. By contrast, it was below 10 % in Stockholm, Mellersta Norrland Småland medöarna and Västsverige in Sweden, Madeira (Portugal), and Malta. On average, single-bidder contracts accounted for a larger proportion of procedures in less developed regions than in others in 2019–2020 as well as in 2021–2022 (Figure 7.2).

The proportion of regional and local authority contracts awarded directly without a call for tenders does not appear to follow a clear geographical pattern, varying from over 30 % in Picardie,

21 European Union (2023).

22 This number increased to 71 % in the case of respondents working in administrative positions. They highlighted general knowledge constraints and shortages of staff qualified to prepare and conduct procedures that would increase competition.

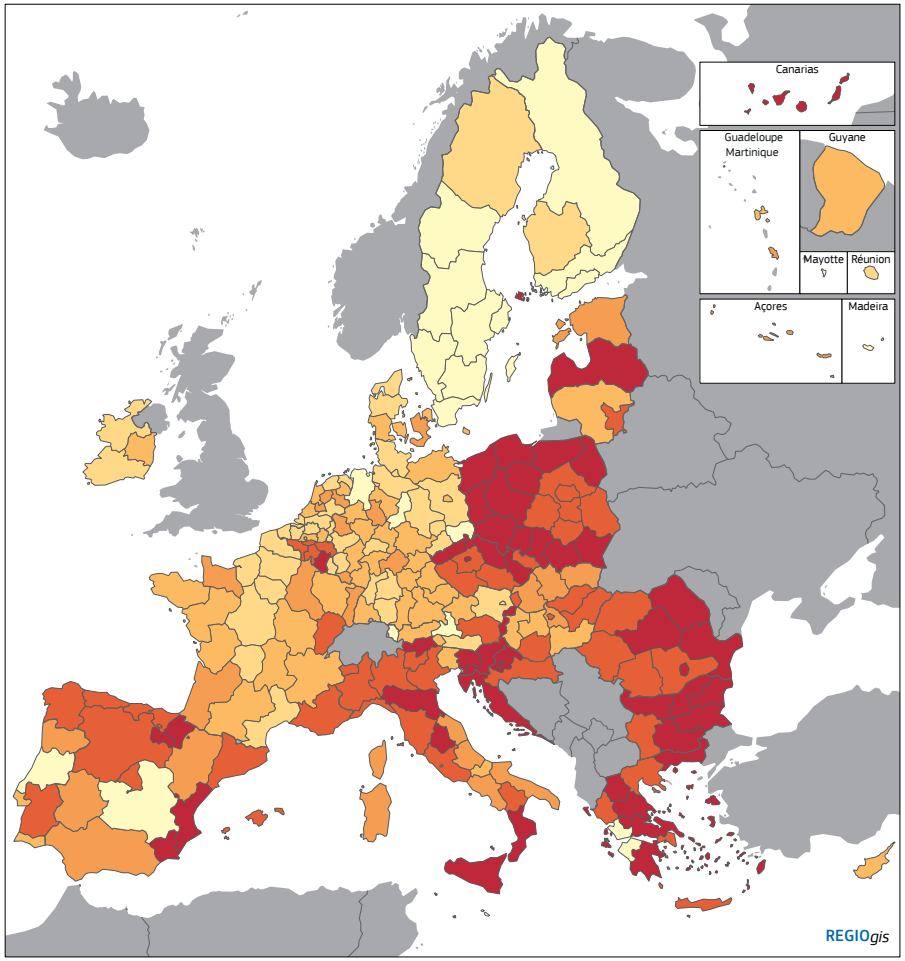
23 Source: See footnote 22.

24 European Commission (2023b), p. 43.

25 Fazekas (2017).

26 Fazekas and Czibik (2021).

27 The trends at the regional level do not always match those observed by the EU Single Market Scoreboard, as the number of regional contracts as a share of the total (regional, national, and European) varies widely between Member States, the average over the period 2018–2020 ranging from 78 % in Sweden to 4 % in Malta.



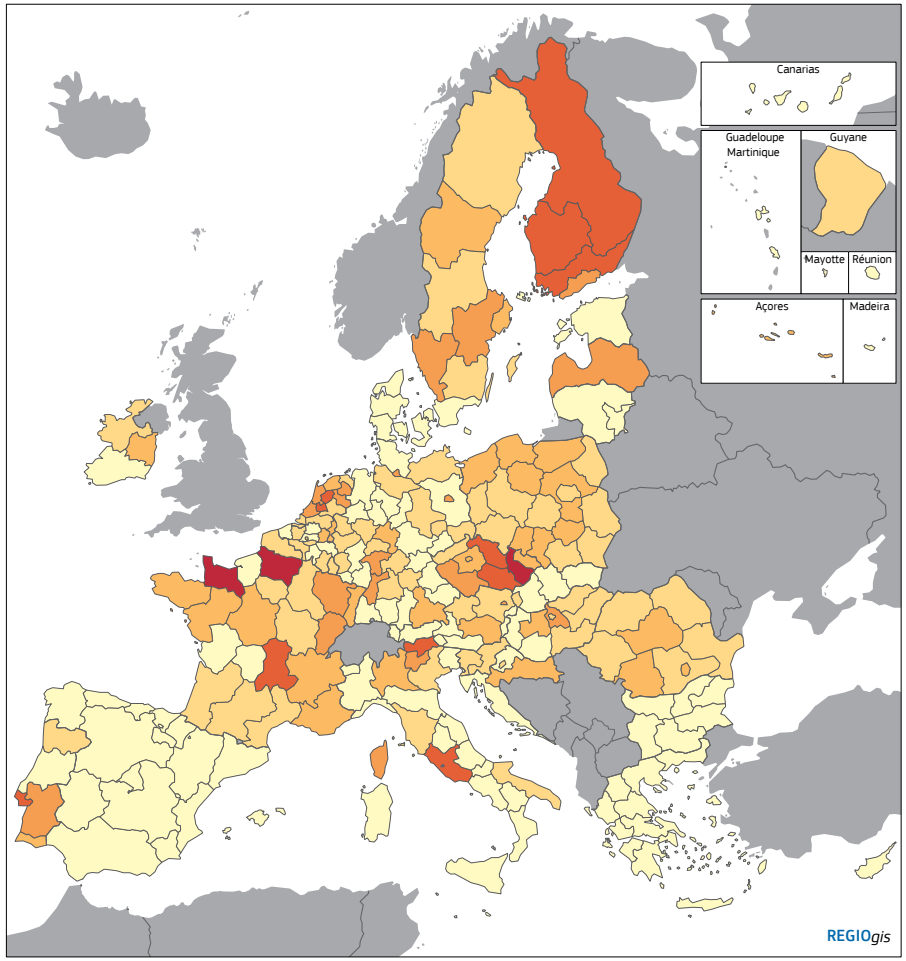
Map 7.5 Public procurement with a single bidder, average 2021–2022

% of contracts awarded by regional authorities

- <= 15
- 15 – 20
- 20 – 25
- 25 – 30
- 30 – 40
- > 40

Source: DG REGIO based on TED data.

0 500 km



Map 7.6 Public procurement without call for tenders, average 2021–2022

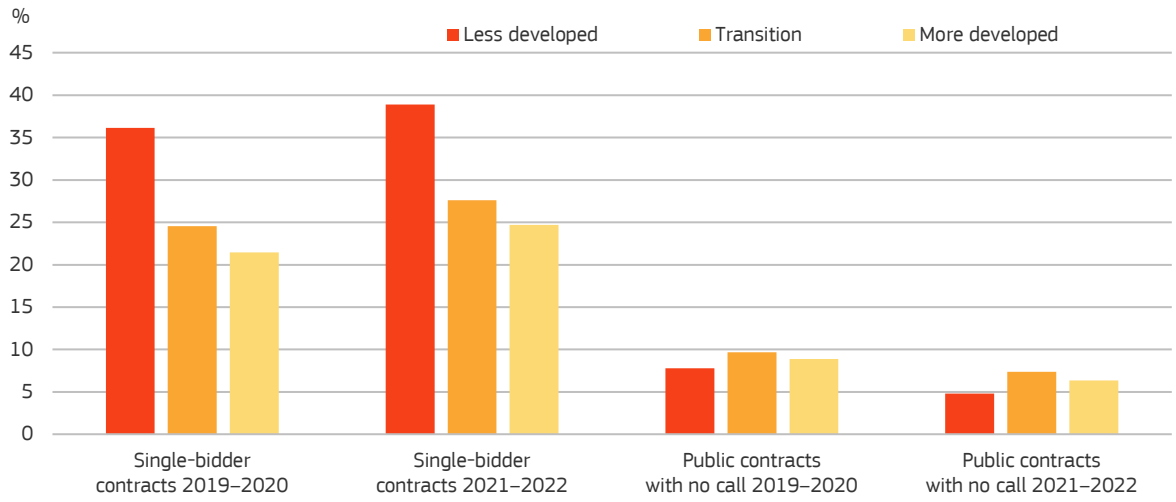
% of contracts awarded by regional authorities

- <= 3
- 3 – 8
- 8 – 13
- 13 – 20
- 20 – 30
- > 30

Source: DG REGIO based on TED data.

0 500 km

Figure 7.2 Single–bidder contracts and contracts awarded without a call for tender, by Cohesion Policy group of regions, 2019–2020 and 2021–2022



Source: DG REGIO calculations based on e-TED data.

Basse-Normandie and Střední Morava in Czechia to below 3 % in a great many regions, including all of those in Spain, Greece, Denmark and Slovakia as well as in Estonia and Lithuania (Map 7.6).

2.3 e-Government as a means of increasing transparency and accountability

Public authorities can increase their efficiency and improve their relationship with the public through e-government – the use of technology to improve and facilitate government services – such as to request birth certificates or submit tax declarations. Wider and easier access to public services ultimately increases their transparency and accountability, while reducing red tape, fraud and corruption.

In 2021, building on its digital strategy unveiled in 2020[28], the Commission presented the EU Digital Compass, which set out a vision and set of targets for 2030 to stimulate digitalisation in the EU[29,30]. One of the targets involves the digitalisation of public services, the ambition being that all the main public services should be available online by 2030. Digitalisation in public administration enables the streamlined delivery of services to people. Online platforms and digital portals provide convenient access to these, reducing bureaucratic red tape and long waiting times. In the current 2021–2027 programming period, over EUR 40 billion of support financed under Cohesion Policy is due to be allocated to investment in digitalisation[31].

In 2023, 54 % of EU internet users interacted with public authorities, though with considerable variation between countries. In Finland and Denmark, the share of internet users having interacted with public authorities was the highest among the Member States, at 92 %. In the Netherlands, the share was 84 %. The lowest rate of internet users having interacted with public authorities was in Romania, at 14 %[32].

28 European Commission (2020a).

29 European Commission (2021a).

30 In 2021, 54 % of EU citizens aged 16–74 had at least basic overall digital skills, 26 pp below the 2030 target set in the Digital Compass (Source: Eurostat [isoc_sk_dskl_i21]).

31 Source: Cohesion Open Data Platform. See: 'Cohesion Policy supporting the digital transition 2021–2027' (https://cohesiondata.ec.europa.eu/stories/s/Cohesion-policy-supporting-the-digital-transition-/vaxt-7rsr).

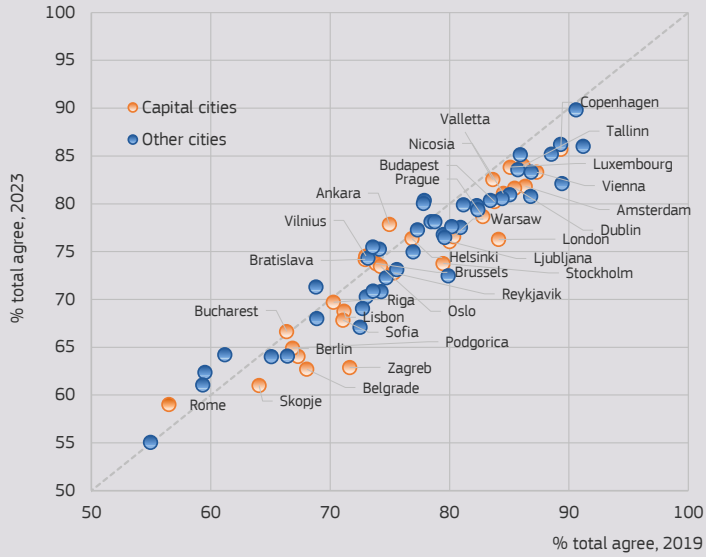
32 Source: Eurostat (isoc_ciegi_ac) and Eurostat (2023) https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Digital_economy_and_society_statistics_-_households_and_individuals#Use_of_e-government.

Box 7.3 While the COVID-19 pandemic accelerated the digitalisation of many services, including e-government, the ease of access to them seems to have declined

The 2023 edition of the European Commission survey on the quality of life in European cities asked residents whether the information and services provided by their local public authorities could be easily accessed online. Some 74 %, agreed, 2 pp lower than in 2019, with the figure varying from 86 % in Aalborg in Denmark to 50 % in Palermo in Italy (Figure 7.3).

The COVID-19 pandemic accelerated the pace of digital transformation in the EU. The containment measures put in place meant that people were forced to use the internet to an increasing extent, boosting digitalisation in the public sector. As a result, Eurostat data show that the proportion of people interacting online with public authorities has steadily increased since 2019, though existing inequalities in digital skills have also widened. The results of the survey show a clear reduction in the proportion of respondents reporting that the information and services provided by their local public administration were easily accessible online in 66 of the 73 cities for which a comparison could be made over the period. The reduction was largest in Zagreb in Croatia (-9 pp), Rostock in Germany (-7 pp) and Miskolc in Hungary (-7 pp).

Figure 7.3 City residents agreeing that information and services of their local public administration are easy to access online, 2019 and 2023

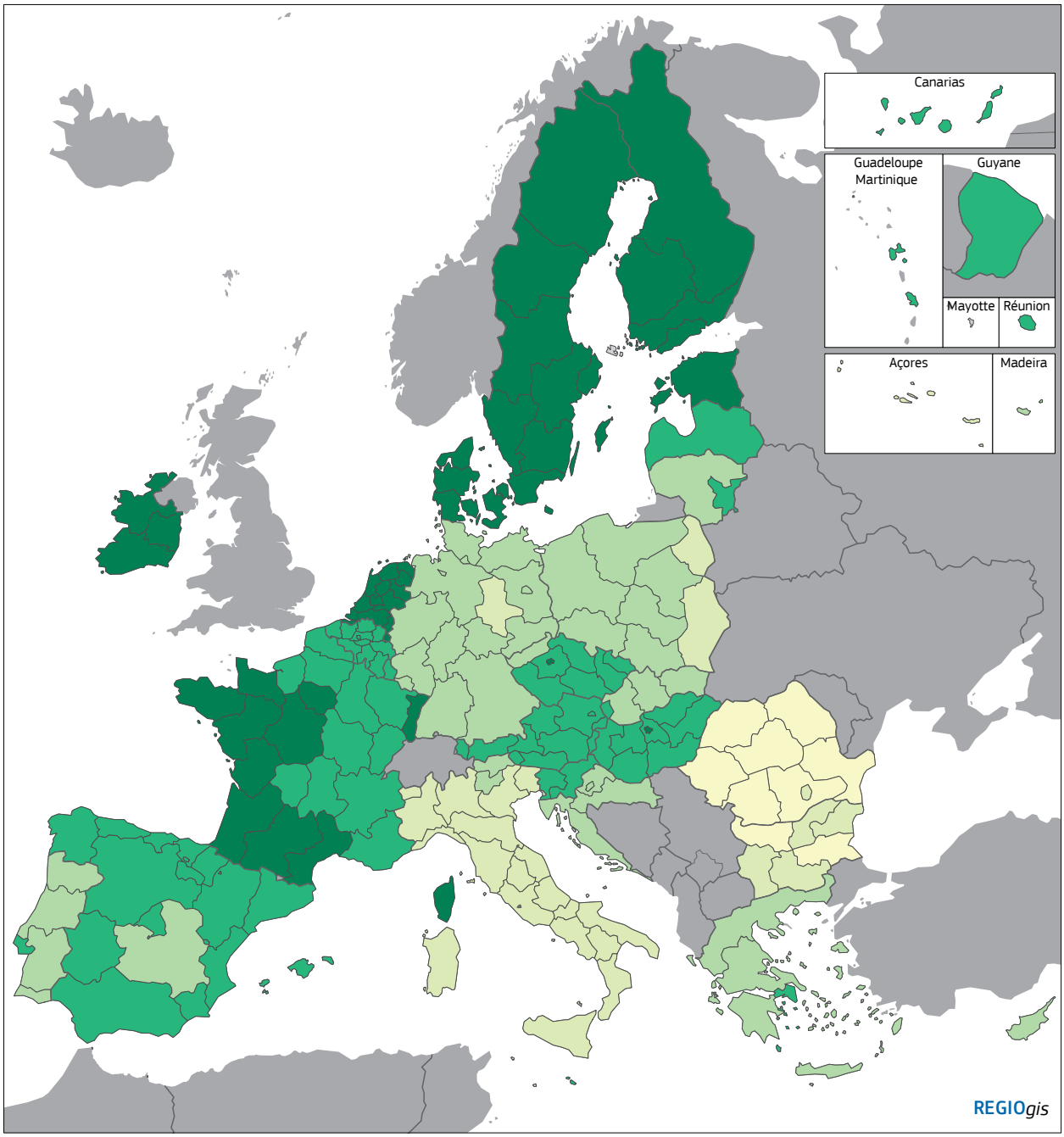


Note: Percentages are based on all respondents (excluding 'don't know'/not answered). The dashed line is a 45-degree line (no change between 2019 and 2023). The chart only includes cities for which a time comparison can be made between 2019 and 2023.
Source: European Commission (2023c).

The proportion was smallest in less developed regions, averaging 42 % in 2021[33] as against 69 % in more developed regions and 74 % in transition ones. The proportion was below 20 % in all regions in Romania – except for Bucaresti-Ilov, the capital city region – and in several regions in Bulgaria (Map 7.7). Over the period 2013–2021, the proportion increased considerably in eastern EU regions (except for those in Bulgaria and Romania) and Spain (Map 7.8).

Low usage of e-government services may be linked to a lack of internet access, a lack of e-government infrastructure, and/or low levels of digital skills, which is a feature of some regions in the EU. This digital gap particularly affects marginalised

33 Latest figures available at the time of closing the report.



Map 7.7 People interacting with public authorities via the internet in the previous 12 months, 2021

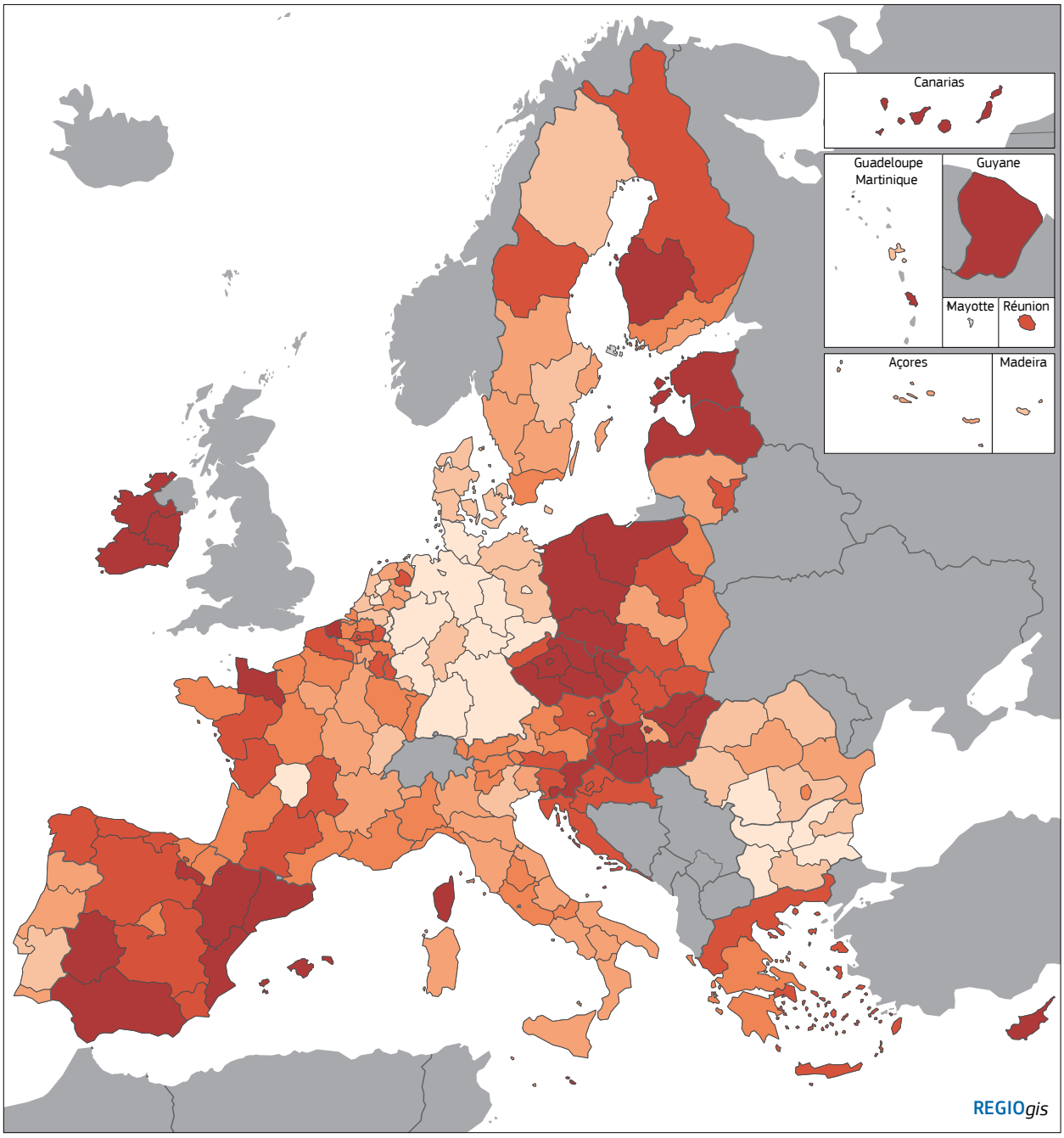
% of people aged 16–74

- <= 20
- 20 – 40
- 40 – 60
- 60 – 80
- > 80
- no data

EU-27 = 58.5

Source: DG REGIO based on Eurostat data (isoc_r_gov_i and isoc_ciegi_ac).

0 500 km



Map 7.8 Change in the proportion of people interacting with public authorities via the internet, 2013–2021

Percentage point difference

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

EU-27 = 17.0
FR: 2014–2021; FR (RUP), SI: 2015–2021.
Source: DG REGIO based on Eurostat data (isoc_r_gov_i and isoc_ciegi_ac).

0 500 km

communities, such as Roma living in remote segregated settlements. In 2023, some 6 % of the population aged 16–74 in the EU had never used the internet[34], with the proportion of individuals not having used the internet exceeding 10 % in Croatia (14 %), Greece and Portugal (13 % in both), and Bulgaria (12 %). The long-term vision for rural areas' flagship Rural Digital Futures[35] highlights the importance of improving digital connectivity for closing the gap between rural and urban areas and boosting competences to make sure everyone benefits from the digital transition.

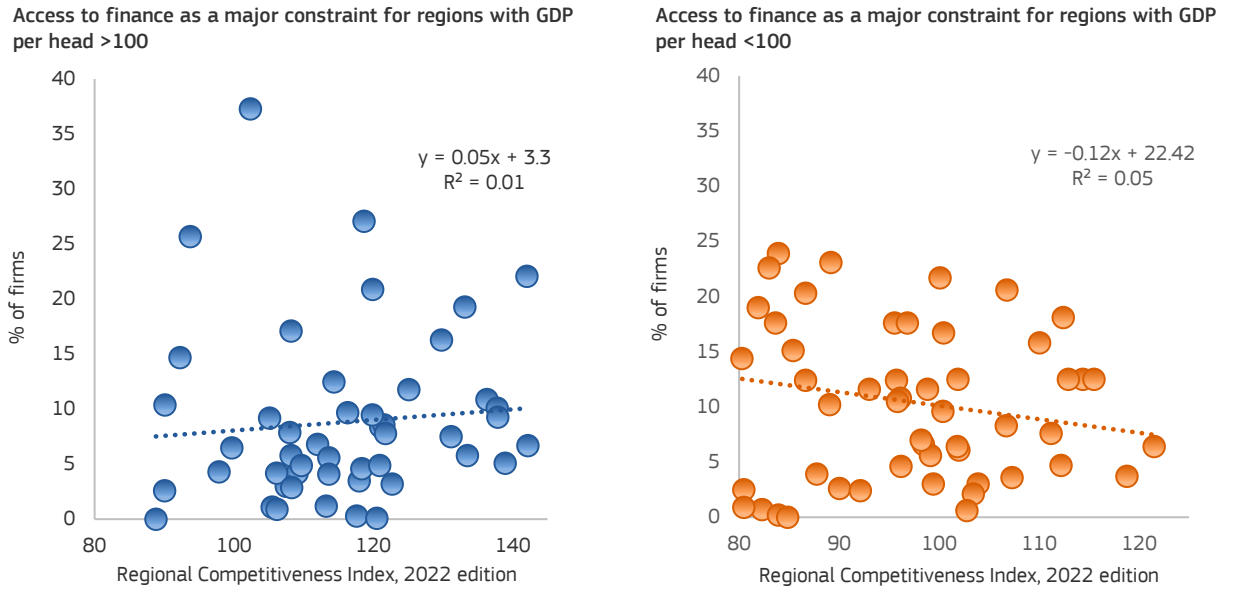
2.4 An efficient business environment is a key asset for regional competitiveness

One of the adverse effects of inefficient institutions is a poor regulatory environment that burdens firms and adversely affects entrepreneurship. Low-quality institutions hamper the creation of new businesses and may lead budding entrepreneurs to seek opportunities abroad or give up altogether.

Over recent years, policy reforms have made the EU more business-friendly[36]. The Commission, via its Technical Support Instrument, has provided support to Member States for building sustainable and competitive economies, including through reforms to improve the business environment, and strengthening SMEs.

How firms perceive the business environment can be key to whether they grow or feel obstructed from doing so. The sub-national component of the World Bank's Enterprise Survey[37] is a useful means for understanding the business environment across EU regions. The surveys were conducted between 2018 and 2022, in the form of nearly 19 000 interviews with top managers and business owners in the private sector. Results are available for a mix of NUTS 1, NUTS 2, and a combination of NUTS 2

Figure 7.4 Percentage of firms indicating access to finance as a major obstacle to their activity versus Regional Competitiveness Index 2.0 by GDP per head



Note: GDP per head is the average in 2019–2021 with the EU average=100. Regions are a mix of NUTS 1, NUTS 2 and combined NUTS 2.
Source: DG REGIO based on World Bank Business Enterprise Survey at the sub-national level and DG REGIO/JRC.

34 In the three months prior to the survey. Source: Eurostat [isoc_r_iuse_i].

35 https://rural-vision.europa.eu/action-plan_en.

36 European Commission (2021b).

37 A project supported by the European Commission.

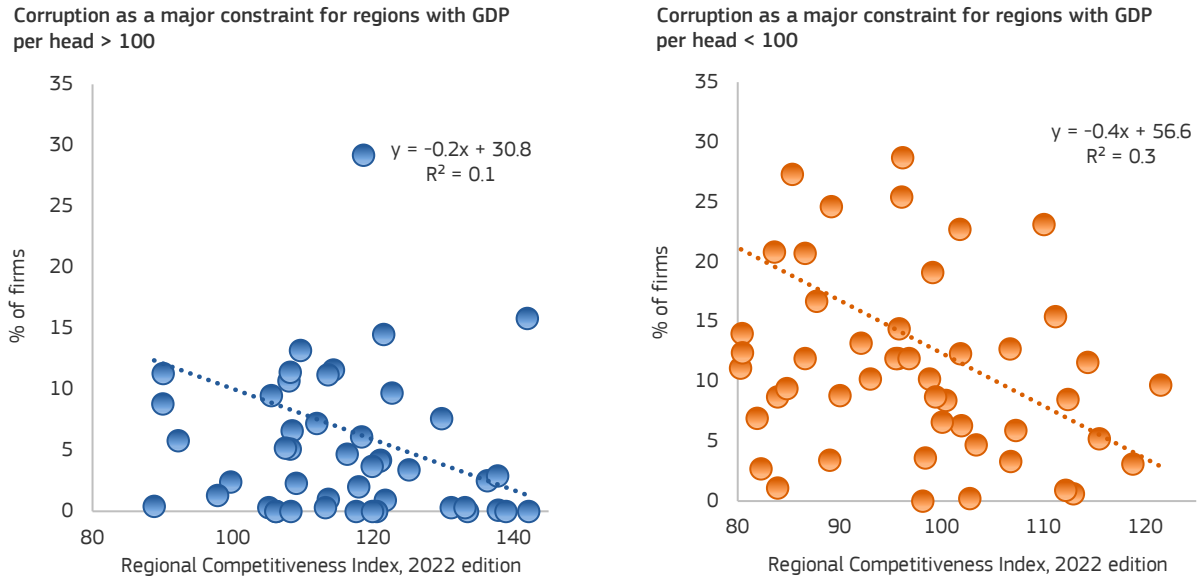
or NUTS 3 regions. This section covers three major aspects of the business environment: access to finance, the extent of corruption, and the burden arising from the administration of tax.

Access to external finance plays a critical role in ensuring regional competitiveness, particularly in less developed regions in the EU, since it is linked to business growth and survival (Figure 7.4)[38]. In 2023, among firms in the EU that judged bank loans to be a relevant source of funding, 7 % faced obstacles in obtaining a loan (5 % of large firms and 9 % of SMEs)[39]. Across the EU regions covered by the survey, 50 % of firms in Sud-Vest Oltenia in Romania identified access to finance as a major constraint[40] on their current activity, 42 % in Attica and 41 % Kentriki Ellada (both in Greece), and 40 % in the Sud region of Italy (Map 7.9, left-hand side).

Corruption can worsen conditions for most businesses, hampering overall regional competitiveness, particularly in less developed regions. There is therefore a negative correlation between the proportion of firms reporting corruption to be a major obstacle to their activity and regional competitiveness (Figure 7.5).

Corruption imposes a variety of costs on firms, including both the direct costs of paying bribes and the indirect costs of maintaining relationships with public officials and managing the uncertainty surrounding informal and often illegal arrangements, so damaging their incentive to develop and grow. Ultimately, corruption may lead to an inefficient allocation of resources[41]. Some 34 % of companies in the EU covered by a Eurobarometer survey in 2022 reported that corruption is a problem when doing business, with the largest

Figure 7.5 Percentage of firms indicating corruption as a major obstacle to their activity versus Regional Competitiveness Index 2.0 by GDP per head



Note: GDP per head is the average in 2019–2021 with the EU average=100. Regions are a mix of NUTS 1, NUTS 2 and combined NUTS 2.
Source: DG REGIO based on World Bank Business Enterprise Survey at the sub-national level and DG REGIO/JRC.

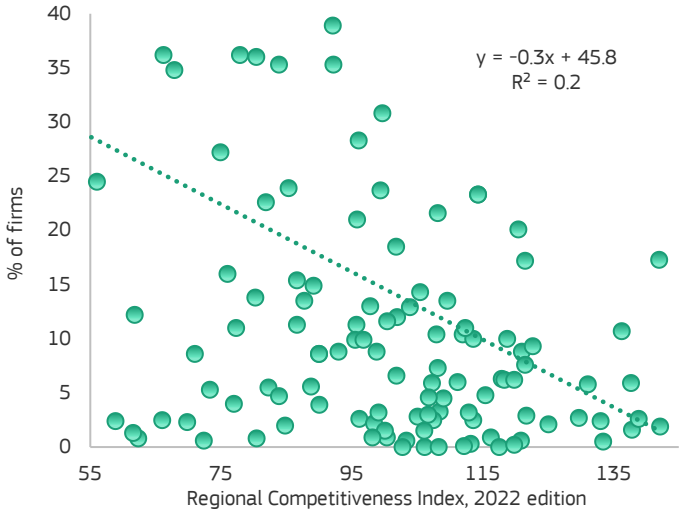
38 OECD (2024, forthcoming); Mach and Wolken (2012).

39 European Central Bank (2023).

40 A firm is considered to find an obstacle a major constraint if it responded 'major obstacle' or 'very severe obstacle' to the question 'Is access to finance no obstacle, a minor obstacle, a moderate obstacle, a major obstacle, or a very severe obstacle to the current operations of this establishment?'

41 Restuccia and Rogerson (2017).

Figure 7.6 Percentage of firms indicating tax administration as a major obstacle to their activity versus Regional Competitiveness Index 2.0 in EU regions



Note: Regions are a mix of NUTS 1, NUTS 2 and combined NUTS 2 and NUTS 3.
Source: DG REGIO based on World Bank Enterprise Survey at the sub-national level and DG REGIO/JRC.

proportions in Romania (70 %), Greece (75 %) and Cyprus (78 %), and the lowest in Denmark (7 %), Ireland (8 %) and Estonia (9 %). In addition, 79 % agreed that close links between business and politics leads to corruption in their country and 70 % that favouritism and corruption hamper business competition[42].

In the World Bank business enterprise survey, the largest proportion of firms identifying corruption as a major constraint on their current activity was in the region of Vest in Romania (74 %), followed by the Sud region in Italy (62 %), Centru and Bucharesti-Ilfov in Romania, and Yugoiztochen in Bulgaria (all 55 %) (Map 7.9, centre).

The burdensome administration of taxes can hamper regional competitiveness. Indeed, there is a clear tendency for the proportion of firms reporting that tax administration is an obstacle to their activity to be larger in less competitive regions (Figure 7.6). Of course, this correlation does not imply that causation runs from the former to the latter, but it is consistent with it doing so.

The burden of tax administration includes all costs arising from the obligations that enterprises must fulfil, given the legislation in place. Studies have found that reducing the burden tends to encourage entrepreneurship and firms to enter the market, irrespective of the corporate tax rate[43]. Tax legislation is consequently a major concern of firms, and its simplification can improve the business environment, enhance competitiveness, and help to stimulate economic growth. In 2020, the European Commission adopted a Tax Action Plan, a set of 25 initiatives, with the aim of reducing the costs for businesses associated with tax collection and unnecessary administrative obligations in the Single Market[44].

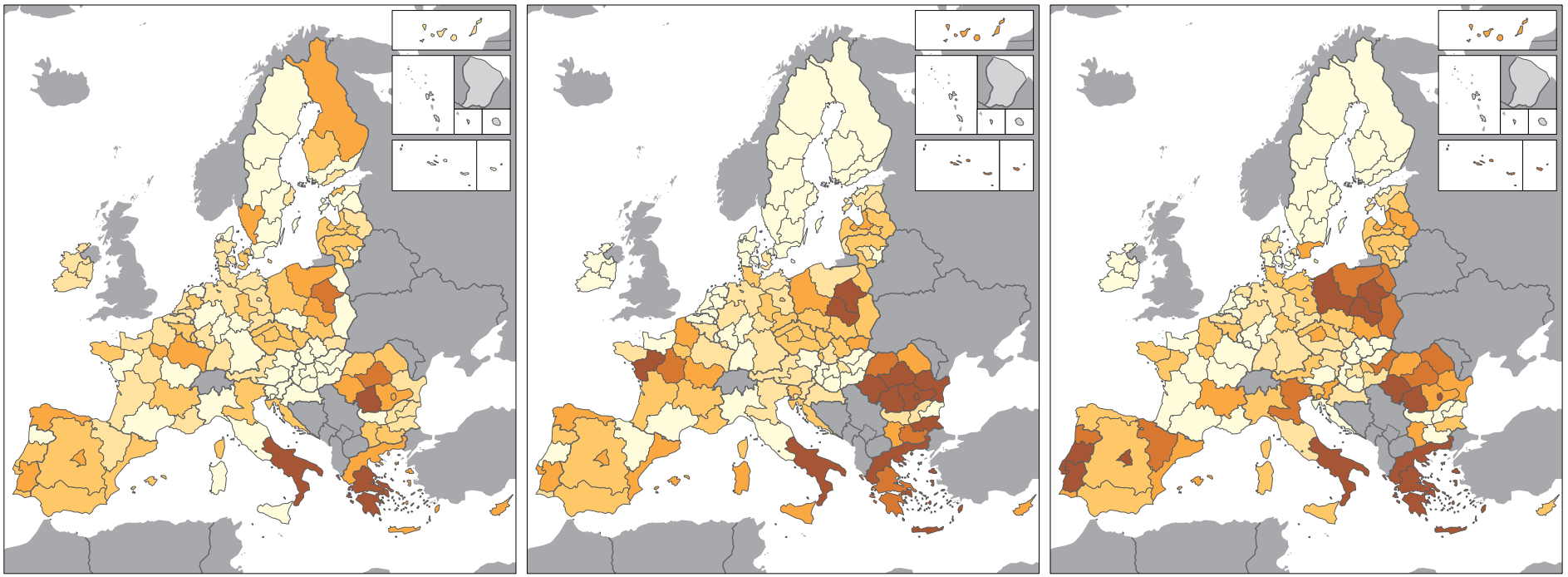
According to the World Bank Enterprise Survey, over 60 % of firms in Attica, Nisia Aigaiou and Kriti in Greece, Sud in Italy, and the Centro region in Portugal, identified tax administration as being a major concern for their current activity (Map 7.9, right-hand side).

42 European Commission (2022), Flash Eurobarometer 507 on business attitudes towards corruption.

43 Braunerhjelm and Eklund (2014); Branuerhjelm et al. (2021).

44 European Commission (2020b).

Map 7.9 Major constraints identified by firms, 2018–2021



Note: Percentage of firms in region reporting 'access to finance'/'corruption'/'tax administration' to be major obstacles to their activities. Regions are a mix of NUTS 1, NUT 2, and combined NUTS 2 and NUTS 3.
Source: Subnational component of the World Bank Enterprise Survey.

Box 7.4 Corruption creates obstacles for nearly 1 in 5 smaller firms in less developed regions

Corruption represents a greater barrier for smaller firms, especially those operating in less developed regions. Firms with fewer than 100 persons employed are more likely to find corruption a severe obstacle than those with 100 or more, and the difference is widest in the less developed EU regions (Figure 7.7). In these regions, almost 20 % of firms with fewer than 100 persons employed consider corruption to be a severe obstacle to their activity. For firms larger than this, the figure is 11 % in less developed regions (i.e. almost half) and only 5 % in more developed regions.

Part of the problem in regions with higher levels of corruption comes from greater 'churn', or the rate of business turnover, among local firms. Corruption increases uncertainty, which with the additional costs associated with corruption can increase the share of firms going out of business, leaving room for new entrants that in turn face the same issues. Churn is usually considered to be positive for economic development, underperforming firms closing and being replaced by new more efficient ones. Corruption seems to distort business dynamics, creating churn without this necessarily leading to more competitive firms being in operation.

Figure 7.7 Percentage of firms in categories of regions that find corruption a severe obstacle to their operations by size class, 2018–2021

Note: Figures cover all EU Member States apart from CY, CZ and MT and refer to the period 2018–2021.
Source: OECD (2024, forthcoming) based on data drawn from the sub-national component of the World Bank Enterprise Survey.

Box 7.5 Small firms in less developed regions are most likely to find access to finance an obstacle

Limited access to finance creates obstacles for firms, particularly smaller ones in less developed regions. Around 9 % of firms with fewer than 20 persons employed in less developed regions reported to the Word Bank enterprise survey in 2023 that access to finance was a severe obstacle to their operations, more than double the figure in developed regions (4 %). The figure is lower for larger companies in less developed regions (7 %) (Figure 7.8).

Smaller firms have more difficulties in accessing finance, for reasons that are more acute in less developed regions. They usually have limited collateral to pledge against their loans, so banks often charge them higher rates than larger firms, which have more resources and are considered less risky. They also tend to have less ability to collect information, so they are less aware of the financial products and government programmes that are available.

The difficulties tend to be more severe in less developed regions, where there are fewer banks and so fewer local options for borrowing. Such regions have, on average, only 2 bank branches per 100 square kilometres as against 10 in more developed ones[1]. This limits choice and competition between banks, which can mean less favourable financing conditions for firms, particularly SMEs. The larger distances between firms and banks in less developed regions can also hinder the exchange of information between them and make it harder to find out about suitable financial products.

1 Source: European Observation Network for Territorial Development and Cohesion, database 2021.

Figure 7.8 Percentage of firms in categories of regions that consider access to finance a severe obstacle to their operations by size class, 2018–2021

Note: Figures cover all EU Member States apart from CY, CZ and MT and refer to the period 2018–2021.
Source: OECD (2024, forthcoming) based on data drawn from the sub-national component of the World Bank Enterprise Survey.

3. The relevance of reforms and the European Semester

Chapters 1 and 2 describe the significant disparities between regions that persist in the EU. In recent years, the European Semester cycle has highlighted disparities that affect economic development, such as access to education and essential public services, the extent of digitalisation, the level of energy-efficiency, and the state of research and innovation. Disparities are further accentuated in rural areas, where access to basic services generally remains a problem. These often translate into disparities in labour market outcomes (i.e. employment and unemployment rates) and business competitiveness.

The European Semester country reports, in addition to identifying country-wide economic and social issues faced by Member States, have highlighted the relevance of the regional dimension of the EU's growth and resilience agenda and the disparities across regions in respect of four dimensions of competitive sustainability: safeguarding the environment, productivity, fairness and macroeconomic stability.

Tackling these disparities entails tackling the structural factors that cause them. This is relevant for both improving Cohesion Policy delivery and maximising its impact. The sub-national dimension is important for the effectiveness of national reforms: on the one hand, regional-specific reforms may be required in certain cases, such as services provided primarily at the sub-national level; on the other, the adoption of national reforms at the sub-national level may require specific measures to take proper account of regional features.

In the first place, several types of reforms can have a strong territorial dimension and require adaptation to the regional and local context. In the case of wide reforms intended to improve economic performance in a structural way, such as sectoral liberalisation or labour market reforms, these can have very diverse effects across regions, especially on employment and wealth[45]. Adapting these reforms to the specific subnational contexts, in particular in the most exposed areas, may require the definition of dedicated timelines and action plans for the implementation, possibly including ancillary measures at the subnational level.

Secondly, in areas where regional and local authorities are in the front line of providing services to businesses and citizens, national reforms can have differing effects depending on the local contexts and the capabilities of local authorities. In these areas, ranging from education, healthcare, and social services to local transport, country-wide reforms that shift responsibility more to the local level need to take account of local differences in the demand for the services and in the capacity of the authorities concerned to deliver them.

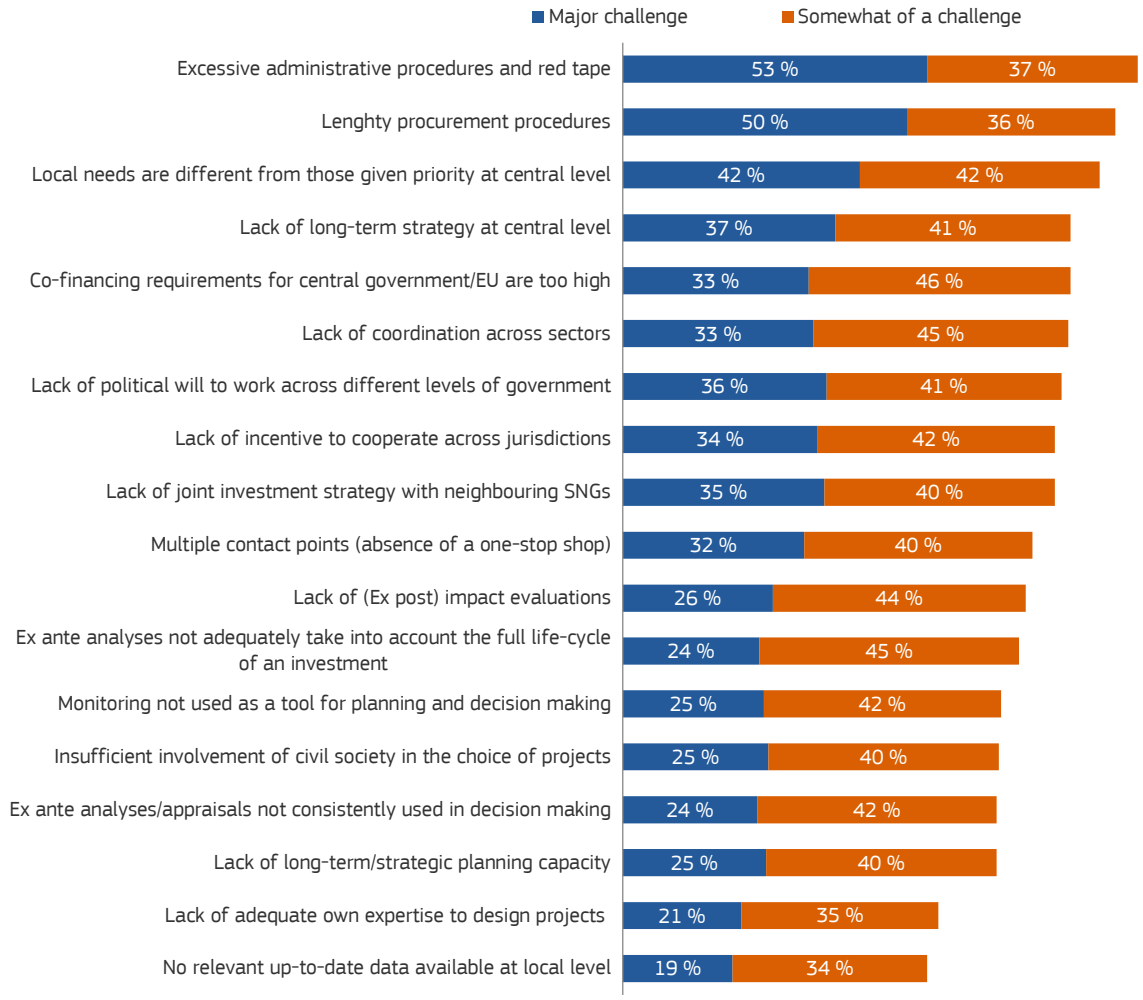
Thirdly, sub-national authorities are in some instances best suited to addressing land use and territorial planning issues. As a place-based policy, the implementation and effectiveness of Cohesion Policy programmes are highly dependent on targeted territorial delivery. Reforms that help to better target Cohesion Policy funds would increase impact and mitigate adverse spill-over effects, or magnify beneficial ones, across regional borders.

As described in Section 2 above, effective and efficient public administration is an essential element in economic development, for both national and sub-national authorities. The administrative capacity to design regional development programmes, to allocate funding to projects in line with EU regulations, and to account for the funding spent is a major determinant of effective policy delivery. The level of administrative capacity varies markedly across the EU, and many authorities, especially sub-national ones, are significantly limited in this respect (Box 7.6).

Public procurement procedures are a notable example. In a survey of municipalities conducted by the Organisation for Economic Co-operation and Development (OECD), smaller ones identified the simplification of such procedures as one of the main reforms needed to improve operational capacity. Another OECD survey, this time with the Committee of the Regions, found that 'lengthy

45 See for instance: Kovak (2013).

Figure 7.9 Challenges in the strategic planning and implementation of infrastructure investment in municipalities in the EU



Source: OECD-CoR survey [OECD-CoR (2016)]. Results of the survey on regional and local obstacles to investments.

procurement procedures' were the second most frequently identified challenge, with over 50 % of respondents regarding them as a 'major challenge' (see Figure 7.9). Reforms to strengthen sub-national capacity as regards public procurement could include a mixture of decentralisation measures, the mutualisation of procurement, and digitalisation (i.e. e-procurement[46]).

Access to finance is at the core of the capacity of sub-national authorities to deliver services and carry out investment. This, along with effective multilevel governance, is a key part of the reforms. The importance of a sound fiscal framework for multilevel governance is recognised in the EU Directive on this[47]. As indicated in Chapter 8, sub-national authorities are responsible, on average, for the execution of a third of total government expenditure (current plus capital) in the EU.

46 Allain-Dupré et al. (2017).

47 European Union (2011). The Directive envisages that 'Member States shall establish appropriate mechanisms of coordination across subsectors of general government to provide for comprehensive and consistent coverage of all subsectors of general government in fiscal planning, country-specific numerical fiscal rules, and in the preparation of budgetary forecasts and setting-up of multiannual planning as laid down, in particular, in the multiannual budgetary framework'.

Box 7.6 The evolution of the organisational model of Managing Authorities between 2000 and 2020

The introduction of general provisions on the Structural Funds for the 2000–2006 period marked a significant milestone by formally recognising the role of managing authorities (MAs) for the first time. The regulation mandated that MAs are accountable for the effective and accurate management and implementation of funds. This shift positioned MAs at the forefront of the management of EU funds for Cohesion Policy.

An ongoing study[1] covering the period from 2000 to 2020 investigates the significant transformations within MAs responsible for interventions financed by the European Regional Development Fund across Member States, excluding transnational cooperation. The study looks at aspects such as staff composition, internal processes and organisation, leadership dynamics, and management of relations with partners. Furthermore, the study considers external factors that might affect the organisation of MAs, including EU regulations, national and institutional frameworks, and socio-economic factors, aiming to explain organisational changes and project the potential challenges for the implementation of programmes in the 2021–2027 programming period and the preparation for future periods.

Preliminary findings reveal that the introduction of a unified EU-level regulatory framework and shared responsibilities led to a diverse range of organisational models among MAs in different Member States. Initially, the size of these authorities varied significantly, as did their internal organisational structures, which ranged from entities with bespoke processes to those integrating or sharing processes with encompassing organisations or other authorities within their respective countries.

Over time, changes reflected the evolution of the EU regulatory framework from one programming period to another. For instance, shifts in policy objectives and implementation tools (such as financial instruments and integrated territorial delivery mechanisms) had some effect on the organisational structure, the number and specialisation of structural units and the delegation of tasks and processes. Other organisational changes followed new national policies and legislation, including changes in the overall governance of regional and Cohesion Policy at national level. External audits also triggered organisational changes within MAs, especially revisions of internal processes and procedures.

Increased programme budgets led to expanded authority sizes. Yet recruiting and retaining skilled staff, developing soft and managerial skills, and achieving gender balance remained challenging. The analysis revealed the importance of consistent leadership as a driver for change, though MA leaders primarily focused on financial achievements and the effective functioning of management and control systems rather than on the achievement of policy objectives. Managing relations with stakeholders has seen little evolution and was mainly focused on running the activities of the monitoring committee, suggesting a lack of emphasis on broader trust-building and conflict management initiatives.

1 PPMI Group and University of Strathclyde (2024, forthcoming).

There are considerable variations, however, between Member States, reflecting differences in the institutional setting. Nevertheless, in all cases, even in the most decentralised countries, enhancing inter-governmental co-operation and a sound fiscal framework is essential to avoid coordination failures, the emergence of 'unfunded mandates' and, ultimately, inadequate policy implementation. Addressing the nexus between the different institutional levels in the design and implementation of reforms is a key aspect in the definition of an effective governance structure.

The multiannual programming of Cohesion Policy has been a major driver for the integration of public investment in medium-term budgetary frameworks and public financial management structures. Integrated strategic planning and methods of project

appraisal and selection that guide budget allocation effectively and use asset registers as input are key to carrying out public investment efficiently. While wide-ranging reforms to systems for managing public investment have been implemented in several Member States, room for improvement is evident in many others. In this regard, the success of decentralisation depends to a large extent on effective vertical and horizontal co-ordination across layers of government to avoid duplication and to ensure policies are consistent. Among EU Member States, there is evidence that difficulty in absorbing funding for investment can be a sign of poorly co-ordinated fiscal policy as well as inadequate administrative capacity at sub-national level[48]. Capacity constraints and co-ordination deficiencies also hinder the use of diverse methods of financing by sub-national governments.

To strengthen economic, social and territorial cohesion in the European Union, the Commission provides to Member States and regions support through the Technical Support Instrument. Support measures cover several reform areas, including: improving the quality of governance and public services; strengthening productivity, innovation and the green transition; and harnessing talent and employment opportunities. The tailor-made support measures help regions define and implement appropriate processes and methodologies to address the development challenges in an integrated manner, taking into account good practices and lessons from other regions. In addition, the TSI also aims to incentivise peer learning and promote intra Member State and cross-border regional co-operation, and complements existing Commission initiatives – Harnessing Talent in Europe's Regions, the New European Innovation Agenda, the Just Transition Platform, the Smart Specialisation Platform, and others.

Reflecting on the structural issues inhibiting convergence across regions identified in recent European Semester country reports and annexes is a precondition for tackling the underlying factors[49]. This includes pointing to the spatially targeted reforms that could be instrumental in this respect, and providing, where relevant, guidance to Member States on where to focus investment for the effective use of funding. This is particularly relevant for the 2024 Semester, in which Country Specific Recommendations provide guidance to Member States on allocating the flexibility amount included in budgets for the 2021–2027 programming period[50].

48 OECD (2020).

49 The 2019 Country Reports included in Annex D a set of regional factors, as well as investment guidance for the 2021–2027 programming period.

50 Article 18.1.a of the Common Provision Regulation (Regulation (EU) 2021/1060 of the European Parliament and of the Council of 24 June 2021).

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8

PUBLIC FINANCES, NATIONAL POLICIES AND COHESION

- The degree of decentralisation of both national public expenditure and Cohesion Policy programmes is generally lower in less developed countries, where there is scope for greater involvement of sub-national governments.
- Preliminary evidence shows that nationally funded investment for territorial cohesion in less developed countries represents in most cases only a small fraction of the funding provided under Cohesion Policy. There is therefore ample scope for increasing the efforts of the Member States concerned to strengthen cohesion as well as for improving the co-ordination with Cohesion Policy.
- Sub-national governments are responsible for carrying out a large share of public expenditure, though with significant differences across the EU.
- Sub-national governments are responsible for the majority of public investment in the EU. This is less the case in less developed countries, but the difference with more developed countries diminished significantly between 2004 and 2022 as public investment became more decentralised in the former. Since all governments decentralise certain public services and investment, a sound fiscal framework, as well as intergovernmental fiscal cooperation, is essential to improve the delivery of public services.
- Cohesion Policy multiannual programming has been a key driver of public investment integration in medium-term budgetary frameworks and public financial management structures. If managed well, decentralised investment, can improve the efficiency and effectiveness of public services to citizens and firms. Effective multilevel governance, in turn, relies on vertical and horizontal co-ordination across government's layers.
- Preliminary evidence from the OECD for several Member States shows considerable heterogeneity in the mix of funding sources at the regional and local levels. Transfers from other levels of government are the most important source of revenue. Countries where there is heavy reliance on one or only a few revenue sources are less resilient to shocks.

Chapter 8
Public finances, national policies and cohesion

1. Introduction

This chapter reviews national policies for territorial cohesion and sub-national public finances. It begins by examining preliminary evidence on the extent of nationally funded policies for territorial cohesion in a number of Member States using the data collected through ad hoc studies. It moves on to examine sub-national trends in public expenditure, revenue and investment over time and across Member States (Section 3). It then considers the composition of regional and municipal public expenditure and revenue in a number of EU Member States on the basis of data collected by the Organisation for Economic Co-operation and Development (OECD) with the support of the European Commission (Section 4).

In order to bring out broad differences, the chapter divides the EU Member States into two groups according to their gross national income (GNI) per head, which is taken as a proxy for their level of development. The 15 countries with GNI per head below 90 % of the EU average – the threshold for eligibility for the Cohesion Fund – are included in the less developed group (i.e. Bulgaria, Czechia, Estonia, Greece, Croatia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Portugal, Romania, Slovenia and Slovakia), the remaining 12 in the more developed group.

2. National policies addressing territorial disparities

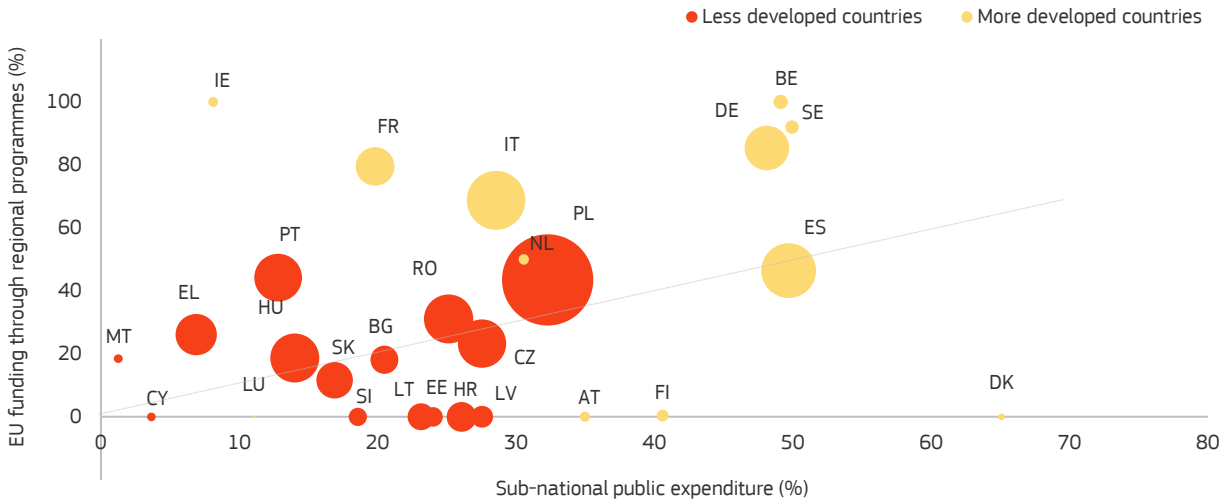
National policies to tackle regional disparities have a key role in strengthening territorial cohesion in the EU, especially contributing to reducing within-country disparities. Reducing internal territorial disparities is essential for optimising economic efficiency and improving competitiveness, and it needs to be a priority in Member States. By securing balanced development between regions, Member States can exploit the unique strengths and assets of each, contributing to a more diversified and resilient national economy. Improving the economic performance of all regions also increases the opportunities for co-operation and can create a dynamic environment in which innovation and knowledge are shared more widely, improving the competitiveness of the whole country.

These are compelling reasons why Member States should apply the 'do no harm to cohesion' principle to their national policies in all areas, meaning that national, regional and local authorities should be aware of the asymmetric territorial impact that any policy measure might have and take account of this in the policy-making process (the Treaty on the Functioning of the EU, it should be noted, explicitly calls on Member States to contribute to strengthening the economic, social and territorial cohesion of the EU through their economic policies (Articles 174 and 175)).

Where disparities exist within countries, these should be addressed in a complementary manner by national policies and EU funding. Where EU-funded interventions are planned and implemented, there may be a need for further support from national resources. This may be the case, for example, where the demand for a certain type of assistance exceeds the expectations of programmes or where unforeseen circumstances arise that require an immediate response. In areas not covered by EU funding, national policies represent the only level of support for sub-national governments to spend on policies aimed at strengthening socio-economic performance, recovering from immediate crises, addressing long-term deficiencies and building resilience to future shocks and a rapidly changing environment.

National policies and Cohesion Policy should be mutually reinforcing, leading to a more comprehensive and effective approach to regional development. By actively tackling regional disparities, Member States align their national strategies with overarching EU objectives.

Figure 8.1 Share of Cohesion Policy support implemented through regional programmes and share of sub-national public expenditure, 2014–2020



Source: DG REGIO calculations based on Eurostat gov_10a_main and Cohesion Open Data.

Figure 8.1 shows the share of EU Cohesion Policy support implemented through regional programmes in 2014–2020 (y-axis) in relation to sub-national public expenditure as a share of total government spending in the same period (x-axis), the size of the bubbles representing the amount of EU Cohesion Policy funding. There is a positive relationship between the two, implying that the degree of decentralisation of Cohesion Policy funding is positively correlated with that of national funding, or, in other words, that EU policy and national policy go broadly in the same direction. Figure 8.1 also shows that larger Member States and federal countries tend to be more regionalised in general (upper right-hand corner of the graph), while smaller Member States tend to be less regionalised in terms of general government expenditure and be dominated by national Cohesion Policy programmes. Remarkably, less developed countries are clustered in the lower left-hand corner of the graph; i.e. they are in general less regionalised, which gives ample scope for a greater involvement of sub-national governments in the design and implementation of both national public expenditure programmes and Cohesion Policy programmes (Box 8.1).

A more in-depth examination of the measures taken by countries to tackle territorial disparities is limited by the fact that available evidence on national policies is scarce and unsystematic, and, where it exists, is mainly limited to specific, time-limited case studies. To fill this knowledge gap, the European Commission has promoted a series of studies starting in 2019 to analyse policies for tackling territorial disparities that are fully funded by national resources.

One such study defined national policies for cohesion to encompass all policy initiatives and measures with the direct objective of reducing territorial disparities, together with those without such an objective but with a significant potential to achieve this. It covered 11 Member States[1]. All of these have national policies for cohesion, as defined, in place, with a range of policy instruments targeting different aspects of development, the most common being direct support for business development and innovation, transport infrastructure projects, and tax incentive schemes to support trade and improve the business environment.

1 European Commission (2019). The study was based on a combined analysis of statistical data, case studies, and stakeholder interviews. It covered 11 Member States, namely Bulgaria, Croatia, Czechia, Hungary, Italy, Poland, Portugal, Romania, Slovakia, Slovenia and Spain.

Box 8.1 Regional policies and multilevel institutional arrangements on the move

In recent years, regional policy has increasingly been confronted with competing objectives. First, the pursuit of its main objective of long-term structural change in less developed regions and the reduction of territorial disparities. Second, responding to short-term emergencies such as coping with the economic impact of the COVID-19 pandemic, facilitating recovery and dealing with the wide-ranging consequences of the Russian war of aggression against Ukraine, and, lately, the geopolitical instability in the Middle East. In addition, government policies are increasingly committed to meeting climate change targets, with potentially territorially asymmetric impacts on industrial production, energy generation and employment. Regional policies, as well as multilevel institutional arrangements and governance, are subject to multiple pressures that require them to evolve and adapt.

In its latest report, the World Observatory on Subnational Government Finance and Investment of the OECD (SNG-WOFI) and the United Cities and Local Governments (UCLG) provide the most comprehensive and systematic picture of territorial institutional structures and multilevel governance in 135 countries, of which almost half (61) have both a municipal and a regional level[1].

The picture that emerges from the report is one of decentralisation frameworks in continuous evolution around the world. It is interesting to note that there is a reform trend towards a clearer division of responsibilities between different levels of government and the allocation of the necessary resources to fulfil them, in an attempt to reduce the emergence of unfunded or underfunded mandates (i.e. the mismatch between responsibilities and available resources).

In addition, the decentralisation process is being accompanied by territorial reforms, such as municipal mergers or splits, in order to achieve greater efficiency. As an alternative to mergers, many countries are implementing inter-municipal co-operation, which can take various forms. In particular, countries are increasingly adopting asymmetric governance arrangements at the regional and metropolitan levels. In other words, more and more countries tend to allocate different political, administrative or fiscal powers to governments at the same sub-national level (regional/state, intermediate or municipal).

As far as Europe is concerned, a recent report by the European Regional Policy Research Consortium, based on a study of 30 countries, both EU Member States and non-EU countries, highlights five emerging trends in regional policy, each of which is actually reflected in the developments of EU Cohesion Policy between the current and previous programming period[2].

1 OECD/UCLG (2022).

2 Bachtler and Downes (2023).

Reducing territorial disparities is often pursued as part of growth and industrial policy, especially in Member States where all or most of the regions are less developed according to the EU Cohesion Policy classification. In these cases, territorial cohesion is often an integral part of a country's broader effort to reduce economic disparities with more developed parts of the EU.

Nationally funded policies complement EU Cohesion Policy in two main ways. Either they provide additional funding in national priority areas where Cohesion Policy funding is considered insufficient, or they support activities that are not eligible for EU funding. In practice, in budgetary terms, national policies for cohesion, as defined, appear to account for a very small fraction of EU Cohesion Policy funding. Of the Member States covered by the study, only Italy and Romania have a significant budget for territorial cohesion, of much the same size as Cohesion Policy in the case of Italy and just over a third of this in Romania. In the remaining countries, national funding ranges from just under 3 % of Cohesion Policy funding, here including national co-financing, in Croatia, to just under 9 % in Spain.

Regional policy is combining sustainability with competitiveness and innovation by reframing the growth objective in terms of sustainable growth. This is based on the recognition of the uneven territorial impact of climate change measures and the impact on already structurally weak regions.

The place-based approach to regional policy is now well established and widespread, often in the form of integrated development strategies tailored to the specific needs of places. It should be noted that the EU 'smart specialisation' approach has helped to disseminate and mainstream this approach among regional authorities in the EU and beyond. Closely linked to this are visible efforts to increase coherence between regional and sectoral policies, for example by giving a territorial dimension to sectoral policies. Again, smart specialisation is an early example of the regionalisation of an otherwise typical sectoral policy.

The study found an increasing focus on vulnerable or marginalised regions. In several cases, this reflects a renewed political concern with the economic and social difficulties faced by rural areas, often in remote parts of countries, where there is a perception of neglect in favour of a policy focus on cities. This focus is also linked to the objective of improving regional resilience, as a consequence of the territorial vulnerabilities revealed by the impact of the COVID-19 pandemic and the need for regions to be more resilient to shocks. This renewed focus is also part of a wider policy objective of using regional policy interventions to improve quality of life and access to public services where these are under pressure or linked to demographic decline.

Finally, governance and institutional reform and capacity-building at regional and local level remain high on the regional policy agenda across Europe. In some cases, this involves the redefinition of existing administrative boundaries or units, for example through mergers and rationalisation of municipalities or increased co-operation between regional and local authorities. Notably, and in line with the global trend observed in the OECD/UCLG report, the decentralisation process in some countries is asymmetric.

As regards the regions targeted, there is evidence of different approaches and mixed experience. According to the findings of the study, some countries (e.g. Czechia and Croatia) actively support the more prosperous regions, including capital city regions, considering them to be the driving centres of economic growth that can help reduce the country's development gap with the more advanced parts of the EU. Other Member States – Italy, Romania and Spain, especially, as indicated above – are more active in supporting less developed regions to reduce disparities. The first approach is more common in countries that devote very limited national resources to this type of policy, while the second approach, targeting less developed regions, is more common in countries that invest more.

The vast majority of national policy measures for cohesion in the countries covered are designed by central government (90 %), some are co-designed with the regions, while only 3 % of the initiatives examined are designed at regional level. Implementation is the responsibility of central government in 70 % of cases and only 16 % of measures are implemented by regional authorities, the rest being implemented by local authorities. Countries where sub-national authorities carry out only a small share of public expenditure tend to have a more centralised governance of national policies for cohesion (as in Bulgaria, Croatia, Hungary, Portugal, Romania and Slovenia).

Further evidence is obtained by restricting the scope of the analysis to investment programmes or initiatives fully financed from national resources in the fields of economic development (including e.g. investment in innovation, ICT, and SME competitiveness), transport (including all forms of mobility), energy, environment, health and education, thus excluding non-investment measures, and by focusing only on policies that either have a specific territorial/spatial focus or are explicitly aimed at reducing territorial disparities and strengthening territorial cohesion, thus excluding measures without direct cohesion objectives[2].

2 European Commission (forthcoming).

Preliminary results for seven Member States (Croatia, Czechia, Estonia, Lithuania, Poland, Romania and Slovenia) show that, for the period 2015–2021, 36 investment initiatives were planned with a budget of EUR 7.9 billion. This represents only 5.4 % of the combined European Regional Development Fund and Cohesion Fund allocations (including national co-financing), for these countries for the 2014–2020 programming period. There are, however, big differences between the countries, especially between Romania, where national investment for cohesion amounted to around 30 % of Cohesion Policy funding for investment, and the other six countries, where the figure ranged from 3.8 % in Slovenia and 1.7 % in Czechia to only 0.7 % in Poland and under 0.5 % in Croatia, Estonia and Lithuania.

The implemented budget of national investment policies for cohesion as of the end of 2023 is overall equal to 76 % of the planned budget for the seven countries surveyed, with a maximum in Czechia at 107 %, and a 100 % execution in Croatia, Estonia, and Lithuania, while Slovenia, Poland and Romania implemented 87 %, 84 % and 73 % respectively. If we compare the implemented budget with total public expenditure (taking into account the sum of central, state and local government) over the same period 2015–2021, we find that, in the seven countries surveyed, national policies for cohesion account for a total of 0.2 % of public expenditure, a tiny fraction. Again, there are huge differences between countries: in Romania, this figure is over 1 %, in Czechia it is almost 0.6 %, while in the other five countries it is less than 0.1 %.

While recognising that a national investment policy for cohesion may cover different policy areas, it can be seen that 50 % of the measures include the area 'business & enterprise', while areas such as 'connectivity', 'human capital' and 'living standards' are each included in around a third of the measures; 17 % of the measures include 'climate change & environment', while 6 % include 'research & innovation'. In terms of policy instruments, the vast majority of the measures identified (94 %) mainly use grants and transfers, although some also offer interest rate subsidies (14 %), tax breaks (8 %) or loan guarantees (3 %), sometimes used in combination.

Evidence is available with a breakdown by categories of beneficiary of national investment policies for cohesion, where again a single measure may address more than one category of beneficiary. The policies identified cover a wide range of different beneficiaries. In particular, it can be noted that the majority of measures (67 %) are targeted at municipalities, followed by SMEs (39 %), public organisations (25 %), non-profit organisations (25 %), start-ups (22 %), scale-ups (11 %), large enterprises (17 %), industrial parks and other types of parks or innovation zones (11 %) and multinationals (8 %).

Some 86 % of the investment measures are designed by central government, 11 % by regional authorities and only 3 % by local authorities. The latter two, however, have more importance in the implementation of investment, being responsible for implementing 19 % and 25 % of measures, respectively. Overall, in these seven countries, therefore, national investment policies for cohesion appear to be predominantly centralised in terms of design, but both regional and local authorities have a significant role in implementation.

3. Sub-national public finances and investment

3.1 The national context: public finances on the way to a gradual improvement after the COVID-19 crisis and the energy crisis

In order to fully understand the situation and evolution of sub-national public finances in EU Member States, it is important to set out the macro-economic context in which they operate. Far from having a uniform impact across countries, macro-economic factors often have strong asymmetric effects that constrain the potential room for manoeuvre of sub-national finances. This is particularly true in the recent crises triggered by the COVID-19 pandemic and the Russian war of aggression against Ukraine. The section provides an overview of the markedly heterogeneous situation of national public finances across the EU in recent years.

The Eighth Cohesion Report described the significant improvement in the public finances of EU Member States in the years following the Great Recession of 2008–2009 and the sovereign debt crisis of 2011. While there was fiscal consolidation to reduce budget deficits in the period after 2011, which was supported by economic recovery from 2015 to 2019, trends were abruptly reversed in 2020 with the outbreak of the COVID-19 pandemic and the restrictive measures taken to contain it, along with the financial support provided to safeguard businesses and jobs. In 2021, the EU deficit started to decline, as a result of a reduction in expenditure on pandemic-related emergency measures, combined with a recovery of GDP from the collapse the year before. The decline continued in 2022, despite government spending on energy support measures in response to the energy crisis triggered by the war in Ukraine.

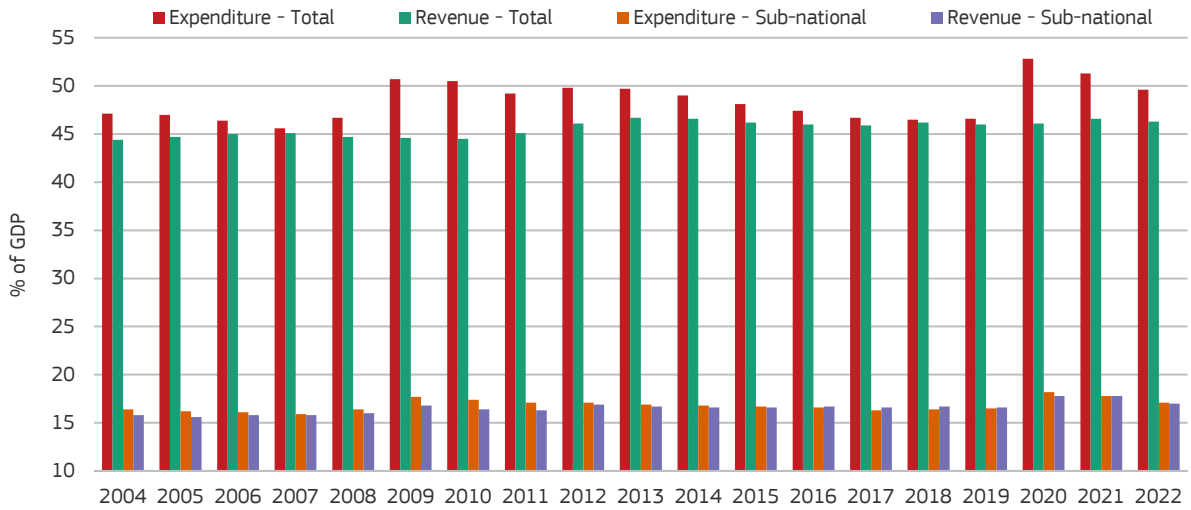
3.2 Sub-national governments carry out a large share of public expenditure, but with marked differences across the EU

This sub-section examines government expenditure and revenue at regional and local level and the changes that have occurred in recent years, including in response to the COVID-19 pandemic and the energy crisis of 2022. Around a third of total government expenditure in the EU-27 is carried out by regional and local authorities, highlighting their importance in the delivery of public services, and their fundamental role in the functioning of the public sector. However, there is substantial variation across Member States in the formal extent of decentralisation of government expenditure and revenue (Box 8.2).

It is important to note that the figures for government expenditure and investment carried out at the sub-national level and the revenues collected at this level indicate the amounts that are channelled through the authorities concerned. While these may be responsible for managing expenditure or collecting revenue, they may have limited autonomy over the underlying policy and the decisions on investment or taxes. Section 4 below sets out an exploratory examination of the composition of revenue and expenditure, which might shed some light on the actual decision-making powers of regional and municipal authorities.

In 2022, sub-national expenditure and revenue in the EU were both 17 % of GDP, or around a third of total government spending, and slightly more of revenue (Figure 8.2). The share of GDP has been very stable over time – in 2004, it was just over 16 %. In the same way as the total, sub-national government expenditure varies counter-cyclically with GDP, tending to increase as a

Figure 8.2 Total and sub-national government expenditure and revenue in the EU, 2004–2022



Source: Eurostat gov_10a_main.

share when GDP falls and to fall when it increases. The share increased sharply in 2020, jumping by 1.7 pp as a consequence of the pandemic and the measures taken in response to it, and falling back in the following two years as GDP recovered. In 2022, it was 1.1 pp lower than in 2020, though 0.6 pp higher than before the pandemic. Sub-national revenue also increased in 2020, by 1.2 pp to almost 18 % of GDP, and in 2022 it was still 0.4 pp higher than before the pandemic, partly because of increased transfers from central governments to combat the pandemic and to recover from the recession caused by the restrictive measures taken.

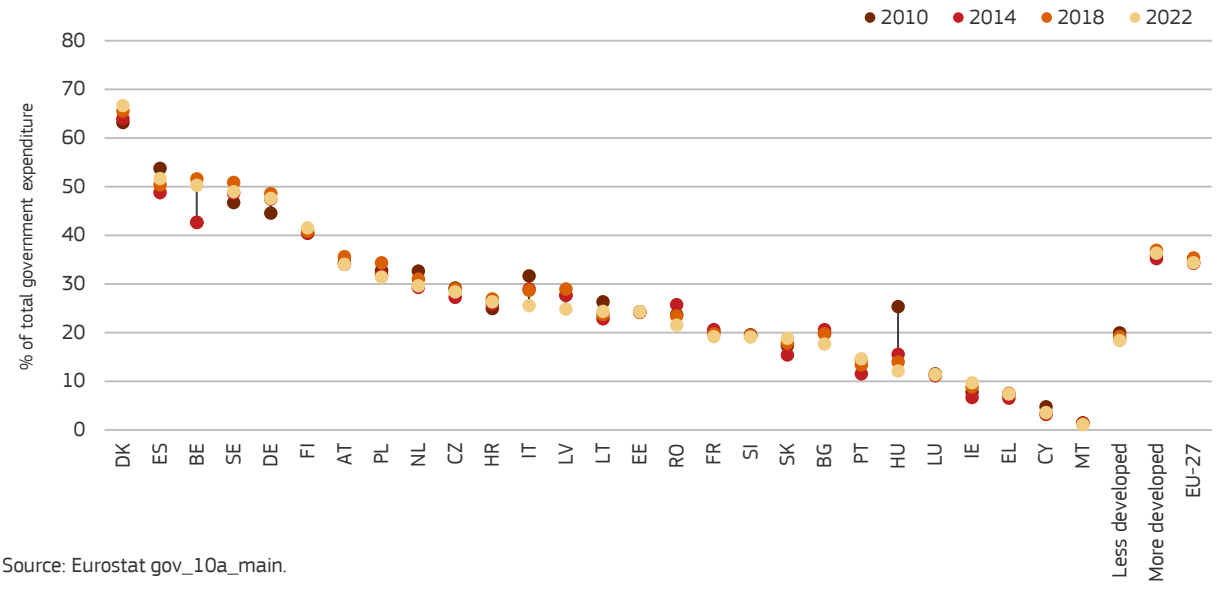
There are significant differences between Member States in the share of sub-national government expenditure in total government spending, reflecting in part differences in the institutional make-up (Figure 8.3). The share is largest in federal countries (Austria, Belgium and Germany) and in those where government is highly decentralised (Denmark, Spain, Sweden and Finland). In Denmark, around two thirds of public expenditure in 2022 was carried out by sub-national authorities; in Spain, Sweden, Germany and Belgium, around half; and in Finland, over 40 %. By contrast, in Cyprus and Malta, reflecting their size, sub-national authorities were responsible for under 5 % of public expenditure, and in Greece, Ireland and Luxembourg, only around 10 % or less.

Although the share of expenditure carried out by sub-national authorities in the EU has been stable over time, this is the result of differing developments across Member States. Between 2010 and 2022, the share increased in eight Member States and declined in 15. More specifically, it increased by around 8 pp in Belgium, by over 3 pp in Denmark and Germany, and by 2 pp in Sweden and Ireland, while it fell by over 1 pp in 11 countries, declining by 6 pp in Italy and 13 pp in Hungary.

Overall, government expenditure tends to be significantly less decentralised in less developed Member States than in more developed ones, with sub-national spending accounting for 18 % of expenditure in the former in 2022 and 36 % in the latter. Over the period 2010–2022, expenditure became less decentralised in less developed countries, with the sub-national share falling by 1.6 pp, while it increased by 0.5 pp in the more developed ones.

Sub-national government expenditure tends to be concentrated in certain policy areas (see Box 8.3 for a description of the breakdown by function).

Figure 8.3 Sub-national government expenditure in EU Member States, 2010, 2014, 2018 and 2022



Source: Eurostat gov_10a_main.

Box 8.2 Fiscal decentralisation and economic performance

The impact of fiscal decentralisation on economic growth has been intensively studied for decades. It is difficult to disentangle because fiscal decentralisation often evolves at different speeds along two axes, expenditure and revenue, which interact with economic performance in complex ways.

Public expenditure decentralisation can be seen as a means of increasing the efficiency of government service delivery at the local level, leading to better social conditions and, ultimately, higher economic growth[1]. However, the precise empirical relationship between fiscal decentralisation and growth is difficult to establish, as economic growth is affected by decentralisation, but decentralisation can also be affected by economic growth.

Using a variety of techniques, some recent studies find a positive effect of expenditure decentralisation on growth, i.e. increasing the share of sub-national expenditure in total general government expenditure increases GDP per capita growth[2]. However, there is still no firm and unanimous consensus in the literature on the existence and magnitude of a general positive effect of decentralisation on growth[3].

Several authors point to the crucial role of the institutional framework as a mediating factor in the relationship between fiscal decentralisation and growth. The efficiency argument, which is used to justify the decentralisation of public services and therefore of expenditure, finds its limits in the autonomy and accountability of sub-national authorities. The growth-enhancing effects of fiscal decentralisation are found to depend critically on the authority of sub-national governments. Fiscal decentralisation is more conducive to growth when sub-national revenues are mostly derived from autonomous sources (e.g. property taxes)[4]. And more generally, the quality of the institutional environment matters for the (positive) impact of fiscal decentralisation[5].

Finally, other studies point out that while greater autonomy for sub-national governments following greater control over locally generated revenues may encourage more efficient, accountable and business-friendly attitudes on the part of local administrators, it may also worsen these same incentives for central government administrators, making it difficult to predict the ultimate combined effect on economic performance[6].

The picture therefore appears to be indeed ambiguous, calling for investment in the production of better territorial data, including on the characteristics of the institutional environment and on the multilevel governance of public policies.

1 Oates (1999).

2 Aray and Pedauga (2024); Canavire-Bacarreza et al. (2020); Iimi (2005).

3 Anam and Plaček (2023).

4 Filippetti and Sacchi (2016).

5 Buser (2011).

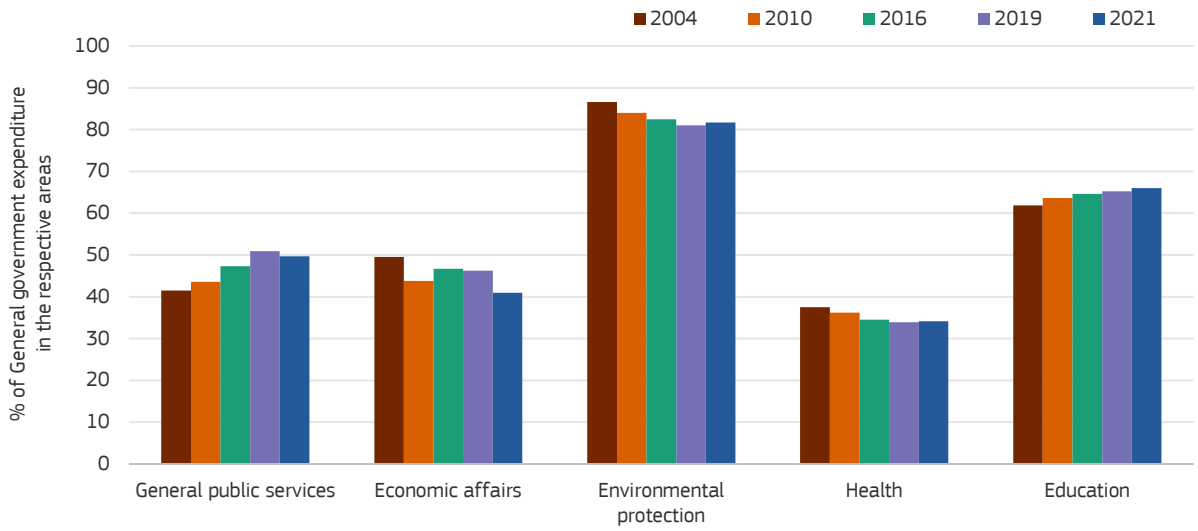
6 Treisman (2006).

In 2021, sub-national authorities were responsible for close to 82 % of public expenditure on environmental protection[3] and 66 % of education expenditure, as well as almost 50 % of spending on general public services, 41 % of spending on economic affairs[4], and over a third of that on health (Figure 8.4). Over the period 2004–2021, there was a marked and almost continuous increase in the decentralisation of spending on general public services (by 8.2 pp, equivalent to an increase of almost 20 %) and education (by 4.1 pp, or 7 %). Sub-national expenditure in other areas, on the other hand, fell, in economic affairs (by 8.5 pp, or 17 %), health (by 3.4 pp or 9 %) and environmental protection (by 4.9 pp, or 6 %).

3 The COFOG category 'environmental protection' includes waste and wastewater management activities.

4 The COFOG category 'economic affairs' includes transport and communication services, which represent a large share of expenditure.

Figure 8.4 Sub-national government expenditure in selected policy areas in the EU, 2004, 2010, 2016, 2019 and 2021

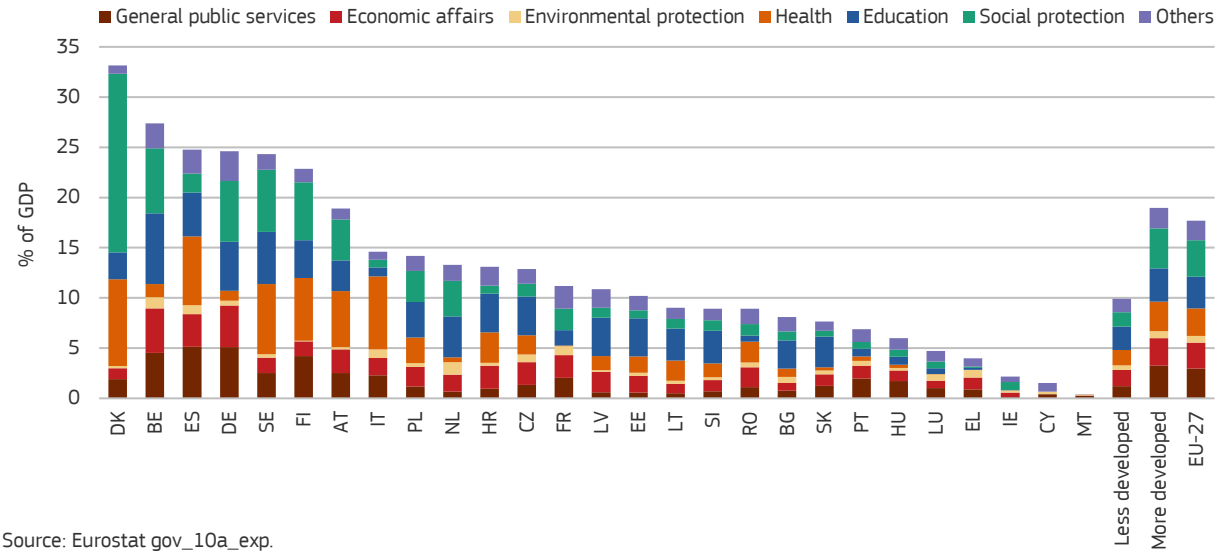


Source: Eurostat gov_10a_exp.

Social protection was the largest area of sub-national government expenditure in the EU in 2021, accounting for 3.6 % of GDP, followed by education at 3.2 %, general public services at 3 %, health at 2.7 % and economic affairs at 2.6 %, while expenditure on environmental protection was just 0.7 % of GDP (Figure 8.5).

Again, there is considerable variation between Member States. Overall, the expenditure carried out by sub-national authorities relative to GDP in less developed countries was only just over half of that in more developed ones (10 % as against 19 %). Spending in all areas was lower in the former, especially on social protection (2.5 pp lower), general public services (2.1 pp lower), health (1.4 pp lower), education and economic affairs (1 pp lower in both).

Figure 8.5 Sub-national government expenditure in selected policy areas, by EU Member States, 2021



Source: Eurostat gov_10a_exp.

Box 8.3 Classification of functions of government (COFOG)

The COFOG was developed by the OECD and is described in detail in the Eurostat guide[1].

There is a three-level classification with 10 'divisions' at the top level, each of which is further subdivided into six to nine groups, some of which are further subdivided into 'classes'. Here, the 10 top-level divisions are regrouped into the following seven categories: general public services (COFOG division 01), economic affairs – mainly transport (04), environmental protection (05), health (07), education (09), social protection (10) and other (comprising 02 'defence', 03 'public order and safety', 06 'housing and community amenities' and 08 'recreation, culture and religion').

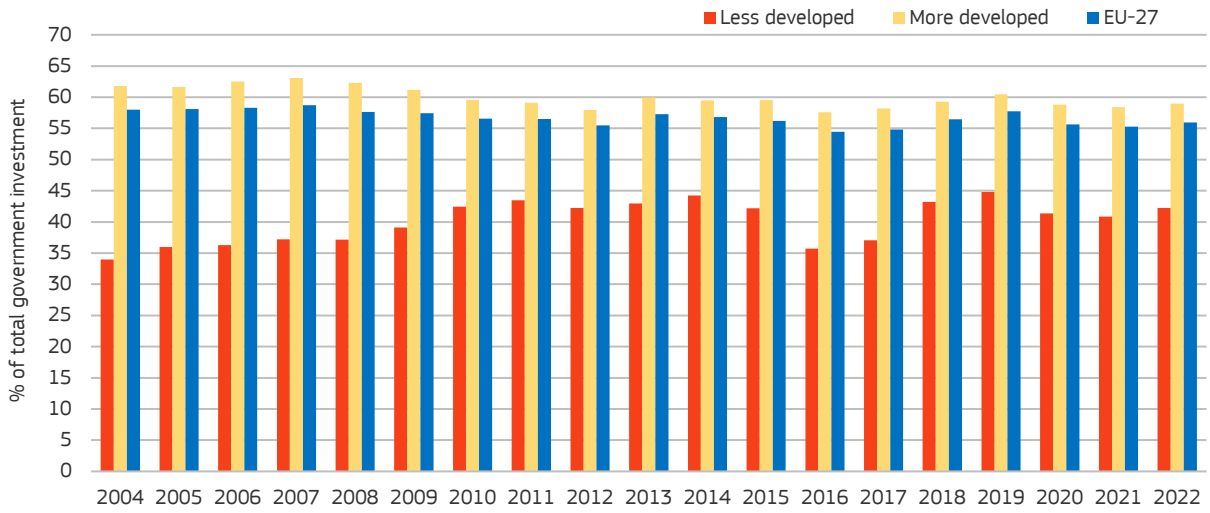
1 Eurostat (2019).

The differences between countries are even more marked. Sub-national expenditure on social protection was almost 18 % of GDP in Denmark, around 6 % or over in Belgium, Sweden, Germany and Finland, but only around 1 % or less in 17 Member States and zero in Malta and Cyprus. Expenditure on general public services at sub-national level was above 5 % of GDP in Spain and Germany, over 4 % in Belgium and Finland, but below 1 % in 11 Member States. Expenditure on education at this level was 7 % of GDP in Belgium, around 5 % in Sweden and Germany, and around 4 % in Spain, the Netherlands, Czechia, Croatia, Latvia, Finland and Estonia, but below 1 % in Italy, Hungary, Portugal, Luxembourg, Romania, Ireland and Greece, and again zero in Cyprus and Malta. Health expenditure was just under 9 % of GDP in Denmark, around 7 % in Italy, Sweden and Spain, and around 6 % in Finland and Austria, but well below 1 % in 11 countries.

3.3 Sub-national governments undertake the majority of public investment

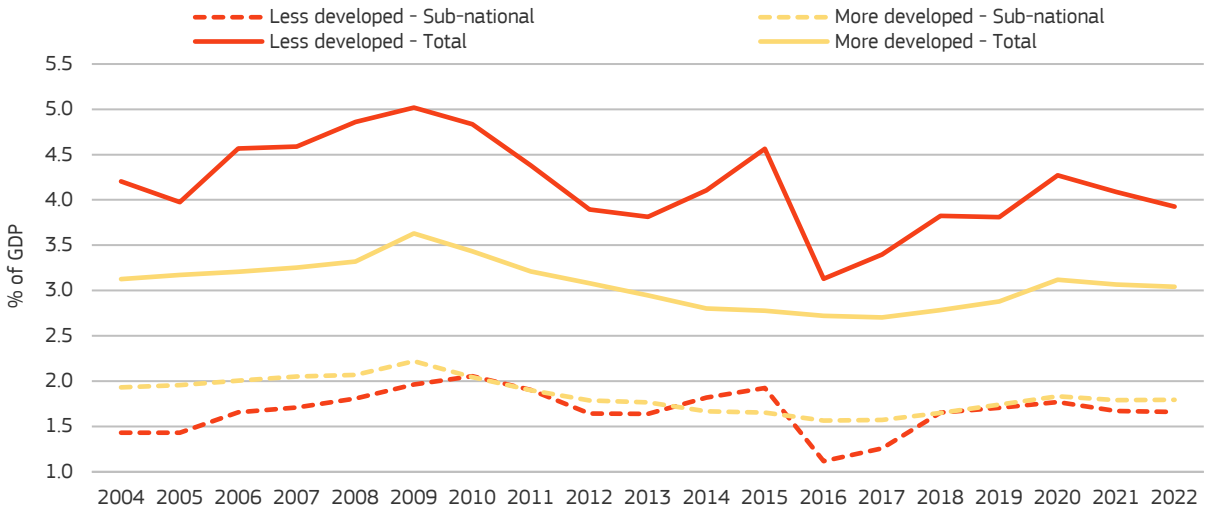
Sub-national authorities have a major responsibility for public investment, more than for public expenditure as a whole. Over half of public investment in the EU is carried out by sub-national governments – over the period 2004–2022, their expenditure on investment accounted for between 54 % and 58 % of the total carried out by government (Figure 8.6). Regional and local authorities, therefore, have a key role in providing the infrastructure to support development. At the same time, the sub-national share of public investment is smaller in less developed countries than more developed ones – 42 % of total investment in

Figure 8.6 Sub-national public investment in the EU and in more developed and less developed Member States, 2004–2022



Source: Eurostat gov_10a_main.

Figure 8.7 Sub-national and total public investment in more developed and less developed Member States, 2004–2022

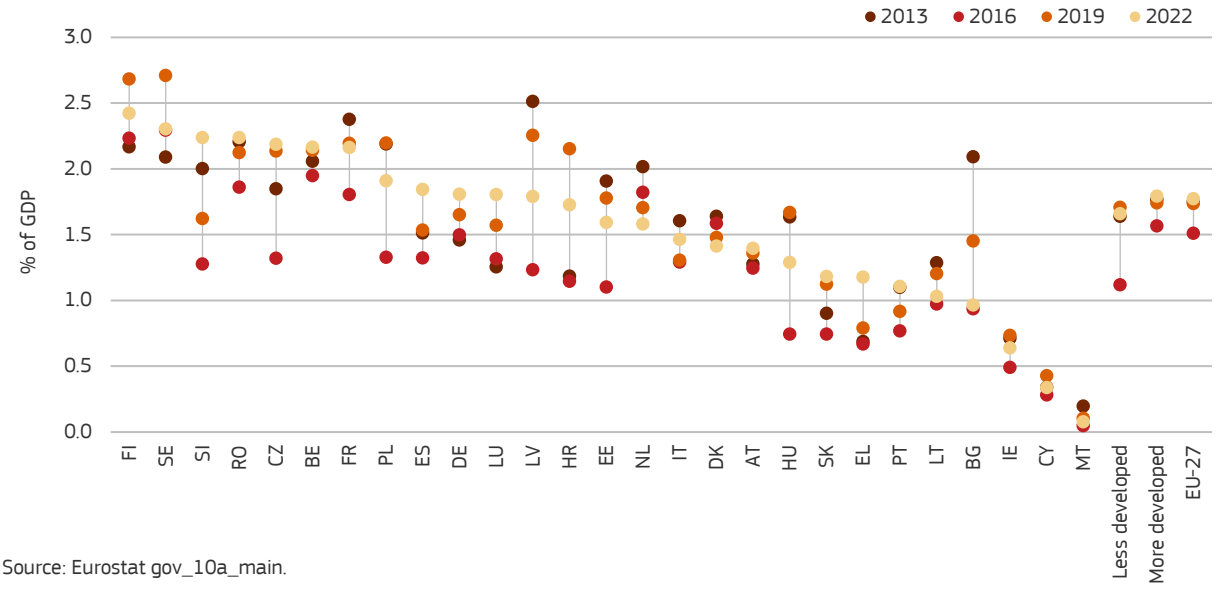


Source: Eurostat gov_10a_main.

2022 as against 59 % – although the difference declined by over 11 pp between 2004 and 2022.

As a share of GDP, total public investment in the less developed countries has been consistently higher than in the more developed ones over the last two decades (Figure 8.10), also due to the key role of Cohesion Policy support in the former. At the sub-national level, public investment as a share of GDP was of a similar magnitude in both more developed and less developed countries over the period 2004–2022, suggesting potential scope for further regionalisation in less developed countries. While, however, public investment as a share of GDP has tended to vary pro-cyclically in the two groups, declining dur- ing economic downturns and increasing during up- turns, the variation has been more pronounced in less developed countries than in more developed ones (Figure 8.10).

Figure 8.8 Sub-national public investment in EU Member States, 2013, 2016, 2019 and 2022



Source: Eurostat gov_10a_main.

Box 8.4 The challenge of producing comparable regional investment data – The experience of the Eurostat Task Force, 2019–2023

The production of systematic and reliable regional public investment statistics is a challenging task. To explore the feasibility of producing this type of statistics for the EU, Eurostat and several Member States formed a Task Force in 2019–2023, composed of experts in regional accounts and government accounts.

The main difference between regional and national government finance statistics is the type of statistical unit used to compile the accounts. While government finance statisticians work with institutional units, regional accountants use local kind-of-activity units.

The Task Force considered these and other methodological issues and made a number of recommendations on how to deal with them, depending on the nature of the assets and the information available.

The general government sector can be broken down into different sub-sectors. For the state and local government sub-sectors, the institutional unit consists of one or more local kind-of-activity units located in a single region. The importance of these two sub-sectors in total government investment at national level is on average close to 50 % for EU Member States. The Task Force recommended that the reporting of sub-sector data should start on a voluntary basis after 2024.

The Task Force focused mainly on the asset categories: other buildings and structures (representing on average three quarters of public investment), mobile equipment, and research and development. Four Member States participating in the Task Force produced test estimates based on new data sources and the recommended methodology. Of these four, Slovenia decided to publish the data[1], while the others considered that further work was needed, mainly to improve the data sources. Eurostat will continue to work with Member States to finalise the methodology for some specific goods (e.g. weapons systems and other military equipment), to establish new data sources and to encourage them to disseminate the results.

1 https://pxweb.stat.si/SiStatData/pxweb/en/Data/-/0309275S.px/.

In 2022, sub-national investment in the EU was 1.8 % of GDP. Public investment was of a similar size in relation to GDP over the period 2004–2022 in both the more developed and the less developed countries. While, however, it has tended to vary pro-cyclically in the two groups, declining during economic downturns and increasing during upturns, the variation has been more pronounced in less developed countries than in more developed ones (Figure 8.7).

In 2022, public investment carried out by sub-national governments was particularly high in relation to GDP in Finland and Sweden (2.3–2.4 %). It was also over 2 % in Slovenia, Romania, Czechia, Belgium and France, but below 1 % in Ireland, Cyprus and Malta. In general, countries with relatively low sub-national public investment also have low total public expenditure at sub-national level (Figure 8.8).

There has been no uniform pattern of change in sub-national public expenditure in relation to GDP over the past decade or so. In 14 Member States, it was higher in 2022 than in 2013, most notably in Luxembourg, Croatia and Greece (0.5 pp higher), while in 11 Member States it was lower, notably in Bulgaria and Latvia.

Cohesion policy multiannual programming has been a key driver of public investment integration in medium-term budgetary frameworks and public financial management structures. Integrated strategic planning and appraisal/selection models that effectively guide budget allocation and use asset registers as input are key for the delivery of public investment. A recent paper discusses a number of good practices across the public investment lifecycle, drawing on recent survey evidence from all EU Member States commissioned by DG ECFIN[5]. Overall, it finds that more sizeable

5 Belu Manesco (2022).

projects traditionally in the transportation sector are subject to a higher level of scrutiny. Similarly, EU financed investments tend to follow stricter rules throughout the project cycle than nationally financed ones. However, evidence also points to wide-ranging reforms of public investment management systems in several Member States, while room for improvement is evident across many Member States.

4. New evidence on regional and local finances

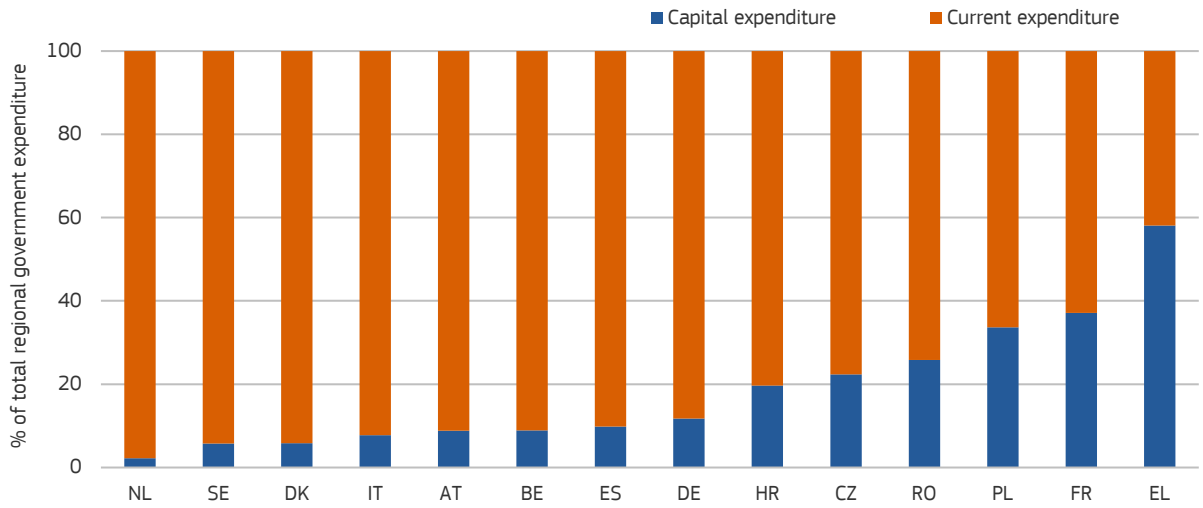
Sub-national public finances are examined in more detail below in order to better understand the role of sub-national governments in the institutional architecture of Member States, and ultimately to assess their degree of autonomy over decision-making. This is based on an initial, and still preliminary, dataset showing the relationship between current and capital expenditure and between different revenue sources for the regional and municipal levels of government in several EU Member States, developed by the OECD in collaboration with the Directorate-General for Regional and Urban Policy (DG REGIO)[6].

4.1 A comparative overview of current and capital expenditure

Figure 8.9 compares current and capital expenditure for 2020 of regional governments in the 14 EU Member States included in the regional government finance and investment database (REGOFI). It should be noted that regional capital expenditure includes the contribution from EU funding, which is particularly important in regions with more responsibility for investment programmes and for regional development more generally and less responsibility for service-provision (Box 8.4).

Current expenditure exceeded capital spending in the regions of almost all countries in 2020, implying that a major proportion of regional government revenue was spent on personnel costs and purchases of goods and services.

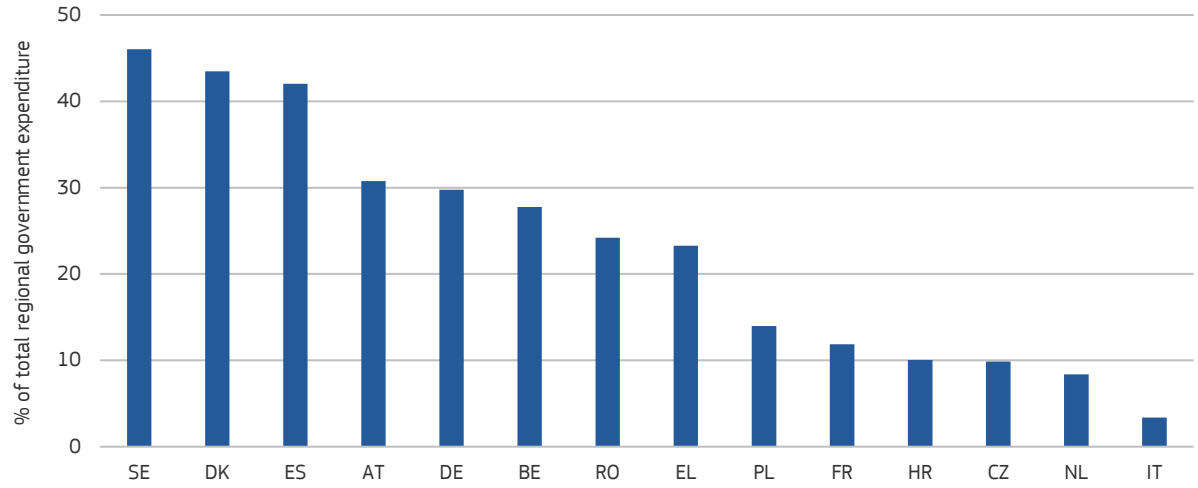
Figure 8.9 Breakdown of regional government expenditure in selected EU Member States, 2020



Source: OECD, MUNIFI and REGOFI Databases 2024.

6 The dataset consists of two databases, REGOFI and MUNIFI (municipal fiscal data), which currently cover 21 EU Member States at the municipal level and 14 at the regional level. They were built using a standardised methodology in collaboration with the national statistical institutes of most of the countries covered to facilitate in-depth comparison of the revenue, expenditure and investment profiles of regions and municipalities across countries. REGOFI covers regions defined at NUTS 2 level (nomenclature of territorial units for statistics) in all the EU Member States surveyed, except Belgium and Germany, where regions are defined at NUTS 1 level. The two databases cover only the regional and municipal levels and do not include other territorial units that fall between the two, such as Belgian provinces, French departments or Italian metropolitan cities, the public finances of which are included in Eurostat's sub-national government statistics. See: OECD (2024).

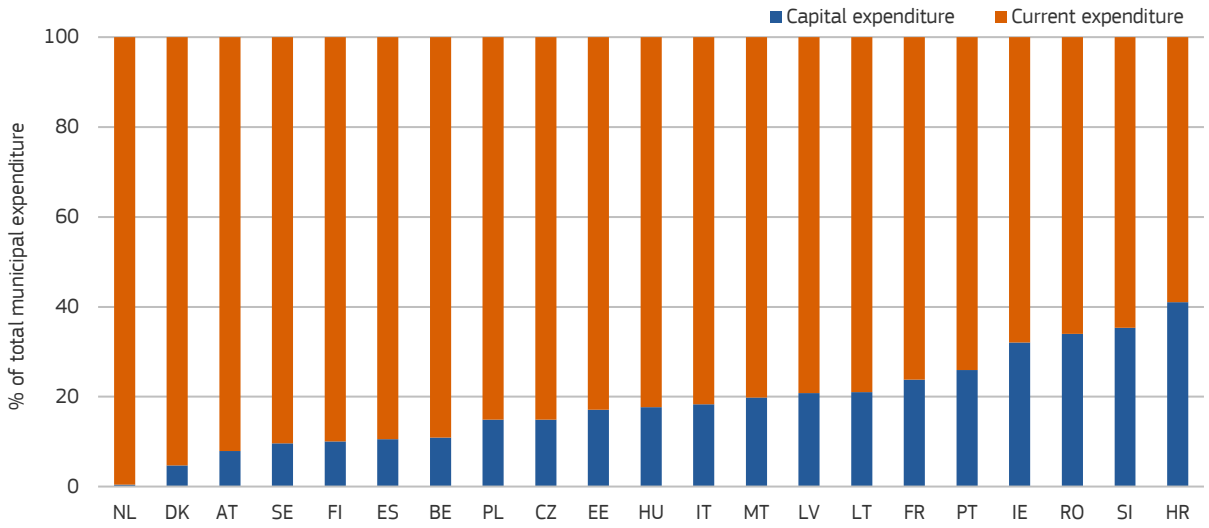
Figure 8.10 Regional personnel cost as a share of total regional expenditure in selected EU Member States, 2020



Source: OECD, MUNIFI and REGOFI Databases 2024.

Capital expenditure amounted to only just over 18 % of the total on average in the countries covered. This varied, however, from over 20 % in Czechia, Romania, Poland, France and Greece to under 10 % in the Netherlands, Sweden, Denmark, Italy, Austria, Belgium and Spain, with Germany and Croatia in between. The share of investment in total regional expenditure was largest in Greece, where regions are mainly responsible for regional planning and development, much of which is financed by funding under EU Cohesion Policy. Regions in Poland, which devoted around a third of their expenditure to investment, are also large recipients of Cohesion Policy funding and tend to play a relatively limited role in the provision of public services (for the 2014–2020 period, Cohesion Policy funding corresponded to around 13 % of public investment in the EU as a whole and to 51 % in the less developed Member States, see Chapter 9, Section 8). Similarly, in France, where the regions are responsible for their economic development, non-urban transport

Figure 8.11 Breakdown of municipal expenditure in selected EU Member States, 2020



Source: OECD, MUNIFI and REGOFI Databases 2024.

and spatial planning, capital expenditure accounted for 37 % of total regional public expenditure in 2020. When the share of capital expenditure is higher, the margins for adjusting the level and allocation of current expenditure in response to emerging exceptional circumstances may be limited, and public expenditure management should therefore be particularly careful.

On the other hand, the share of capital spending in total government expenditure at regional level was smallest in the Netherlands, Denmark and Sweden, where regional authorities have large responsibility for public services, such as healthcare, and administrative tasks. Regions in these countries also accounted for a smaller share of sub-national investment than local authorities.

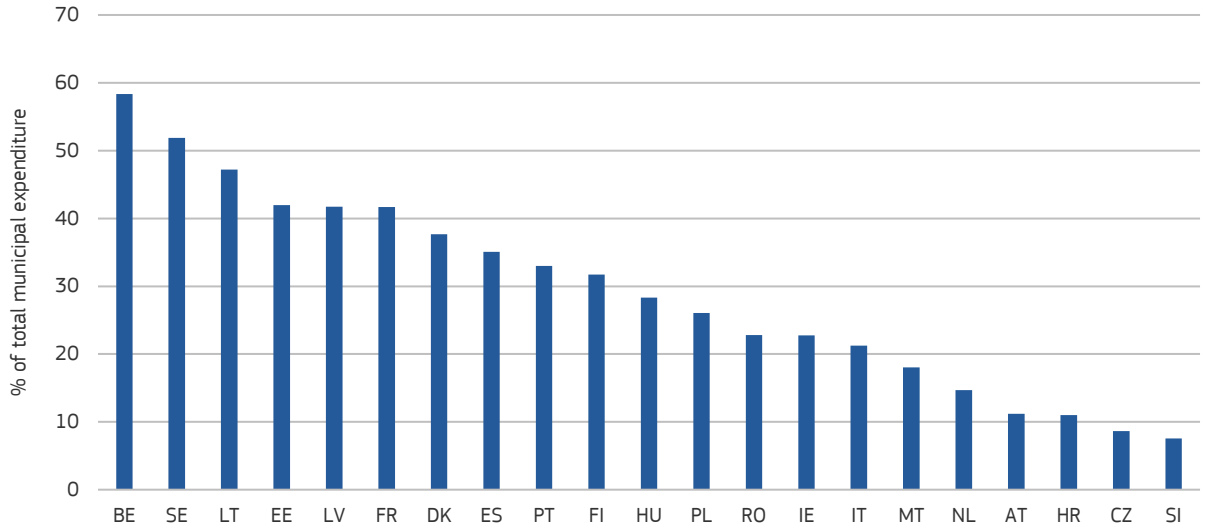
Figure 8.10 shows personnel costs as a share of total government expenditure at regional level for the 14 EU Member States covered. Personnel costs accounted for a particularly large share in Sweden, Denmark and Spain (over 40 %), but less than 10 % in the Netherlands, Czechia, Croatia and Italy (only 3 % in the last).

Figure 8.11 shows that, in all the 21 Member States for which municipal data are included in the database, current spending was the largest component of total government expenditure at this level in 2020. Capital expenditure accounted for just under 19 % of total municipal expenditure, on average, much the same as for regional government, although the set of countries covered is different and a comparison not meaningful.

Again, there is substantial variation between countries. Capital expenditure in municipalities was only around 10 % or less of total spending in the Netherlands, Denmark, Austria, Sweden and Finland, but over 20 % in Latvia, Lithuania, France and Portugal and over 30 % in Ireland, Romania, Slovenia and Croatia, in the last 41 %. In the last three countries, municipalities have the main responsibility for urban development, transport and housing. On the other hand, the small share of capital expenditure, and the correspondingly large share of current spending, in the first group of countries reflects their major role in the provision of education and social services (and social protection in Denmark).

Figure 8.12 shows personnel costs in 2020 as a share of total expenditure at municipal level for the Member States covered. These accounted for over 50 % of the total in Belgium and Sweden and over 40 % in Lithuania, Estonia, Latvia and France, while they accounted for under 20 % in Croatia, Austria, the Netherlands and Malta, and under 10 % in Slovenia and Czechia.

Figure 8.12 Personnel cost as a share of total municipal expenditure in selected EU Member States, 2020



Source: OECD, MUNIFI and REGOFI Databases 2024.

Box 8.5 Building resilience: the need for diversified revenue sources

In an era of unprecedented challenges and crises, the ability of sub-national governments to respond effectively depends on their capacity to adapt both the level and the composition of expenditure to changing circumstances. This requires access to financing, to taxation or borrowing. Where borrowing is constrained (usually by central government restrictions) – because, for example, of tight monetary conditions, as in the aftermath of the COVID-19 and energy crises – the key factor in ensuring financing at sub-national level is the diversity of revenue sources available.

Diversified revenue sources give sub-national governments operational flexibility, while overdependence on a main single source increases vulnerability, especially during crises. By diversifying revenue sources, sub-national governments can better withstand shocks. A balanced mix of sources, such as revenue from assets, user fees, grants, and taxes contributes to fiscal resilience, acting as a buffer and giving financial stability when one source is adversely affected.

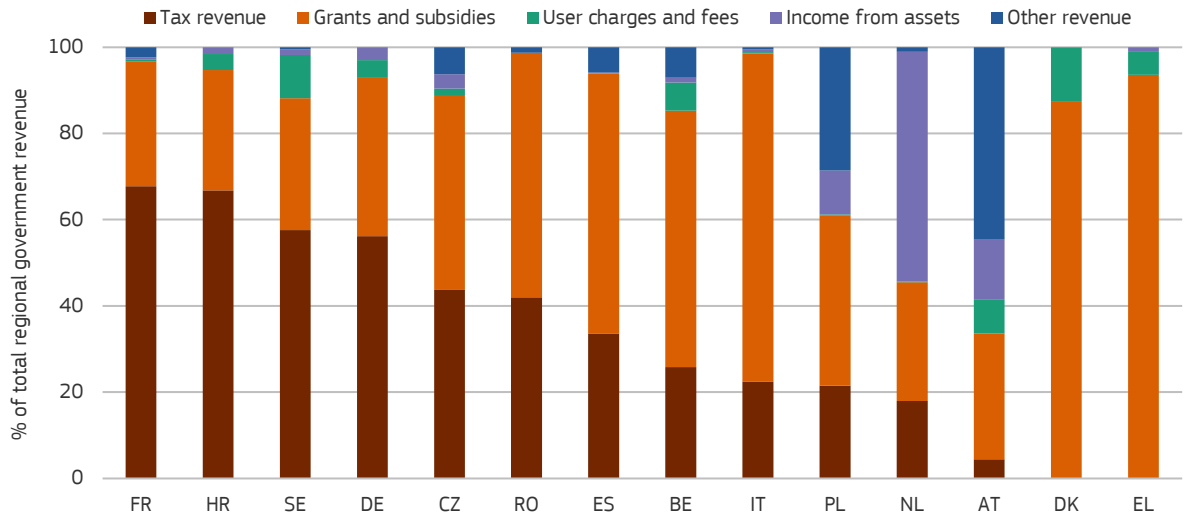
The importance of cultivating flexibility in revenue sources for sub-national governments cannot be overstated. The ability to weather crises, respond skilfully to unforeseen challenges and promote long-term sustainability depends on the diversification of revenue streams. By adopting a multi-faceted approach to revenue generation, sub-national governments can strengthen their fiscal resilience and ensure the well-being of their constituents in the face of an ever changing world.

4.2 Municipal and regional revenue sources

This section examines the revenue sources used to finance regional and municipal government expenditure. Relying on a single or only a few revenue sources as opposed to having a more diverse mix has important implications for the sustainability and resilience of public finances at sub-national level. Other things being equal, reliance on a few sources generally means less resilience to shocks and changing socio-economic conditions. Resilience can, therefore, be improved by diversification of revenue sources, but effective institutions and mechanisms need to be in place to achieve this (see Box 8.5).

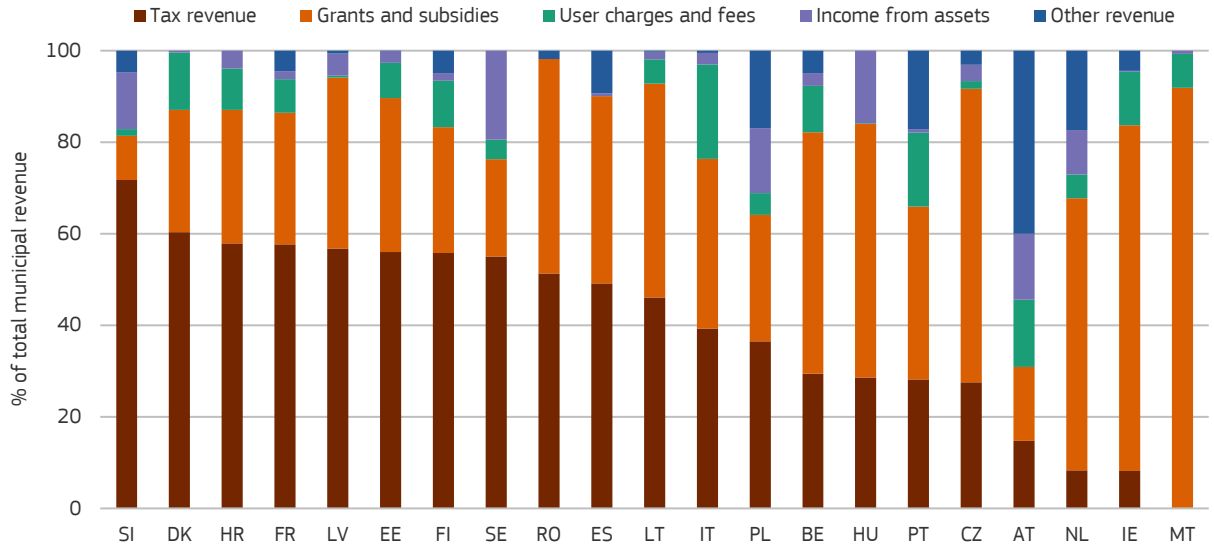
Figure 8.13 shows the breakdown of regional revenue sources for 14 EU Member States in 2020. It is important to note that a larger share of revenue

Figure 8.13 Breakdown of regional government revenue in selected EU Member States, 2020



Source: OECD, MUNIFI and REGOFI Databases 2024.

Figure 8.14 Breakdown of municipal revenue in selected EU Member States, 2020



Source: ECD, MUNIFI and REGOFI Databases 2024.

from taxes as compared with, for example, transfers from central government does not automatically mean a higher degree of autonomy for regions in deciding and managing their finances. Regional governments have different degrees of control over tax rates and provisions, especially with regard to shared taxation, i.e. national taxes where a specified proportion of the revenue raised is allocated to regional or other sub-national authorities[7].

In general, the main source of regional government revenue in 2020 was grants and subsidies, i.e. transfers from central government and the EU, accounting on average for half of the total revenue (see Box 8.6 on the challenges of managing transfers between different levels of government). This revenue source was the only one present in all 14 countries covered, ranging from 94 % in Greece, over 70 % in Denmark and Italy and over 50 % in Belgium, Spain and Romania to under 30 % in Austria, France, Croatia and the Netherlands.

The second major source of revenue at regional level is taxes, including both shared and own-imposed, which, on average, accounted for a third of total regional government revenue in 2020. It is notable that regions in both Denmark and Greece had no revenue from taxes, reflecting their lack of tax-raising power. Much the same was the case in Austria, where taxes accounted for under 5 % of revenue. By contrast, in Sweden and Germany over 55 % of regional government revenue came from taxes and over 65 % in France and Croatia.

User charges and fees and asset-based revenue made up a much smaller share of government revenue at regional level, averaging just under 4 % and just over 6 %, respectively. However, in Sweden and Denmark, user charges and fees accounted for over 10 % of revenue, and in the Netherlands, asset-based revenue for over half.

Funding sources at regional level are most diverse in Poland, the Netherlands, Austria and Sweden, while they are most concentrated in Greece, Denmark, Italy, France and Croatia.

Contrary to the situation at regional level, transfers and taxes were of a similar weight in funding municipal governments in 2020 (Figure 8.14), each accounting for around 40 %. However, differences between Member States are again considerable. The most diverse mixes of funding sources at this level were in Poland, Austria and Portugal, followed by Finland, Sweden, Italy, Belgium and Hungary, while they were most concentrated in Malta, Ireland, Czechia and Slovenia.

7 In Germany, for example, tax revenue is the main source of revenue for the Länder, but they have little influence over it, as most comes from shared taxation (from personal and corporate income tax and value added tax).

Box 8.6 The challenges of managing fiscal transfers between different levels of government

Inter-governmental financial transfers, often in the form of grants and subsidies, are an important source of revenue for sub-national governments and the main one in several EU Member States. The transfers can be used to finance the implementation of national policies as well as sub-national expenditure as such[1].

The governance of fiscal transfers depends on the political, economic and administrative system of the country, and so their design and effects can only be fully understood in the specific institutional context concerned. The governance of transfers is complex and practices vary widely across countries, with implications for the efficiency and effectiveness of delivery of the services that transfers support.

In general, multilevel governance poses the challenge of balancing the need for sub-national authorities to have some autonomy with the need to avoid policy incoherence and economic inefficiency. The former is important for policy accountability, while the latter cannot be taken for granted, as governments at different levels serve the interests of different constituencies, which may not coincide, especially in countries with significant territorial disparities. These challenges involve the design and management of transfers.

To address them, the design needs to make policy objectives clear, transparent and measurable with all levels of government being accountable. Imposing conditionality on transfers is a powerful means of striking a balance between the need to ensure alignment of policy objectives, and standards of delivery between national and sub-national governments, and the decision-making autonomy of the latter. This is a means through which the central government can influence the sub-national government by limiting its discretion through incentives and constraints.

Conditional grants are now widely used. An important aspect of their functioning is that they require both donor and recipient governments to establish effective means of monitoring, controlling and enforcing the conditions. This in turn requires reporting, robust evaluation methods, the capacity to analyse, and procedures for resolving disputes, all of which are costly. It requires skilled and committed personnel, diplomacy when co-operation is at stake, and institutional stability. All of these factors can create a significant administrative burden, particularly for sub-national governments and especially for small municipal authorities.

In some cases, sub-national authorities, especially in less developed EU Member States, lack the capacity and resources to set up effective systems for managing such fiscal transfers. The transfer of resources implies a transfer of responsibilities and the ability to perform the tasks and functions involved, which cannot be taken for granted. Specific reforms may be needed at the sub-national level to build stable structures capable of managing fiscal transfers effectively. The receptiveness of sub-national authorities to nationally determined reforms is also a prerequisite for the successful imposition of conditionality on transfers.

1 Bergvall et al. (2006), Lago et al. (2022) and Spahn (2012).

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9

THE IMPACT OF COHESION POLICY

- Macro-economic model simulations indicate that the 2014-2020 and 2021-2027 programmes of Cohesion Policy investment will have increased EU GDP by almost 1 % by 2030, the end of the implementation period.
- The same model indicates that all EU regions – including the most developed ones – benefit from the investment financed under Cohesion Policy.
- This shows that Cohesion has delivered on its mission to promote convergence and harmonious development, as well as contributed to support EU competitiveness and investment to help create a greener, more connected and socially integrated Europe. It also helped finance the response in EU Member States to the COVID-19 pandemic.
- Many studies and evaluations have shown that Cohesion Policy has had a significant impact on the socio-economic development of EU regions, especially in the less developed ones; in several less developed regions GDP is expected to be 10 % to 13 % higher by 2030 than it would have been without Cohesion Policy. Cohesion Policy therefore contributes to reducing regional disparities, both at EU level and within Member States.
- The conditions imposed on the receipt of Cohesion Policy funding starting from the 2014-2020 period, along with the technical assistance provided, have helped to improve institutional capacity across the EU, the overall investment environment, and the ability of Member States to make the best use of EU support. They have also helped speed up reforms, by raising political awareness of their need and reinforcing the commitment of governments to them.

Chapter 9
The impact of Cohesion Policy

1. Introduction

The sustainable development of all regions in the EU is important for its prosperity economic, social and territorial cohesion. Cohesion Policy has contributed substantial funding to support Member States and regions to overcome obstacles to their socio-economic development and reduce territorial disparities across the EU. Cohesion Policy is firmly place-based, which means that most programmes are adapted to the specific needs of individual regions, so providing tailored responses to development challenges to the local context.

This chapter reviews the features of Cohesion policy and the evidence relating to its impact. It highlights the place-based nature of the policy and summarises some of the main achievements of the 2014–2020 programming period. It also examines the 2021–2027 programmes and the way that they support the political priorities of the EU. It ends by assessing the impact of the 2014–2020 and 2021–2027 programmes on GDP across the EU, and on less developed regions in particular.

2. Achievements and evaluation of the 2014–2020 programme

Under the EU budget's 2014–2020 Multiannual Financial Framework, Cohesion Policy was the EU's main means of funding investment in economic and social development across the EU. As of December 2023, EUR 405 billion of support[1] had been committed under the 2014–2020 programmes, which, with national (public and private) co-financing, is estimated to have resulted in EUR 551 billion of investment. The support came from three funds: the European Regional Development Fund (ERDF), the Cohesion Fund (CF) and the European Social Fund (ESF), supplemented by the Youth Employment Initiative (YEI). Financing from these was aimed at 11 Thematic Objectives, 10 of which for the 2021–2027 period were transformed into five Policy Objectives (see Box 9.1 and Figure 9.1). To enable comparisons to be made between the two periods, these 10 Thematic Objectives, and the expenditure under them, have been mapped for the analysis here to the five Policy Objectives.

The ERDF financed projects under all 11 Thematic Objectives listed in Box 9.1, but predominantly those under the first seven. Four Objectives (the first four in the box) – 'Strengthening research, technological development and innovation (RTDI)', 'Enhancing access to, and the use and quality of, ICT', 'Enhancing the competitiveness of SMEs' and 'Supporting the shift towards a low-carbon economy' – accounted for between 50 % and 80 % of total ERDF expenditure in Member States, the share varying according to the level of development. A larger share went on these four Objectives in the more developed countries and regions, and a larger share on the other three in the less developed ones, particularly on environmental and transport infrastructure, under Thematic Objectives 6 and 7, which was the focus of the CF. Although the ERDF also financed investment under Thematic Objectives 8–11 (on employment, social inclusion, education and training, and institutional capacity), current expenditure, as opposed to capital expenditure, was financed by the ESF.

The following sections review the progress made up to the end of 2022 in spending the funding allocated for the 2014–2020 period, the output and results so far achieved, and the findings from evaluations carried out up to now by Member States. A more detailed presentation of the implementation of 2014–2020 programmes is contained in the Commission's 2023 annual summary of implementation reports, while more details of national evaluation findings are set out in the Commission's annual summary[2]. The ex post evaluation of the 2014–2020 programmes is being carried out at present and will be published between end–2024 and mid–2025 (see Box 9.2).

1 2014–2020 figures include Interreg (UK, and REACT-EU).

2 European Commission (2024).

Box 9.1 Thematic priorities

In the 2014–2020 programming period, the investment financed under Cohesion Policy was aimed at supporting 11 broad priorities or Thematic Objectives, as follows.

1. Strengthening RTDI.
2. Enhancing access to, and the use and quality of, ICT.
3. Enhancing the competitiveness of SMEs.
4. Supporting the shift towards a low-carbon economy.
5. Promoting climate change adaptation, risk prevention and management.
6. Preserving and protecting the environment and promoting resource-efficiency.
7. Promoting sustainable transport and removing bottlenecks in key network infrastructures.
8. Promoting sustainable and high-quality employment and supporting labour mobility.
9. Promoting social inclusion, and combating poverty and discrimination.
10. Investing in education, training and vocational training for skills and lifelong learning.
11. Enhancing the institutional capacity of public authorities and efficient public administration.

In the 2021–2027 programming period, the first 10 Thematic Objectives have been replaced by five Policy Objectives, as follows.

1. Smarter Europe (including RTDI, digital economy, and SME competitiveness - corresponds to the 2014-2020 thematic objectives 1, 2 and 3).
2. Greener Europe (including a low-carbon economy, climate action, protecting the environment, and clean urban transport - corresponds to the 2014-2020 thematic objectives 4, 5 and 6).
3. More connected Europe – the trans-European transport network (TENT-T) and other transport priorities (corresponds to the 2014-2020 thematic objective 7).
4. Social Europe (employment and labour market measures, social inclusion, and human capital).
5. Europe closer to citizens.

For the sake of consistency and to facilitate comparison between the two programming periods, in this chapter the 11 Thematic Objectives are mapped, approximately, to the new Policy Objectives as listed above.

Following the COVID-19 crisis, in 2021–2022 an additional Objective of 'Fostering crisis repair and resilience' was introduced, financed from REACT-EU with a budget of EUR 50 billion as part of the NextGenerationEU (NGEU) recovery package.

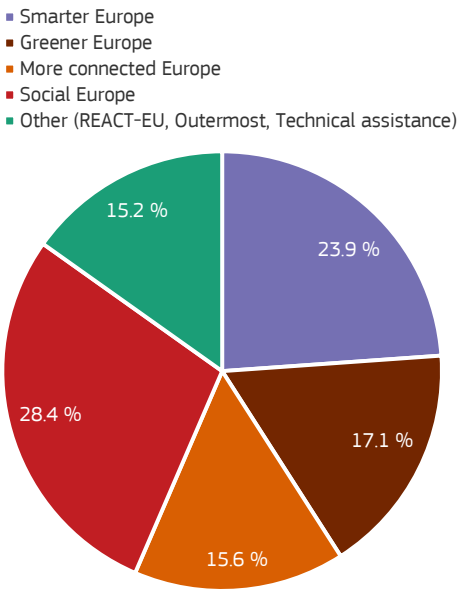
For the 2014–2020 period, the present chapter sets out figures for the EU shares of planned investments, the amounts allocated to the projects selected for funding, and expenditure on the five Policy Objectives. The financing and indicator data go up to the end of 2022 (the latest date for which data are available). It should be noted that the amount allocated to projects selected for funding can exceed the EU funding available since it is often the case that more projects are selected than can be financed so as to ensure that all the funding available is ultimately spent, given a belief that not all projects selected will actually come to fruition.

During this period, the Union faced several crises which required exceptional measures to support Member States and regions. This implied adjusting the policy objectives to changing priorities and, in a some cases, targets are likely to underachieved and in other case overachieved compared to the original programmes.

2.1 Policy Objective: Smarter Europe

The Smarter Europe Policy objective aims to contribute to a more competitive and smarter Europe by promoting innovative and smart economic transformation and regional ICT connectivity."

Figure 9.1 EU Cohesion Policy budget (2014–2020) approximated to 2021–2027 Policy Objectives



	2014–2020 EU planned (EUR mn)	Estimated spending end-2022 (EUR mn)	Estimated as % of planned
Smarter Europe	96 669.8	90 807.4	94 %
Greener Europe	69 060.8	55 332.8	80 %
More connected Europe	62 967.1	57 361.8	91 %
Social Europe	114 802.5	100 215.4	87 %
Other (REACT-EU, Outermost, Technical assistance)	61 413.2	30 852.0	50 %
Cohesion Policy total 2014–2020	**404 883.5**	**338 821.2**	**84 %**

Notes: The funding allocated to the 11 Thematic Objectives (and multithematic priorities) for 2014–2020 is mapped to the 4 main Policy Objectives for 2021–2027 (see Box 9.1). Data as at 31 December 2022 (which are not final values as spending is ongoing; formal closure of programmes will occur only in 2025).
Source: DG REGIO calculations based on Cohesion Open Data.

In 2014–2020, Cohesion Policy provided ERDF support of EUR 96 billion (24 % of total Cohesion Policy funding) to enhance RTDI, ICT infrastructure and services, and SME competitiveness. Up to the end of 2022, estimated expenditure on these amounted to around 94 % of the total allocated to them.

The common indicators give an indication of the outputs across the EU from this investment and how they relate to the targets set.

- Over 2.36 million enterprises had received support by the end of 2022 (109 % of the target).
- Nearly 370 000 jobs were directly created as a result of the expenditure (98 % of target).
- 228 000 new enterprises were created (101 % of target).
- 84 000 enterprises developed new-to-market or new-to-firm-products/services (102 % of target).
- 7.88 million additional households had access to broadband (66 % of target). The final achievement will be closer to the target if the projects already selected for funding are completed.

Funding for research and innovation went mostly to increasing collaboration between companies, particularly SMEs, and universities and other research centres. The evaluations carried out in Member States have identified positive results from the support provided, such as in Romania, where support for research and development (R&D) and innovation increased the capacity of SMEs to develop new products and processes and improve worker competences; in Wallonia, where between 2014 and 2018 support helped increase the survival rate of companies; and in Slovakia, where start-up SMEs had a significantly higher growth of value-added and employment over the period than those not supported.

Cohesion Policy funding has also helped to boost digitalisation and the development of ICT services. In Corsica, it has enabled the development of new ways of learning adapted to students' personal needs, which have increased their motivation and helped to reduce social and territorial divisions. Equally, in Lithuania, it has increased the availability of e-services, with estimated savings of EUR 1.89 billion, mostly from people not having to travel to physical locations.

Box 9.2 Progress in the Commission's ex post evaluation of 2014–2020 programming

The Commission launched its ex post evaluation of 2014–2020 ERDF and CF programmes with a view to completing it in 2025. The evaluation is composed of: four cross-cutting work packages – on Interreg, Integrated Territorial Investment (ITI), the response to the COVID-19 pandemic, and the macro-economic effects of Cohesion Policy; seven work packages covering all the 2014–2020 Thematic Objectives; and a work package for creating a database of projects to be used in the evaluation. A synthesis report will summarise the results of the evaluation.

The thematic work packages adopt a theory-based approach to evaluating the effects of the investments financed. For each Thematic Objective, the theory of change – or logic – underlying the policy instruments used to pursue the policy aims is first spelled out, identifying the various steps by which each instrument is assumed to achieve these aims and the links between them, as well as the conditions that need to prevail for this to be successful. The evaluation then assesses how far the various steps in the theory of change can be observed in practice and how far the aims have actually been achieved, based on the evidence available or that can be collected. In the process, the performance of the programmes implemented by means of the policy instruments will be judged in terms of their effectiveness, efficiency, relevance (in terms of meeting the needs identified), coherence (both internally and with other policy measures) and the EU added-value they have generated. The work packages are being carried out by independent contractors and the Commission is supported by experts who critically assess the reports that the contractors produce and the soundness of their findings.

The final reports of the work packages will be published in the second half of 2024, providing assessments of how the various programmes have performed over the period, which will be used to prepare proposals for the next period. They will also assess the contribution of Cohesion Policy to the pursuit of its ultimate goals. The final synthesis report is scheduled to be published in spring 2025. The Commission's conclusion on the evaluation, in the form of a staff working document, will then be finalised later in 2025.

The Commission is in parallel carrying out an ex post evaluation of the ESF and YEI for the 2014–2020 period. It will assess the performance of the programmes financed in the same way as for the ERDF and CF – i.e. in terms of their effectiveness, efficiency, relevance, EU added-value, and coherence with policy measures financed in other ways. It will consider the pursuit of all ESF priorities, including funding initiatives in response to the COVID-19 pandemic and the effects of Russia's war of aggression against Ukraine – i.e. the Coronavirus Response Investment Initiative (CRII), Coronavirus Response Investment Initiative Plus (CRII+), REACT-EU, and Cohesion's Action for Refugees in Europe.

The evaluation is based on a range of data sources to reach its conclusions, including monitoring systems, national statistical offices, surveys, targeted interviews and public consultation, as well as case studies and focus groups.

The findings of the ESF evaluation will be published before the end of 2024.

2.2 Policy Objective: Greener Europe

The Greener Europe Policy Objectives contributes to a greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe by promoting clean and fair energy transition, green and blue investment, the circular economy, climate change mitigation and adaptation, risk prevention and management, and sustainable urban mobility.

Cohesion Policy provided EUR 69 billion from the ERDF and CF for investment in the Greener Europe Objective in 2014–2020. This funding targeted increases in: energy-efficiency and renewable energy; improvements in environmental infrastructure; the development of the circular economy; mitigation of, and adaptation to, climate change; risk prevention; biodiversity; and clean urban transport (Box 9.3). The amount allocated represented 17 % of the total funding available under Cohesion Policy

Box 9.3 Tracking support for climate action, biodiversity and improving air quality

For the period 2014–2020, the EU established an overall target that at least 20 % of funding should be spent on climate-related measures. Cohesion Policy funds allocated nearly 15 % of the total budget to climate action objectives[1] with 18 % of the ERDF and 28 % of the CF being used for these. The measures include investment in the low-carbon economy, the circular economy, risk prevention, environmental protection, clean urban mobility, and research and innovation activities. By the end of 2022, an estimated EUR 46.8 billion from the ERDF, CF and ESF had gone into the projects concerned.

A separate tracking mechanism has been established for the ERDF and CF as regards their contribution to action on biodiversity[2]. In 2014–2020, nearly 4 % of ERDF/CF funding or EUR 10.7 billion was planned for activities protecting and enhancing biodiversity, nature protection and green infrastructure, including Natura 2000 sites, and reducing pressure on habitats (e.g. purifying wastewater). By the end of 2022, an estimated EUR 8 billion of the planned funding had been invested.

For reporting under the National Emission Reduction Commitment Directive (NECD), DG BUDG, DG REGIO and DG ENV have developed a method of tracking similar to the one for climate and biodiversity. The first NECD implementation report indicates that an estimated EUR 31.2 billion from the ERDF and CF had been spent on measures to improve air quality.

1 The Cohesion Open Data tracking tool provides a description of the climate tracking method and available data: https://cohesion-data.ec.europa.eu/stories/s/a8jn-38y8.

2 The Cohesion Open Data tool for tacking biodiversity can be found at this link: https://cohesiondata.ec.europa.eu/stories/s/tdxi-ibcn.

for the period. By the end of 2022 the expenditure amounted to around 80 % of the total EU allocation and projects already selected by Member States, if they are completed, will absorb the amount available. The common indicators reported by the end of 2022 show significant achievements, including:

- 17.3 million people benefiting from the flood protection measures supported (83 % of target);
- 3.4 million hectares of habitats conserved (76 % of target);
- Nearly 6 000 megawatts of renewable energy capacity created (69 % of target);
- 9.1 million people given access to completed wastewater treatment systems (45 % of target);
- 6.9 million people given access to an improved water supply (50 % of target); and
- 257 kilometres (km) of new or improved metro or tram lines completed in various EU cities (47 % of target).

The final achievements (by end–2023) will only be reported in the Final reports in 2025–2026. Those reports are likely to reports achievements approaching the targets set, as the great majority of projects selected for funding are expected to be completed.

The substantial funding allocated to increasing energy-efficiency and renewable energy sources has helped further the shift towards a low-carbon and less polluting economy. In Poland, for example, heating systems using high-efficiency cogeneration were modernised in 34 % of district heating systems, while in the Opolskie region low-emission transport projects have helped to expand the use of public transport, to extend the cycle path network and to increase the attraction of walking and cycling in urban areas.

At the same time, support for investment in environmental infrastructure in Hungary, for instance, has helped reduce the number of water supply areas not complying with the Drinking Water Directive to only 4 % of the total and led to a substantial expansion of wastewater treatment. In the Auvergne

and Rhône-Alpes regions in France, ERDF-financed investment has helped to improve energy-efficiency in public buildings and social housing, so reducing greenhouse gas emissions, while under the Czechia-Poland Interreg programme joint risk management measures have increased the capacity of the authorities concerned to tackle crises and emergency situations.

2.3 Policy Objective: More connected Europe

The Connected Europe Policy Objective contributes to a more connected Europe by enhancing mobility, in particular on the Transport Trans European Network.

Nearly EUR 63 billion from the ERDF and CF was allocated to the Connected Europe Objective in 2014–2020 to improve rail and road networks and other strategic transport and energy infrastructure. This represents 16 % of total Cohesion Policy funding for the period. By the end of 2022, projects selected suggest that an estimated EUR 57.4 billion, 91 % of the total allocated, was spent on the pursuit of this Objective. The investment was mainly in the less developed Member States (those receiving support from the CF) and in less developed and transition regions elsewhere.

According to the common indicator, the achievements by the end of 2022 include:

- 3 560 km of new roads being constructed by the end of 2020 (99 % of target), mostly on the TEN-T network, with another 8 400 km of road being renovated (76 % of target); and
- 2 100 km of rail being reconstructed (47 % of target) again mostly on the TEN-T network.

As regards the latter, while the funding set aside for selected projects suggests that the target for the rail might be achieved, these are complex projects which often experience some difficulty in being completed within the set deadline.

Support under Cohesion Policy in the 2014–2020 period, as in earlier years, has led to tangible improvements in transport links both between countries and within them. In Warmińsko-Mazurskie in Poland, for example, co-financed investment has had a significant impact on increasing the ease of movement in the region. It has led to improvements in road safety and reductions in CO_2 emissions through facilitating the use of railways and public transport.

In Czechia, projects have helped to save an estimated 1 hour 25 minutes on average per person in travel time a year in the five urban agglomerations. They have also helped to increase the number of passengers using public transport and their safety. Similarly, in Bulgaria, connectivity to the TEN-T has been improved significantly, while travel time has been reduced at the same time as the adverse effects of transport on the environment have been mitigated.

2.4 Policy Objective: Social Europe

The Social Inclusion Policy Objective contributes to a more social and inclusive Europe implementing the European Pillar of Social Rights.

Cohesion Policy funding of nearly EUR 115 billion, mainly from the ESF and YEI but also from the ERDF (for infrastructure and equipment), was allocated to the 'Social Europe' Objective targeting support for employment and labour market integration, education and training, and social inclusion. Funding represents 28 % of the overall Cohesion Policy budget for 2014–2020. By the end of 2020, estimated expenditure was around 87 % of the amount available.

The common indicators covering all EU Member States in respect of the ESF (including the YEI in the 20 Member States where it is applied) show that up to the end of 2022:

- there had been 64.5 million participants in the measures supported, including nearly 22.2 million who were unemployed and nearly 25 million who were inactive (in the sense of not actively seeking employment);
- 7.4 million participants in EU-funded schemes had found a job and 10.2 million had obtained a qualification;

- up to 2 030 000 firms had been supported under the ESF; and

- 46 % of participants had a low level of education (only up to compulsory schooling or less), and 14 % were migrants, had a foreign background, or were from ethnic minorities.

ERDF common indicators on support for investment in social infrastructure, which was mainly in less developed and transition regions in eastern and southern Member States, show that:

- 63 million people had benefited from improved health service facilities (72 % of target) up to the end of 2022; and

- nearly 24.6 million children and young people had benefited from the childcare facilities and education infrastructure that had been built (132 % of target).

The ESF and ERDF combined over the period to support social inclusion across the EU, the former through funding measures to increase employability and for job-search, education at all levels, healthcare, long-term care and community services of various kinds, and the ERDF by financing investment in the infrastructure and equipment involved. In Portugal, for example, measures under the YEI increased the probability of being in employment three years after participation by up to a third depending on the measure, while in Lazio, the 'Torno subito' work experience scheme raised the probability by 11 percentage points (pp) 18 months afterwards. In Slovakia, the employment rate of people with disabilities was increased by 20 pp by subsidies to employers to take them on, while in Marche, traineeships for disadvantaged people helped to increase their employment rate six months later by 6–8 pp more than those not receiving training.

In Poland, ESF support helped to improve the quality of medical training; in Portugal, to increase the standard of vocational education; and in Slovakia, to reduce early school-leaving among the Roma community.

The results of an updated[3] meta-analysis[4] of the available ESF and YEI counterfactual impact evaluations carried out in the 27 Member States and the UK showed that participants in ESF/YEI measures had, on average over the 2014–2020 period, a higher likelihood of being in employment afterwards than comparable non-participants, amounting to 6–8 pp (depending on the method used).

2.5 Policy Objective: a Europe closer to citizens

The Europe Closer to the Citizen Policy Objectives contributes to bring Europe closer to citizens by fostering the sustainable and integrated development of all types of territories and local initiatives.

Unlike the other 2021–2027 Policy Objectives, 'a Europe closer to citizens' has no direct equivalent under the Thematic Objective categorisation used for 2014–2020. Nevertheless, it is evident that this Policy Objective includes investments in community-led local development (CLLD), support for ITI and other territorial measures relating to urban regeneration, which were funded under multiple Thematic Objectives in 2014–2020. Support of EUR 32 billion from the ERDF, ESF and CF was allocated for integrated approaches to local and territorial development for the period, around 8 % of the overall Cohesion Policy budget. At the end of 2022, expenditure under the projects selected for funding was around 65 % of the amount allocated. The level of expenditure relative to the amount allocated is lower than for the other Policy Objectives, reflecting the fact that much of the investment involved mobilisation of local communities and/or the formulation of development plans involving different sectors or aspects, which tend to need more time to be carried out.

The common indicators show that achievements by end–2022 include:

- 27.75 million people benefiting from integrated urban strategies (71 % of target);

3 Joint Research Centre (JRC), Competence Centre on Microeconomic Evaluation calculations.

4 European Commission (2022).

- 20 million square metres of open space being created or rehabilitated through the investment undertaken (63 % of target); and

- 1.7 million square metres of buildings being constructed or renovated in urban areas (78 % of target).

The final achievements by the end of 2023 are expected to be close to the targets, given the large number of projects selected for funding that are likely to be completed.

Cohesion Policy funding for local development took the form especially of helping to redevelop degraded areas. In Puglia, for example, financing was directed to the renewal of urban infrastructure, refurbishing abandoned buildings, and improving cultural sites. This was accompanied by strengthening public services, so increasing the quality of life for residents and attracting both businesses and people to move in and encouraging those already there to stay. In Toscana, urban regeneration measures in towns and small cities in the region led to the extension of green areas and of cycle paths as well as to improvements in public safety.

Support also went into CLLD and ITI to ensure both the involvement of residents in the redevelopment of their local area and the coherence of the projects undertaken. In Středočeský, in Czechia, for example, CLLD projects took place in almost 100 smaller municipalities, leading to the renewal of local roads and infrastructure, especially school buildings. At the same time, ITI projects were used to improve public transport and road connections to reduce the isolation of rural areas farthest from large cities.

3. Response to the COVID-19 pandemic and to Russia's war of aggression against Ukraine

In response to the COVID-19 pandemic, the EU reacted in two main phases. The initial response was to provide much needed financial support by reorienting the existing 2014–2020 programmes through the CRII and CRII+. These allowed Member States to support the healthcare response to COVID-19, provide working capital for SMEs, and assist vulnerable groups. Around EUR 23 billion of EU funding was mobilised under CRII for these measures. The rationale for repurposing Cohesion Policy funding in this way was to avoid long-term socio-economic consequences in Member States that could exacerbate existing disparities. It was, in particular, to support more vulnerable, and more affected, regions, that had limited capacity to support the economy, health services, and vulnerable workers and households.

The second phase of the Cohesion Policy response was the adoption of the NGEU recovery package, for the EU to emerge more resilient from the crisis and to support its digital and green transition. NGEU included the REACT-EU with funding of EUR 50.6 billion programmed through the ERDF, ESF and Fund for European Aid to the Most Deprived (FEAD)[5]. In parallel, the core of NGEU was the Recovery and Resilience Facility (RRF) delivered through the Recovery and Resilience Programs (RRPs) (see Box 9.4).

Member States reported using Cohesion Policy support for COVID-19-specific measures up to the end of 2022 in the following ways[6]:

- to purchase EUR 3.7 billion of personal protective equipment;

- to procure around 12 500 ventilators;

- to procure nearly 97 million vaccination doses and to vaccinate 49 million people; and

5 For more details on the use of REACT-EU see this Cohesion Open Data story: https://cohesiondata.ec.europa.eu/stories/s/26d9-dqzy.

6 An overview of the reported outputs from COVID-19-related measures under CRII/CRII+ and REACT-EU are presented on this dashboard: https://cohesiondata.ec.europa.eu/stories/s/c63b-b6in.

Box 9.4 The Recovery and Resilience Facility

The Recovery and Resilience Facility (RRF) was established in February 2021 by Regulation (EU) 2021/241[1] to help the EU recover from the COVID-19 crisis and make the EU more resilient and better prepared for the future. It was set up as a new, demand-driven performance-based instrument in which financial support to Member States is provided upon the fulfilment of milestones and targets in relation to reforms and investments. In the RRF model, reforms, rather than being a precondition for the disbursement of funds, are themselves embedded in the programmes, and their implementation is an integral part of the deployment of the facility. With a total funding of EUR 724 billion (at current prices) in the form of loans and grants, the scale of financial support provided by the RRF is unprecedented.

To access support under the RRF, Member States have had to prepare Recovery and Resilience Plans (RRPs) setting out a national agenda of reforms and investments to be implemented by the end of 2026. The plan needs to meet minimum green and digital targets (respectively 37 % and 20 % of the total allocation), while specifying how it contributes to addressing all or a significant sub-set of relevant CSRs made as part of the European Semester.

The RRF is a performance-based instrument under which payments are made against the satisfactory fulfilment of relevant milestones and targets. Once a Member State has fulfilled those for a particular instalment, it submits a justified payment request to the Commission, which then has two months to assess whether the milestones and targets have been fulfilled.

The establishment of the RRF has brought the issue of the link between structural reforms and EU funding for public investment to the forefront.

1 European Union (2021).

- to provide financial and other support to over 920 000 enterprises.

According to the preliminary evaluation of the support provided by the ESF and FEAD under CRII and CRII+[7], the two initiatives represented an efficient way of using funding that remained to respond to the COVID-19 pandemic and for integrating the funding into national strategies for tackling the crisis.

In the aftermath of Russia's war of aggression against Ukraine, the EU put forward the three initiatives for Cohesion's Action for Refugees in Europe (CARE/CARE+ and FAST-CARE) to provide emergency shelter and basic social support to people fleeing the war. This resulted in the reallocation of EUR 1.7 billion and increased liquidity of EUR 13.6 billion, targeting primarily the Member States bordering Ukraine and with greatest influx of refugees. To support SMEs and vulnerable households affected by the high energy prices and finance short-time work schemes to keep people in jobs, the Supporting Affordable Energy Initiative (SAFE), reallocated around EUR 4 billion.

4. Institutional capacity and the role of reforms

As shown in Chapter 7, the quality of institutions, in terms of technical capacity but also transparency, accountability, rule of law, and effective governance structures, is essential for the creation of a healthy business environment and for economic and social development. The quality of managing authorities, and of government more generally, has proven to be an important determinant of the performance of Cohesion Policy, in terms of the capacity to absorb the funding, the effectiveness and efficiency of the investment financed, and the impact on socio-economic development. The past two decades have seen increased scientific evidence on the effect of institutional and administrative factors, particularly the quality and capacity of public administration, in accounting for asymmetries in the performance of Cohesion Policy across EU regions. There is a general consensus in the literature that the ability of national, regional and local authorities to design robust strategies, allocate resources effectively, and administer EU

7 Preliminary evaluation of the support provided by ESF and FEAD under the CRII and CRII+, SWD(2023) 249 final, European Commission, Brussels, 2023.

funding efficiently is a major contributor to the overall effectiveness of the policy[8].

Both the European Commission and Member States have given increased attention to the reform of public administration and administrative capacity-building to assist national and sub-national bodies improve their management of the European Structural and Investment Funds. This has led, on one side, to the Commission imposing certain ex ante conditions on Member States for the receipt of funding, starting from the 2014–2020 programming period. On the other side, the Commission has supported the strengthening of the administrative capacity of regional authorities in Member States through a dedicated budget.

Ex ante conditionalities were introduced in the 2014–2020 programming period. Member States were required to comply with a series of conditions in relation to regulation compliance, governance and administrative capacity before the programming period started, with the aim of ensuring that the investments funded were effective. These conditionalities were both 'horizontal' (relating to public procurement, State aid, anti-discrimination, gender equality, disability, environmental legislation and statistical systems); and thematic, setting out sector-specific conditions. These gave an incentive for Member States to implement structural changes and policy reforms, including those linked to relevant country-specific recommendations (CSRs) made as part of the European Semester process.

Ex ante conditionalities were also aimed at improving the targeting of public investment through better and more strategic policy frameworks, prioritisation of projects, and ensuring complementarity with other sources of funding. They were, in addition, expected to contribute to improving the institutional and administrative capacity of public institutions and to stimulate co-ordination within public administrations and with relevant stakeholders.

In case of the non-fulfilment of ex ante conditionalities, Member States were required to include in their programmes and partnership agreements action plans setting out how they intended to fulfil them. The evidence is that the majority of these plans were put in place to meet general conditions in respect of public procurement and compliance with State aid regulations. As regards public procurement, the fulfilment of conditionalities entailed:

- adoption of national strategies and the establishment of legislation in several Member States (including Bulgaria, Hungary, Italy, Romania and Slovakia);
- establishment of an adequate control system (as in Bulgaria and Romania);
- introduction of e-procurement (e.g.in Hungary, Italy and Latvia);
- simplification of procedures and increased efficiency (e.g. in Italy and Slovenia);
- creation of a specific advisory unit and consultation groups for identifying key issues and proposing improvements (e.g. in Slovenia);
- development of guidelines (e.g. Romania, Italy and Slovenia); and
- training and capacity-building (as in Bulgaria, Greece, Croatia, Hungary, Italy, Malta, Romania, Slovenia and Slovakia).

Romania developed a comprehensive action plan, while six Member States reported action plans on State aid. These included the adoption of legislation, the setting-up of a central State aid electronic register and database, the publication of a list of aid recipients on the website, and the implementation of dedicated training programmes.

As regards thematic ex ante conditionalities, several Member States designed and implemented action plans in respect of smart specialisation, digitisation and digitalisation, energy, healthcare, education and institutional capacity. Many of the plans adopted involved both national and regional

8 Bachtler et al. (2016).

authorities and, though in varying degrees of detail, the evidence shows that in many cases they were instrumental in improving the effectiveness and efficiency of programmes.

For some environmental areas such as air quality, ex ante conditionalities were not desirable or possible. However, in cases where air pollution exceeded EU limits, it proved useful to have concrete references to air quality plans, which were mandatory in such situations, in the text of partnership agreements and Operational Programmes.

In addition, ex ante conditionality required partnership agreements to address the CSRs relevant to Cohesion Policy made by the Council as part of the European Semester.

Overall, the introduction of ex ante conditionality has improved the investment environment in the EU and the targeting of EU and other public funding. It has also accelerated the transposition and implementation of EU legislation and helped speed up reforms, reinforcing the commitment of governments to them and raising political awareness about them. In addition, by requiring public authorities to formulate development strategies, it has improved institutional capacity across the EU.

The 2021–2027 programming period has seen the introduction of enabling conditions under which investments are supported by Cohesion Policy funding. As in the case of ex ante conditionalities, they are either horizontal (e.g. compliance with the EU Charter of Fundamental Rights, public procurement and State aid rules) or thematic (e.g. governance of smart specialisation strategies to build local innovation ecosystems, compliance with 2020 binding national renewable energy targets, the planning of investments in environmental and transport infrastructure, the establishment of strategic policy frameworks for active labour market measures in the light of the employment guidelines, and for social inclusion, poverty reduction, and Roma inclusion). They are rules establishing preconditions for funding, which have to be complied with throughout the programming period. There are fewer enabling conditions than ex ante conditionalities, and they benefit from a simplified procedure for reporting on their fulfilment. Unlike in the case of ex ante conditionalities, the regulation sets the fulfilment of enabling conditions as a prerequisite for the disbursement of funds: if enabling conditions are not fulfilled at the time of submission of a payment application to the Commission for the specific objective concerned, the related expenditure will not be reimbursed from the Union budget until the Commission assesses those enabling conditions as fulfilled. Enabling conditions have to remain fulfilled during the whole programming period.

In the case of the horizontal enabling conditions in cross-cutting areas, all Member States have fulfilled those relating to public procurement, State aid, and the UN Convention on the Rights of Persons with Disabilities; all but one, have fulfilled the condition on the Charter of Fundamental Rights.

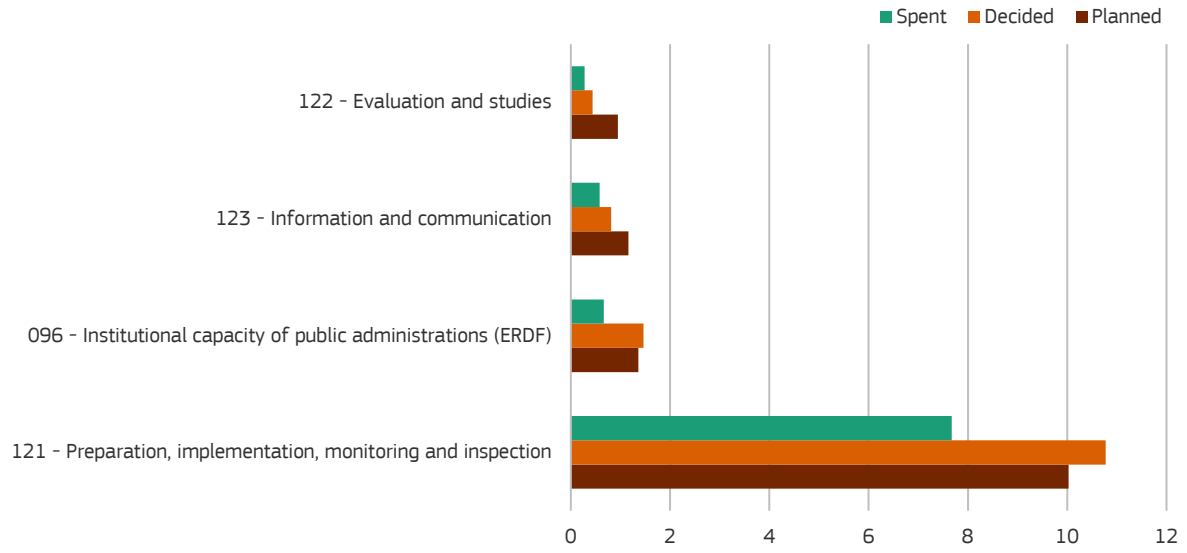
As regards thematic conditions, i.e. those linked to specific Thematic Objectives and investment priorities, such as the existence of appropriate strategies/plans/frameworks in the policy areas covered by Cohesion Policy[9], two thirds were fulfilled at the time of adoption of programmes and 90 % were fulfilled as of first of March 2024.

In addition to establishing conditions for funding, financing under Cohesion Policy has also gone to strengthening the administrative capacity to implement the policy. This has entailed making available to Member States a set of tools for building administrative capacity, such as guidance on how to develop roadmaps for this, a means for peer exchange, communities of good practice, and activities (including training) focused on key strategic issues, such as public procurement, State aid, Integrity Pacts, and prevention of fraud and corruption.

In the 2014–2020 programming period, support for administrative capacity was used by Member States on activities for strategic capacity-building, scaling up existing practices, introducing innovations, and improving management of human resources. Overall, over EUR 13.5 billion of EU fund-

9 These include smart specialisation, broadband, energy-efficiency, responding to climate change, prevention and alleviation of risks and disasters, water supply and wastewater treatment, waste management, transport, labour market policies, education, social inclusion, alleviation of poverty, support for Roma and other minorities, and improving health and social services.

Figure 9.2 Planned, decided and spent amounts by field of intervention (EUR billion)



Source: DG REGIO based on Cohesion Open Data.

ing was allocated to such activities (Figure 9.2, which distinguishes between planned, decided and already spent amounts)[10].

Preliminary evidence from administrative capacity-building activities carried out in the 2014–2020 period shows that ERDF-financed investments have had a positive impact on public authorities, beneficiaries and stakeholders. Pilot case studies carried out in Romania, Greece, Spain and Italy provide a first indication of the effectiveness of these investments. In Romania, a digital register of properties and land was created to facilitate interaction between property owners and the authorities. In Spain, the governance of ERDF-financed projects in specific areas was digitalised. In Greece the emphasis has been on administrative and organisational reform, e-government and public sector management, while in Italy there is a commitment to bridging the digital divide and optimising administrative procedures using ERDF financing for digitalising governance.

The ESF provided support under the institutional capacity-building objective (TO11) for some 840 000 participants for lifelong learning and training and 3 000 projects targeting national, regional or local authorities or public services. For example, with ESF support, the National Customs Agency in Bulgaria implemented a series of projects to simplify and rationalise legislative procedures and improve the efficiency of customs operations, including by establishing a fully electronic working environment.

The ex post evaluation now underway will shed further light on how Cohesion Policy funding contributed to the implementation of reforms in Member States and on whether programme strategies, ex ante conditionalities and horizontal principles have led, directly or indirectly, to CSRs being taken up.

5. Cohesion Policy funding 2021–2027

Cohesion Policy funding for the 2021–2027 period amounts to a third of the EU's long-term budget under the Multiannual Financial Framework. The EUR 378 billion[11] of support is expected to result in EUR 542 billion of investment once national (public and private) co-financing is included. The less developed regions are the main beneficiaries, 70 % of the ERDF and ESF+ being allocated

10 Based on data from the system for fund management in the EU at 31 December 2022 for the following fields of intervention: 'institutional capacity of public administrations and public services related to implementation of the ERDF or actions supporting ESF institutional capacity initiatives'; 'preparation, implementation, monitoring and inspection'; 'evaluation and studies'; and 'information and communication'.

11 2021–2027 figures cover shared management, including Interreg programming, and funds managed directly and indirectly by the Commission.

Table 9.1 EU Cohesion Policy allocations under shared management by Policy Objective (2021–2027)

Goal / Policy objective	EU planned amount	Total planned amount	% of total EU planned
PO1 Smarter Europe	73 830	114 692	19.6 %
PO2 Greener Europe	93 356	128 930	24.8 %
PO3 More connected Europe	40 474	53 504	10.8 %
PO4 Social Europe	112 351	167 079	29.9 %
PO5 Europe closer to citizens	19 554	26 907	5.2 %
Just Transition Fund specific objective	18 049	25 363	4.8 %
Technical assistance	9 267	13 436	2.5 %
Goal: Investment in jobs and growth	366 882	529 911	97.6 %
Goal: Territorial co-operation (Interreg)	9 041	12 032	2.4 %
Total	**375 923**	**541 943**	**100.0 %**

Note: The table covers the budget delivered through shared management programming and excludes initiatives managed directly and indirectly by the Commission.
Source: DG REGIO calculations based on shared management programmes adopted and Cohesion Open Data.

to them. In addition, the CF provides support to 15 Member States[12], and is targeted at investment in environmental infrastructure and trans-European networks. Moreover, a new facility, the Just Transition Fund, has been set up to address the impact of the transition towards climate neutrality.

These funds are invested in the pursuit of two high-level Cohesion Policy goals, jobs and growth (national and regional programming) and European territorial co-operation (Interreg). These two goals, as indicated above, are pursued, in turn, predominantly through the five Policy Objectives, indicated earlier, which are aimed at creating a more competitive, smarter, greener, more connected, and more social and inclusive Europe, closer to citizens (Table 9.1)[13].

6. Cohesion Policy as a placed-based policy

Cohesion Policy is the main EU instrument for supporting regional development. The policy follows a place-based approach to pursuing EU-wide overarching policy priorities. Such an approach is essential for tailoring policy interventions to local characteristics, preferences and circumstances, which tend to differ very significantly across space and time within the EU and Member States, as highlighted in previous chapters.

A first indication of the place-based nature of the policy is reflected in the way funding under Cohesion Policy is allocated[14], which is based on categorising regions in terms of their level of development, as indicated by their GDP per head. The 'less developed' category includes regions with GDP per head below 75 % of the EU average (PPS); the 'transition' category includes those with GDP per head between 75 % and 90 % of the EU average for the 2014–2020 period and of between 75 % and 100 % for the 2021–2027 period; and the 'more developed' category includes all the other regions. Several additional indicators are then used to fine-tune the allocation according to the situation of individual regions, specifically, to reflect socio-economic, environmental, and demographic challenges – overall unemployment, youth unemployment, low levels of education, greenhouse gas emissions, and outward migration. The allocation for each Member State is the sum of allocations for its eligible regions.

As indicated above, most funding under Cohesion Policy goes to the less developed regions and Member States, in line with the policy's mandate of re-

12 The CF is available to those Member States with gross national income per head below 90 % of the EU average. The 15 Member States eligible in 2021–2027 are Bulgaria, Czechia, Cyprus, Estonia, Greece, Croatia, Hungary, Lithuania, Latvia, Malta, Poland, Portugal, Romania, Slovenia and Slovakia.

13 For a more complete summary of the Objectives and contents of the programmes adopted, see European Commission (2023).

14 Regulation 2021/1060 (Annex XXVI) of the European Parliament and of the Council.

ducing regional disparities. The rationale for policy intervention is to provide more direct development support to those areas that need it the most but have less capacity to fund the investment required themselves. Some support is also provided to regions with higher level of GDP. Importantly, national co-financing is required for all types of regions, although at much lower rates for less developed ones.

Aid intensity (i.e. the amount of support per inhabitant per year) is a useful indicator to show how Cohesion Policy funding provides more support to less developed regions, in line with aim of the policy to reduce regional disparities. The direct allocation of funding, however, does not fully reflect the overall impact of the policy. To grasp the benefits it brings fully, the allocation of funding needs to be considered in conjunction with taking account of the effects of interventions on the EU economies, including not only the local and immediate impact of programmes but also the many spill-over effects that they generate. Several studies

Table 9.2 Cohesion Policy aid intensity, GDP per head, and Cohesion Policy funding, in Member States, average 2014–2020

	Aid intensity (EUR per head)	GDP per head (at PPS)*	Cohesion Policy funding (% GDP)*
Austria	25.80	37 172.80	0.06 %
Belgium	33.20	34 568.50	0.09 %
Bulgaria	163.50	14 759.80	2.21 %
Cyprus	149.40	25 664.10	0.65 %
Czechia	310.10	26 365.10	1.72 %
Germany	37.60	35 968.90	0.10 %
Denmark	20.10	37 429.00	0.04 %
Estonia	404.30	23 320.90	2.22 %
Greece	245	19 475.10	1.50 %
Spain	139.30	26 185.60	0.57 %
Finland	41.40	32 342.90	0.10 %
France	42	30 628.70	0.12 %
Croatia	318.90	18 412.60	2.73 %
Hungary	332.60	20 602.90	2.60 %
Ireland	39.70	52 696.20	0.06 %
Italy	115.80	28 227.70	0.41 %
Lithuania	358.20	23 277.20	2.40 %
Luxemburg	46.70	77 993.30	0.05 %
Latvia	346.80	19 652.30	2.50 %
Malta	243.60	28 918.40	1.02 %
The Netherlands	15.80	37 672.60	0.04 %
Poland	295.70	20 540.80	2.43 %
Portugal	322.20	22 537.20	1.72 %
Romania	175.90	18 440.60	1.84 %
Sweden	34.30	35 728.50	0.07 %
Slovenia	236.60	24 934.50	1.14 %
Slovakia	380.60	21 240.40	2.44 %
United Kingdom	25.90	31 347.50	0.07 %
EU-28	**112.70**	**29 143.50**	**0.38 %**

*Average 2014–2020, except for the EU-28 and UK for which the figures correspond to average 2014–2019.
Note: Aid intensity is defined as the amount of funding per inhabitant per year.
Source: Eurostat, DG REGIO.

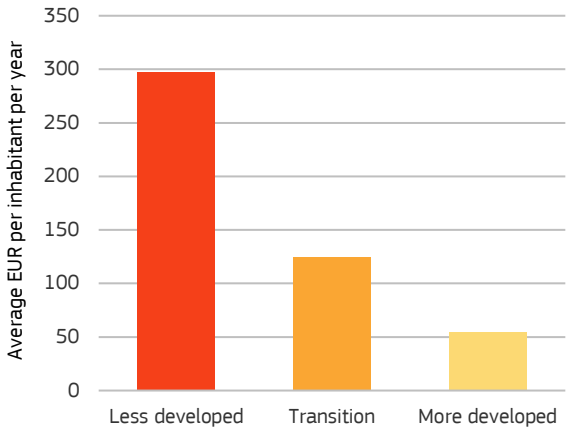
emphasises[15] that the programmes implemented in the main beneficiary regions also benefit more developed regions. Indeed, for some of them, these indirect spill-over effects can be larger than the direct effects of funding, in large part because of the goods and services that more developed regions export to less developed ones. These effects are examined in detail in Section 8 below.

Table 9.2 shows the aid intensity (funding per head) implied by the investments financed by the ERDF, ESF and CF for the 2014–2020 period, the average level of GDP per head over the period and Cohesion Policy funding in relation to GDP.

As is evident, aid intensity is highest in the less developed Member States, amounting to EUR 404 per inhabitant per year in Estonia and EUR 381 in Slovakia. Funding represents a substantial injection into all the less developed economies, reaching 2.7 % of GDP in Croatia, 2.6 % in Hungary, and 2.4 % in Poland, Slovakia and Lithuania.

Reflecting its mandate to reduce the extent of regional disparities across the EU, support, as noted above, goes predominantly to the regions with the greatest development needs and smallest financial means for meeting these. Aid intensity, therefore, averaged EUR 297 per inhabitant per year over the 2014–2020 period in the less developed regions, much more than the EUR 127 in the transition regions and well over 5 times more than the EUR 55 in more developed ones (Figure 9.3).

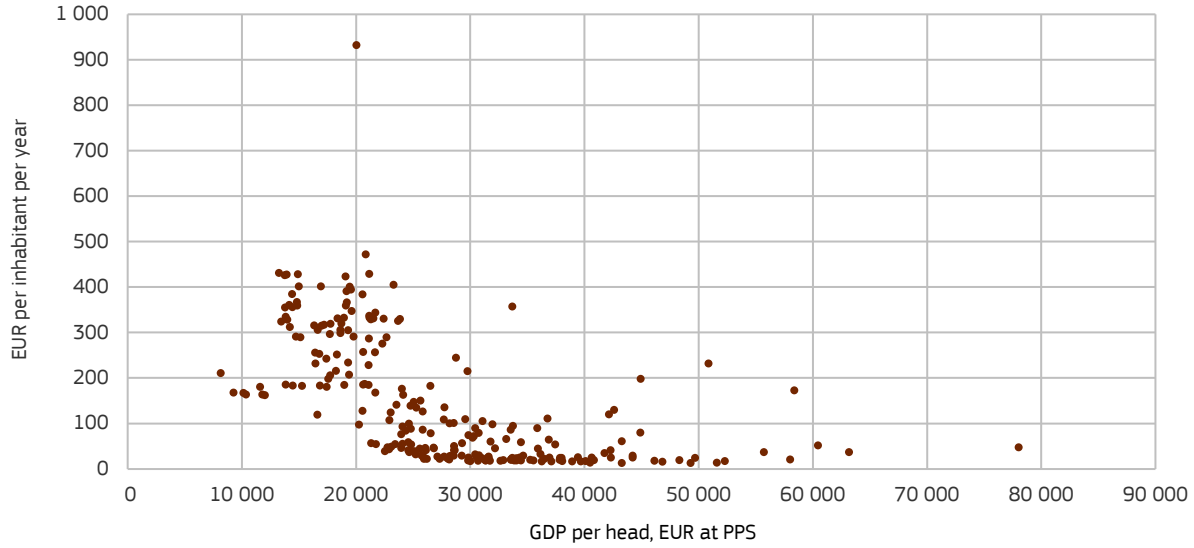
Figure 9.3 Aid intensity in categories of regions, 2014–2020



Source: Eurostat and DG REGIO.

In general, there is a clear inverse relationship between aid intensity at regional level and GDP per head, reflecting the relative concentration of funding on the less developed regions (Figure 9.4).

Figure 9.4 Aid intensity in relation to GDP per head, NUTS 2 regions, averages 2014–2020



Source: Eurostat and DG REGIO.

15 See for instance Crucitti et al. (2023).

Box 9.5 Research into the regional impact of Cohesion Policy

A 2013 study[1] used a regression discontinuity design on a dataset covering the 1994–2006 period to find a substantial positive impact of Cohesion Policy on regional economic growth. Two other studies[2] also used a regression discontinuity approach to test for the impact of Cohesion Policy on Objective 1 regions (i.e. the least developed ones, receiving the most support) using a dataset including programmes from 1989 to 2013. They find a positive effect on GDP growth, every 1 EUR spent on Objective 1 transfers leading to EUR 1.20 of additional GDP.

A 2020 study[3] used a spatial regression discontinuity approach on a database covering the 2000–2013 period to find that Cohesion Policy has a positive impact on growth, though the scale varies across regions. A 2019 study[4] found a positive effect of the policy in about 40 % of Objective 1 regions, depending on their human capital endowment and quality of institutions.

For the evaluation of the 2007–2013 period, the Commission also relied on these kinds of approach, with counterfactual analysis based on propensity score matching (PSM), which attempts to match regions receiving support with those not receiving it in terms of their relevant characteristics, and a regression discontinuity design. These pieces of analysis also point to a positive and statistically significant impact of EU funding on the growth of the regions supported. For instance, the analysis using PSM estimates that funding raised the growth rate of the regions supported by 0.5 to 0.7 pp on average. Counterfactual impact evaluations have also been used by Member States to analyse their programmes (see for instance, the meta-analysis of the ESF counterfactual impact evaluations carried out by Member States)[5].

Model simulations constitute another strand of research to assess the impact of Cohesion Policy. While this used to be conducted mostly at the national level[6], sub-national models have become more developed in recent years. For instance, a 2017 study[7] found a positive effect of smart specialisation strategies on regions, though the extent differed between them. A 2020 study[8] applied a dynamic spatial computable general equilibrium model to NUTS 2 regions in Poland, Estonia, Lithuania and Latvia and found that Cohesion Policy investments have resulted in substantial welfare gains. The JRC of the Commission, in collaboration with DG REGIO, has developed the 'RHOMOLO' model, which is regularly used to assess the impact of Cohesion Policy[9] and to address more specific issues such as the international spill-over effects of the policy[10].

In general, model-based simulations indicate a sizeable and long-lasting impact of the policy on the performance of EU regions, particularly on the main beneficiaries. However, this rests on a number of assumptions, some of which can legitimately be considered as optimistic. For instance, it is generally assumed that funding is spent efficiently on all projects, which clearly is not necessarily the case. Model simulations, therefore, should be taken as estimates more of the potential impact of the policy than of the actual impact, and interpreted in close conjunction with counterfactual impact evaluations and empirical estimates of macro-economic multipliers.

1 Pellegrini et al. (2013).

2 Becker et al. (2013, 2018).

3 Crescenzi and Giua (2020).

4 Di Caro and Fratesi (2019).

5 European Commission (2022).

6 See for instance: Bradley et al. (2003); Bayar (2007); Allard et al. (2008); Varga and in 't Veld (2011a and 2011b); or Monfort et al. (2017).

7 Varga (2017).

8 Korzhenevych and Bröcker (2020).

9 See for instance Di Comite et al. (2018) or Crucitti et al. (2023b).

10 Crucitti et al. (2023a).

Aid intensity is particularly high in less developed regions located in Member States with low GDP per head. Accordingly, it is highest in eastern and southern Europe, where it reaches levels above €400 per inhabitant per year in most regions of Slovakia, Hungary and Estonia. It is also higher in outermost regions that benefit from a top-up linked to their specificities. It is much lower in north-west Europe.

7. Place-based policies and economic performance

This section reviews the latest empirical economic literature on the impact of Cohesion Policy on EU regions, bringing together studies using a variety of methods and with different geographical and temporal coverage, to provide an overall view of the issue, the availability of larger, and more reliable, complete and detailed data-sets (partly as a result of stricter performance monitoring requirements introduced in the 2007–2013 and 2014–2020 programming periods), together with progress made in analytical methods, has led to improvements in the way the effectiveness of the policy is assessed. In particular, there has been a more thorough application of econometric techniques to micro-level data and more sophisticated approaches to identifying the counterfactual situation, i.e. what would have happened without Cohesion Policy-financed investment[16].

In methodological terms, these studies have moved largely away from trying to assess the impact of Cohesion Policy on growth at the macro-economic level, at which it is especially difficult to isolate the effect of the policy from the many other factors that can affect outcomes, to focus on the micro-level impact of funding. By and large, this strand of research tends to find that Cohesion Policy has a positive impact on beneficiary regions and, through spill-over effects, on Member States in general (see Box 9.5).

Simulations of macro-economic models are another means of investigating the effects of Cohesion Policy and, in recent years, regional versions of these have been developed. These have shown positive effects of smart specialisation strategies on regions and of EU-funded investment on welfare. They have also shown that the effect is sizeable and long-lasting, especially on the less developed regions receiving the largest amount of support. It should be noted, however, that the models concerned rest on a number of assumptions, not least that the investment funded is effective in achieving its immddediate objectives, which may not necessarily hold in reality.

Overall, the large majority of the research studies, from the financial crisis onwards, find an overall positive effect of Cohesion Policy on regional development[17]. They suggest, moreover, that the place-based focus of the policy and its redistributive effect have not come at the expense of overall economic growth in the EU and that the positive impact is not confined to the less developed regions but has occurred in more developed ones as well.

8. The macro-economic impact of Cohesion Policy

8.1 How to assess the impact of the policy

According to the Treaty establishing the European Community, the objective of Cohesion Policy is to: *'promote economic and social progress as well as a high level of employment, and to achieve balanced and sustainable development'* (Article 2) and *'... reduce the disparities between the levels of development of the different regions and the backwardness of the least favoured regions or islands, including rural areas'* (Article 174).

16 More specifically, increasingly in the last decade, studies have applied techniques such as difference-in-difference or regression discontinuity design to quantifying the impact of Cohesion Policy, attempting, for example, to estimate the effect of the interventions by comparing similar regions just above and below the threshold for eligibility for funding see e.g. Crescenzi and Giua (2016). The studies rely in the main on identifying a counterfactual situation, in which beneficiaries of the support are compared with a control group in a quasi-experimental framework.

17 McCann (2023).

Cohesion Policy is aimed at promoting convergence and an harmonious development, fostering sustainable growth and improving the well-being of people living in the EU. It is the EU's main long-term instrument to achieve these objectives, with the main instruments, the ERDF, the ESF and the CF, achieving its objectives through channels such as increasing R&D, supporting companies, and public investment in education, transport, telecommunications, or public infrastructure.

The impact of Cohesion Policy entails a combination of direct and indirect effects. For instance, output and employment may increase in SMEs receiving support. At the same time, the SMEs concerned may also increase their demand for intermediate inputs and hence boost activity in firms that are not the direct beneficiaries of the support. The policy may generate significant spatial spill-over effects and externalities outside the economies benefiting from the programmes. In particular, the increase in local demand stemming from the programmes implemented in less developed regions is likely in some degree to be met by imports from more developed regions, which therefore end up indirectly benefiting, in some cases to a considerable extent.

At the same time, economic performance is affected by a wide range of other developments that coincide with the investment financed under Cohesion Policy, including other policy action or changes in the business cycle. The specific impact of the policy can, therefore, not be identified simply by looking at the data in the national and regional accounts. In order to identify the impact that can be attributed to the policy, the world as it is needs to be compared with what it would have been without the policy, which obviously cannot be observed in reality.

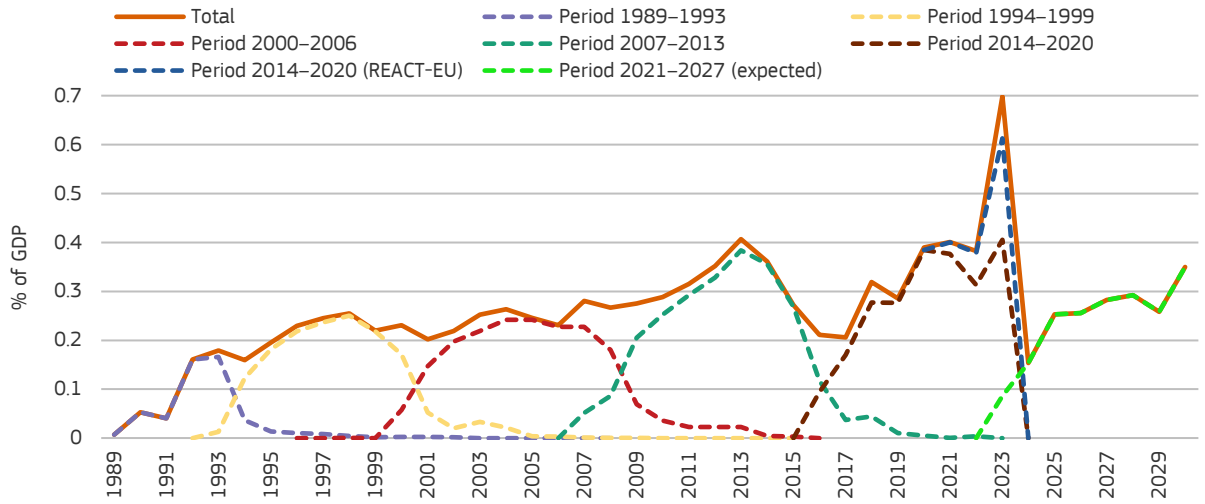
Macro-economic models enable these issues to be addressed in a consistent way. Firstly, models can be used to simulate developments without the policy and so provide a counterfactual base against which the impact of the policy can be assessed. Secondly, models enable both the short- and long-term effects of the policy to be simulated, taking explicit account of the interaction between direct and indirect effects. Thirdly, models can account for spill-over effects and externalities and so enable the full impact of the policy to be assessed. Fourthly, models help to trace back the effects of policy interventions and to shed light on the channels through which the policy produces its impact on the economy.

Over the past few decades Cohesion Policy has been the second most important line in the EU budget, accounting for around a third of the Multiannual Financial Framework. Between 1990 and 2024, the funding allocated increased over 10-fold in relation to EU GDP, from 0.03 %, on average, for the 1989–1994 programming period to 0.3 % for the 2014–2020 period, and 0.4 % if REACT-EU is included. This increase reflects the need to accompany the deepening and widening of EU integration, the strengthening of the Single Market and successive rounds of enlargement, which have meant addressing the needs of a growing number of less developed regions. For the 2014–2020 period, EUR 356 billion was allocated to Cohesion Policy (EUR 405 billion with REACT-EU) and for 2021–2027, EUR 376 billion (less than in the previous period, reflecting the exit of the UK). While, as indicated above, this funding is allocated to all regions across the EU, it goes predominantly to the less developed regions and Member States, in some of them representing close to 3 % of GDP. For the 2014–2020 period, Cohesion Policy funding corresponded to around 13 % of public investment in the EU as a whole and to 51 % in the Member States eligible for the CF.

As Figure 9.5 shows, spending tends to be concentrated at the end of implementation periods[18], but is not discontinued between programming periods. Indeed, the objective of the policy to reduce the development gap between EU regions is a long-term one, which is maintained throughout the EU budget cycle. The overlapping of funding between programming periods means that there is no interruption to the support provided. Accordingly, in the analysis below programming periods are not considered in isolation but as continuous sources of support.

18 The N+3 rule allows funds to be used up to three years after they have been committed, which implies that the programmes are actually implemented over a period of 10 years rather than seven.

Figure 9.5 Cohesion Policy funding 1989 to 2030



Note: Figures relate to EU payments except for 2021–2027, where they are planned amounts. The timing of payments for 2021–2027 is estimated from that for 2014–2020, net of REACT-EU funding.
Source: DG REGIO.

8.2 Model and results

The impact of the policy is assessed using the European Commission's spatial computable general equilibrium model, RHOMOLO[19]. In this type of model, policy interventions – disbursements of funding for specific purposes – are modelled as shocks to an economic system, generating, on the basis of a set of assumptions, responses that are reflected in changes in macro-economic variables, such as GDP, employment, investment, and household consumption.

The economic foundations of the model lie in the literature on general equilibrium models[20]. The model itself is featured in numerous articles contributing to this literature[21], and it is regularly used for policy impact assessment purposes. The model covers all EU NUTS 2 regions and divides the economies in these into 10 (NACE[22]) production sectors. It incorporates input-output matrices to represent the flow of raw materials and goods and services between these sectors and their distribution to final users. It also incorporates capital and labour as factors of production, households as final consummers, and governments that impose taxes and borrow to finance their expenditure (see Box 9.6 for a description of the model).

In the present analysis, Cohesion Policy expenditure is regrouped into six fields of intervention. In order to simulate the impact of the policy, each field of intervention is assumed to generate a set of model 'shocks', which are intended to capture the economic transmission mechanisms through which the expenditure concerned is most likely to have effects. Specifically, one or more model shocks are used to simulate the spending categories relating to the six fields of interventions. The shocks can be broadly separated into demand-side shocks, with temporary effects, and supply-side shocks, with more permanent structural effects on the economy. The shocks – i.e. the demand and supply-side effects – assumed to be associated with expenditure in the six fields of intervention are as follows.

- Transport infrastructure (TRNSP) – Investments in transport infrastructure are assumed to generate both demand- and supply-side effects. Demand-side effects are produced by the

19 https://joint-research-centre.ec.europa.eu/tedam/rhomolo-model_en. See also: Christou et al. (2024).

20 For the full mathematical description of the model, see: Lecca et al. (2018).

21 See, among others: Lecca et al., 2020; and Di Pietro et al. (2021).

22 Nomenclature statistique des activités économiques (statistical classification of economic activities).

Box 9.6 Model description

The model is calibrated on a set of fully integrated EU regional social accounting matrices (SAMs) for all the EU NUTS 2 regions and for the year 2017[1], which is taken as the baseline state of the economy. The SAMs include all the standard information of input-output tables on the production and use of goods and services, as well as information on the secondary distribution of income, detailing the roles of labour and households.

The model economies are disaggregated into 10 sectors (based on the NACE rev. 2 industry classification)[2]. Firms are assumed to maximise profits and produce goods and services according to a constant elasticity of substitution production function[3]. The other agents in the model are households and a government that collects taxes and spends money on public goods and transfers. Capital and labour are used as factors of production (public capital enters the production function as an unpaid factor). Trade in goods and services – within and between regions – is assumed to be costly, with transport costs increasing with distance. The estimate of transport costs is based on a transport model (see below). Regional economies are typically more open than national ones, due to their smaller size, and this is taken into account in the model through regional trade flows and the relatively high elasticity of substitution between domestic and imported goods and services[4]. (This is set to 4, based on empirical estimates using European data[5]). The presence of significant inter-regional spill-overs is an important feature of the model. This borrows from economic geography by incorporating a notion of spatial equilibrium corresponding to a balance between agglomeration forces (pushing economic activity to concentrate in particular places) and dispersion forces (pushing economic activity to be less concentrated).

RHOMOLO is used for scenario analysis, in the sense that shocks mimicking the effects of policies are introduced to disturb the initial assumed steady state calibrated with the SAMs, resulting in different values for the endogenous variables of the model, such as GDP, employment, imports and exports, and prices. The model is solved in a recursively dynamic process, where a sequence of static equilibria linked to one another through the law of motion of state variables. This implies that economic agents are not forward-looking and their decisions are solely based on current and past information.

1 Thissen et al. (2019).

2 The 10 (NACE) sectors are: agriculture, forestry and fishing (A); mining and quarrying, electricity, gas, steam, and air conditioning, water supply, sewerage, waste management and remediation activities (B, D, and E); manufacturing (C); construction (F); wholesale and retail trade, repair of motor vehicles and motorcycles, transportation and storage, accommodation and food service activities (G-I); information and communication (J); financial and insurance activities, and real estate activities (K-L); professional, scientific and technical activities, and administrative and support service activities (M-N); public administration and defence, and compulsory social security, education, human health and social work activities (O-Q); and arts, entertainment and recreation, other service activities, activities of the households as employers, undifferentiated goods- and services- producing activities of households for own use, and activities of extraterritorial organisations and bodies (R-U).

3 Constant elasticity of substitution is a class of production functions frequently used in applied economics. It describes the relationship between production and production factors in the technological production process. It accounts for various substitution possibilities across inputs and determines demand for the various types of factors of production.

4 This elasticity specifies the degree of substitution in demand between similar products produced in different countries.

5 See: Németh et al. (2011); and Olekseyuk and Schürenberg-Frhosch (2016).

temporary increases in government consumption, i.e. in the purchase of goods and services required to build the infrastructure concerned. On the supply side, the investments are assumed to reduce transport costs, so reducing the prices of goods and stimulating trade flows. The induced reduction is based on the estimates obtained from the fully fledged transport cost model[23] used to assess the investments in transport infrastructure financed under Cohesion Policy for the 2014–2020 period.

- Other public infrastructure (INFR) – Investment in non-transport infrastructure, such as electric-

23 Persyn et al. (2022 and 2023).

ity networks, water treatment plants and waste management facilities, are modelled as public investments when associated with industrial processes, and otherwise as government consumption. In the latter case, only temporary demand-side effects are produced. Public investments not only trigger an increase in demand, but also have supply-side effects, since they increase the stock of public capital used to produce goods and services. (The output elasticity of public capital, i.e. the goods and services it produces, is set to 0.1, in line with the existing literature[24]). A congestion parameter of public capital, set to 0.5 (equivalent to a medium level of congestion[25]) captures the fact that, to some extent, the use of public infrastructure by a user prevents other users from using it as well.

- Research and technological development (RTD) – Subsidies to R&D are modelled as increases in private investments as a result of a reduction in the risk premium, which increase the stock of private capital[26]. Moreover, these investments are assumed to increase total factor productivity (TFP) according to an elasticity that depends on the importance of spending on R&D in the region relative to GDP, and which is based on the literature[27].

- Human capital (HC) – Investments in human capital are assumed to increase demand via government current expenditure. They are also assumed to have two alternative supply-side effects, depending on the nature of the interventions. The spending categories associated with human capital development, such as training to improve the skills of the workforce and similar active labour market policies, are assumed to generate an increase in labour productivity. The main assumption is that an additional year of training leads to an increase in productivity, which is set at 7 % based on the literature[28]. The cost of education per pupil or student is used to calculate the amount of training implied by Cohesion Policy funding going to investment in human capital, with country-specific efficiency adjustments based on PISA scores[29]. On the other hand, interventions aimed at promoting the socio-economic integration of marginalised communities, participation in the labour market, or the modernisation of labour market institutions, are assumed to generate an increase in aggregate labour supply. In this case, a higher cost per trainee is assumed, and it is further assumed that it takes two to three years of training to integrate a worker into the labour force.

- Aid to private sector (AIS) – Aid to the private sector is modelled as an increase in private investment via a reduction in the risk premium, as in the case of RTD investment, but without any impact on TFP.

- Technical assistance (TA) – Technical assistance is modelled as a demand-side shock increasing public current expenditure with no supply-side effects.

It is further assumed that a fixed interest rate of 4 % applies across regions[30], and that all long-run supply-side effects diminish over time. Specifically, increases in labour productivity and TFP, and reductions in transport costs, are assumed to diminish at a rate of 5 % a year. In addition, stocks of private and public capital are assumed to have a depreciation rate of 15 % and 5 %, respectively (a higher rate for private than public capital is a common assumption in the literature and reflects

24 See: Ramey (2020). Note that 0.1 is slightly below the average of 0.12 found by the meta-study by Bom and Lightart (2014).

25 Alonso-Carrera et al. (2009). A value of zero would make public capital a pure public good (i.e. one for which one person's use has no effect on its availability to others).

26 In the production function, the capital-labour elasticity of substitution is 0.4, in line with, among others: Chirinko (2008) and Leon-Ledesma et al. (2010).

27 See: Kancs and Siliverstovs (2016).

28 De la Fuente and Ciccone (2003); and Canton et al. (2018).

29 Programme for international student assessment, which measures 15-year-old students' reading, mathematics, and science literacy in different countries.

30 Following Smets and Wouters (2003).

the typically longer life of public infrastructure[31]). This implies that, in the absence of further investment, the structural effects from Cohesion Policy gradually vanish and the economy is assumed eventually to return to its initial steady state[32].

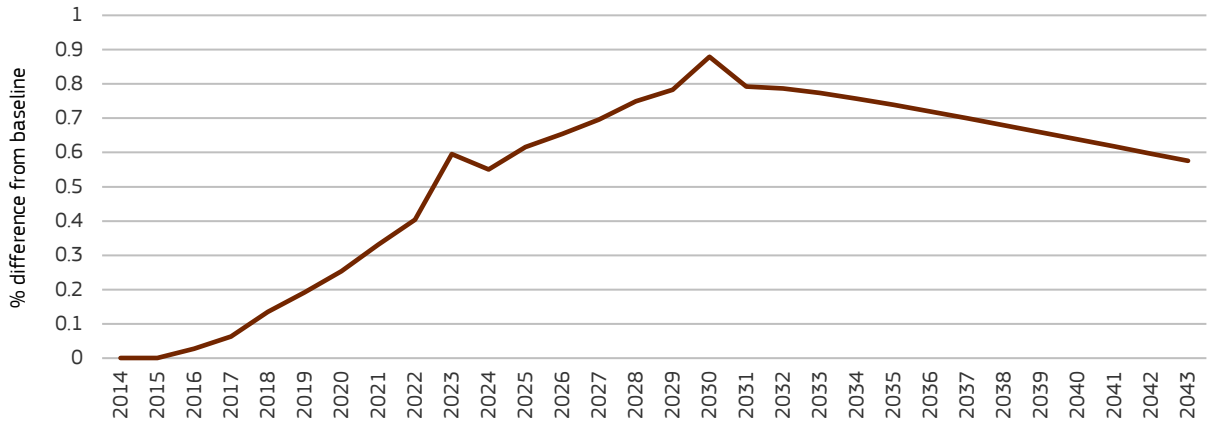
The model simulations take into account the fact that Cohesion Policy is financed by the *pro rata* contribution of Member States to the EU budget, which is assumed to be proportional to their share of EU GDP. Member State contributions to the funding of Cohesion Policy are assumed to be financed by a lump-sum tax that reduces household disposable income, so adversely affecting economic performance and partly offsetting the positive impact of the programmes[33]. This implies that a larger share of Member State contributions to Cohesion Policy comes from the more developed parts of the EU, while the bulk of the interventions take place in the less developed parts. The next section presents the results of the analysis based on the assumed effects of the different kinds of intervention described above.

8.3 Impact at EU level

The impact of the policy is estimated by comparing the results of the model under a scenario excluding Cohesion Policy interventions (the 'baseline' scenario) with a scenario including these. The difference between the two scenarios for a given variable, such as GDP, indicates the impact of the policy, which is expressed as the percentage difference from the baseline[34].

The results of the simulation suggest that Cohesion Policy interventions are likely to have a positive and significant impact on the EU's economy (Figure 9.6)[35]. The impact of Cohesion Policy builds

Figure 9.6 Impact of Cohesion Policy programmes 2014–2020 and 2021–2027 on EU GDP, 2014–2043



Note that if the 2007–2013 programmes had been included in the analysis, their impact would have been visible in the initial years of the graph and the cumulative impact would have been larger. Similarly, starting from 2030, the effects of post-2027 programmes would be expected to progressively kick in.
Source: RHOMOLO simulations (GDP impact) and DG REGIO (Cohesion Policy data).

31 See: Bom (2017).

32 Various pieces of sensitivity analysis (not reported here) have been conducted to check the robustness of the results for the values selected for some of the key parameters.

33 This means that, in the model, the EU regions are not constrained to run a balanced budget and can have deficits or surpluses. The EU budget is constrained to be balanced, as the amount of spending incurred by regions that is financed from Cohesion Policy is repaid through an equal amount of lump-sum transfers from households.

34 The baseline is established on the basis of assuming that observed trends in key variables continue, which is common practice in modelling exercises. The results, which correspond to the difference between the baseline and the 'with-policy' scenario, are largely independent of the baseline assumptions.

35 The UK is excluded when reporting results because of its exit from the EU. The aggregate effects are also reported net of the UK. Including the UK in the analysis does not alter the substance of the results.

Box 9.7 Recent estimates of fiscal multipliers

Estimates of the impact multiplier associated with EU funding differ widely according to approach adopted, the time horizon considered, and the programmes analysed. In the macro-economic literature, (fiscal) multipliers are usually assessed using two broad families of method. The first is based on econometrics, spanning a wide range of approaches – including spatial panel data analysis, structural vector autoregression (VAR), instrumental variables and local projections models. For instance, a 2022 study[1] reports multipliers associated with the ERDF of between 0.2 and 1.4 while a 2021 study[2] finds multipliers at Member State level of between 1.2 and 1.8. A 2019 study[3] estimates multipliers on EU structural fund spending ranging between 0.9 and 1.8. Based on VAR, a 2023 report[4] identifies a long-run value of the multiplier associated with the structural funds of around 2.6. Focusing on government spending (which may be less focused on structural investment than that supported by Cohesion Policy), another 2023 study[5] finds a long-grun multiplier of around 1.9, while yet another[6] reports multipliers in the range 1.5 to 2. The short- and long-run multipliers obtained with RHOMOLO (around 1.3 at the end of the implementation period and 3.0 30 years after the start of the programmes) are in the middle of the range of these estimates.

The second methodological strand in assessing multipliers is built on macro-economic models such as dynamic stochastic general equilibrium models or new-Keynesian models. Using QUEST[7], a 2011 study[8] estimates cumulative multipliers for the EU Member States that were the main beneficiaries of the 2000–2006 programmes ranging from 0.44 to 1.49 at the end of the implementation period and from 1.96 and 6.13 15 years after the start of the programmes. Using the same model, the same authors report[9] values of the cumulative multiplier of around 2.6 for the 2007–2013 period 10 years after the end of the programmes' implementation for the 11 Member States that had recently joined the EU, while a 2017 study[10] finds cumulative multipliers of 0.8 at the end of the implementation period and 2.7 10 years after the programmes' end. These estimates are close to those obtained with RHOMOLO[11].

Even though estimates of the multiplier associated with Cohesion Policy vary from one study to another, depending of the scope of the analysis and on the methodological approach, they generally point to significant and long-lasting effects on GDP in particular and economic performance in general.

1 Canova and Pappa (2022).

2 Durand and Espinoza (2021).

3 Coelho (2019).

4 Destefanis and Di Giacinto (2023).

5 Brueckner et al. (2023).

6 Duque Gabriel et al. (2030).

7 QUEST is a micro-based dynamic general equilibrium model used by DG ECOFIN for economic policy analysis.

8 Varga and in 't Veld (2011a).

9 Varga and in 't Veld (2011b).

10 Monfort et al. (2017).

11 The value of the cumulative multiplier for 2040, i.e. 10 years after the end of the implementation period, is estimated at 2.6.

up over time, especially when the two programming periods overlap between 2021 and 2023. The impact is the greatest in 2030, when GDP in the EU is estimated to be 0.9 % higher as a result of the combination of the 2014–2020 and 2021–2027 interventions[36]. The cumulative impact of these programmes is particularly significant in less developed Member States and especially in Croatia (an increase of 8 % in GDP), Poland and Slovakia (an increase of 6 %) and Lithuania (a 5 % increase).

In the short run, a substantial part of the impact stems from the increase in demand, which is assumed to be partly crowded out through increases in wages and prices. In the medium and long run, productivity-enhancing effects of Cohesion Policy investment as well as increases in the stock of public and private capital materialise, so boosting both current and future GDP as production capacity is increased. The policy-induced increases in potential output leave room for increases in GDP free of inflationary pressures from 2031 onwards. The interventions therefore continue to stimulate economic activity long after the interventions come to an end, as would be expected from a policy aimed at strengthening EU regional economies.

The policy yields a positive return at EU level. The cumulative multiplier, i.e. the ratio of cumulative changes in GDP to the amount of expenditure, is estimated at 1.29 in 2030 and 2.97 in 2043. This means that 30 years after the start of the programmes, for each 1 EUR invested under Cohesion Policy, EU GDP is increased by almost EUR 3, which is equivalent to an annual rate of return of around 4 %.

These results are consistent with the literature on the impact and the effectiveness of public policies and spending. The vast majority of the studies concerned rely on econometrics and provide estimates of impact multipliers, i.e. the ratio of the change in GDP to a change in government spending in the periods directly following the one in which the spending takes place. Most of them, however, do not go beyond a time horizon of more than four years, whereas model-based analysis can investigate the long-term, lasting effects. Most studies, therefore, provide estimates of cumulative multipliers calculated at a given, relatively short, time after the policy shock, which can be considered to be a short-run estimate of the multiplier, while models can also estimate the long-run multiplier over an infinite time horizon[37] (see Box 9.7 for a review of recent studies).

8.4 Impact at regional level

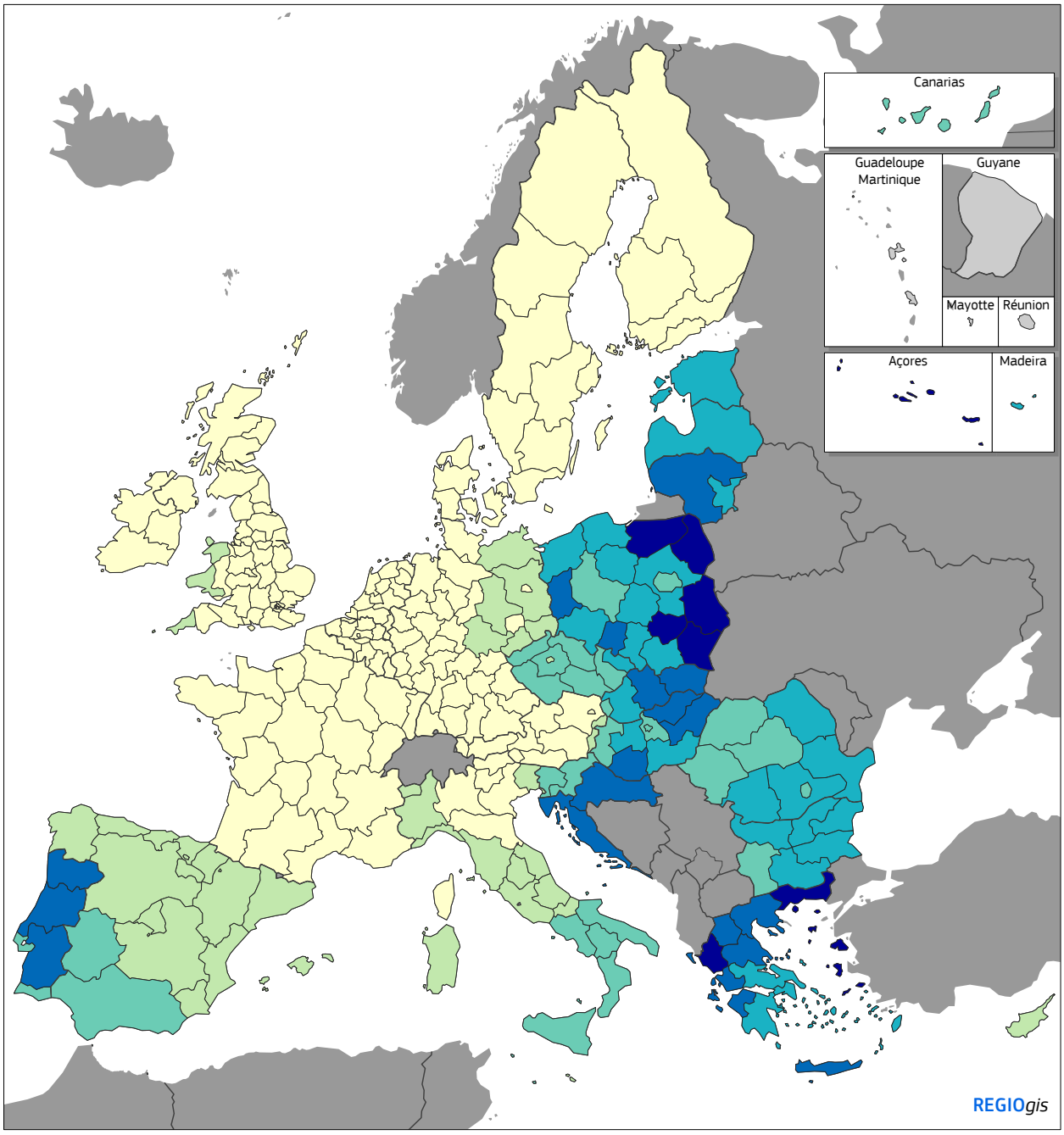
Cohesion Policy is a place-based policy aimed at fostering convergence, with both the amount and composition of expenditure it finances differing between regions according to their characteristics, notably their level of development and their economic and social circumstances. As a consequence, the impact on GDP is heterogeneous across regions. Maps 9.1 and 9.2 show the effect of Cohesion Policy on GDP in EU regions in 2023 – the last year for which the two programming periods overlap – as the percentage difference from the baseline. The impact increases over time in all regions up to 2030. In both 2023 and 2030, the largest increases occur in less developed regions, such as those in Bulgaria, Greece, Hungary, Portugal, Poland and Slovakia. The increase is particularly large in Voreio Aigaio in Greece (12.7 % in 2030), the Portuguese Açores (12.0 %), and Swietokrzyskie (117 %) and Warminsko-Mazurskie (103 %) in Poland. There are also significant differences between regions in the same country. For example, in Poland the increase in GDP ranges from 3.8 % to 11.7 %, and in Hungary from 2.2 % to 8.0 %.

In the more developed regions, the short-run impact of the Policy is smaller and more difficult to estimate[38]. However, in the medium to long run, the differences in the impact on GDP between regions diminishes and it is positive in all regions. This is partly because of the strong positive spatial spill-over effects generated by the policy, which stem mostly from the fact that the main beneficiaries are often small, open economies with

36 The long-term cumulative impact on GDP is positive for both the EU as a whole and for all Member States.

37 See, for instance: Tesfaselassie (2013); or Ilzetzki et al. (2011).

38 As noted above, it is assumed that regions finance the policy proportionally to their share of EU GDP.



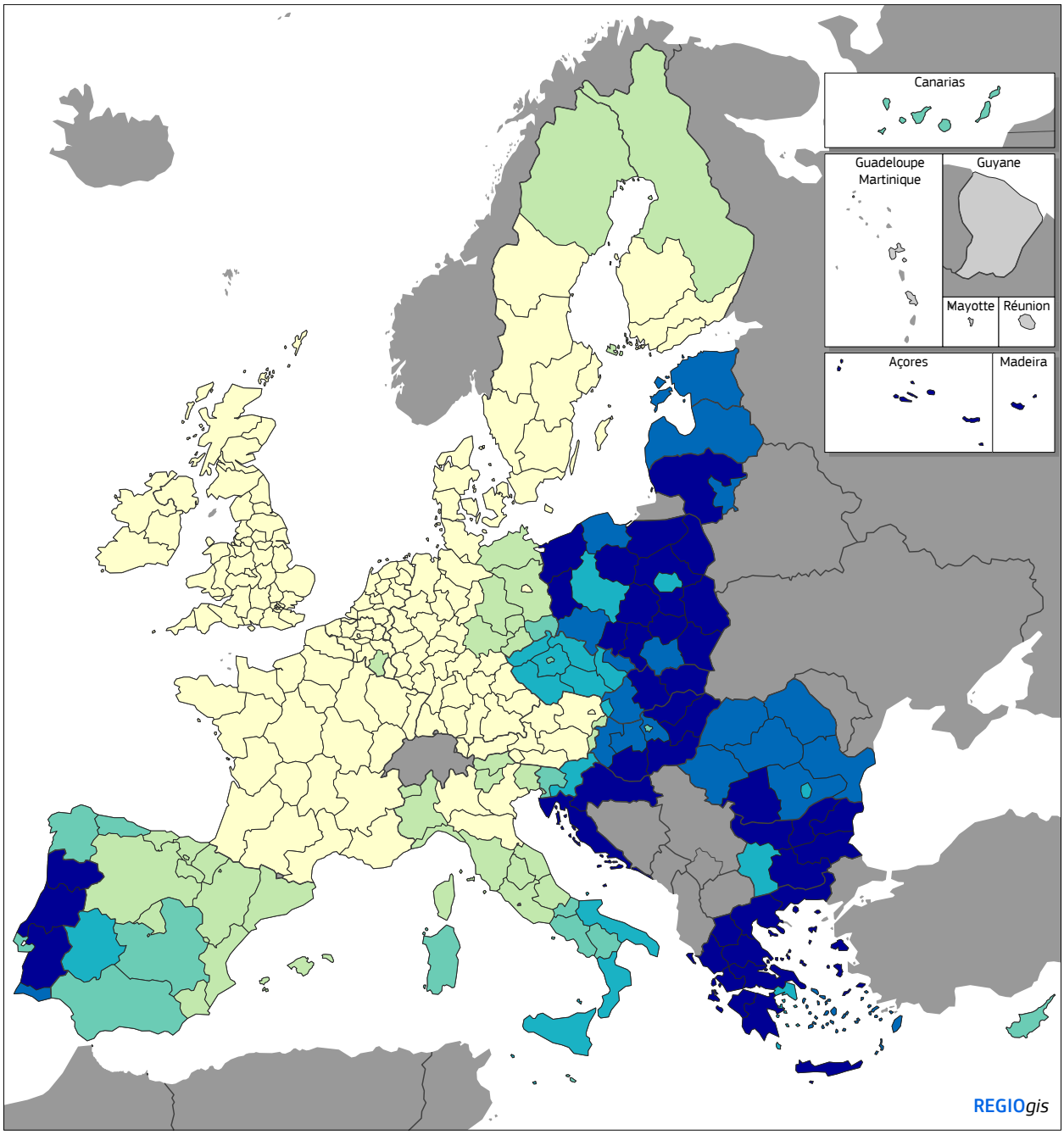
Map 9.1 Impact of Cohesion Policy programmes 2014–2020 and 2021–2027 on GDP in NUTS 2 regions, 2023 (% increase relative to the baseline)

% above baseline

- <= 0.5
- 0.5 – 1.5
- 1.5 – 3.0
- 3.0 – 4.5
- 4.5 – 6.0
- > 6.0
- no data

Source: RHOMOLO.

0 500 km



Map 9.2 Impact of Cohesion Policy programmes 2014–2020 and 2021–2027 on GDP in NUTS 2 regions, 2030 (% increase relative to the baseline)

% above baseline

- <= 0.5
- 0.5 – 1.5
- 1.5 – 3.0
- 3.0 – 4.5
- 4.5 – 6.0
- > 6.0
- no data

Source: RHOMOLO.

0 500 km

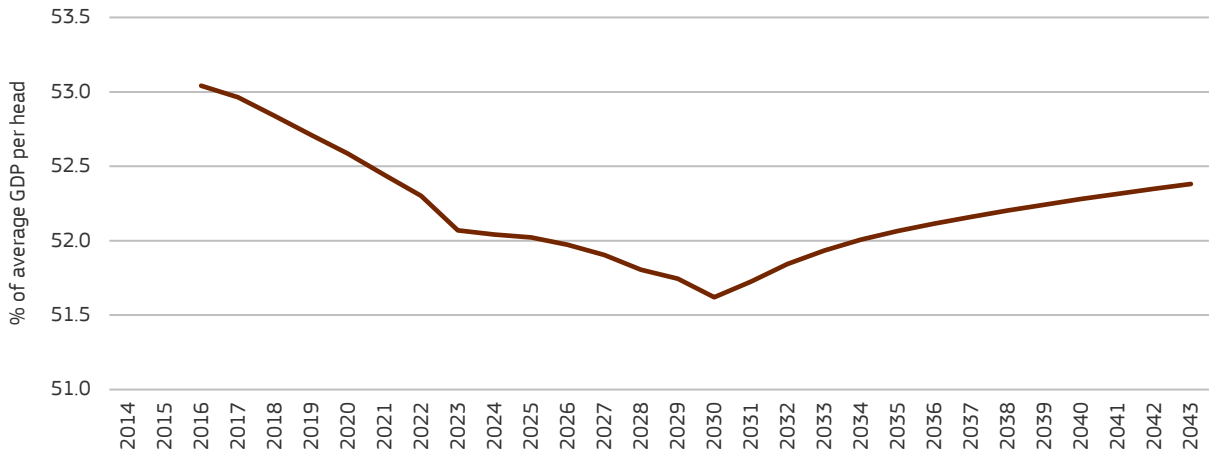
narrow industrial bases and limited R&D capacity. Many goods or services needed for the implementation of Cohesion Policy programmes are, therefore, not produced domestically and so need to be imported, to a large extent, from more developed regions[39].

8.5 Impact on regional disparities

Cohesion Policy helps to reduce regional disparities significantly. The coefficient of variation, which measures the extent of regional disparities in GDP per head, is estimated to decline by around 3 % 10 years after the beginning of the 2021–2027 programming period (Figure 9.7). It increases after that as the supply-side effects of the interventions diminish. The same pattern is observed in other measures of dispersion such as the ratio of the 80th to the 20th percentile of the distribution of regional GDP per head (the top 20 % and bottom 20 % of regions in these terms). However they are measured, regional disparities are estimated to be much lower than without Cohesion Policy for many years to come even if the policy were to come to an end.

Cohesion Policy also helps to increase internal convergence and reduce regional disparities within Member States. The extent of regional disparities (again as measured by the coefficient of variation) is estimated to decline in all Member States as a result of policy interventions (Figure 9.8). In Hungary, it is reduced by 2.5 pp compared with a situation without Cohesion Policy, and by around 2.0 pp in Portugal and Poland.

Figure 9.7 Impact of Cohesion Policy programmes 2014–2020 and 2021–2027 on the coefficient of variation in GDP per head in EU NUTS 2 region, 2014-2043



Source: RHOMOLO simulations.

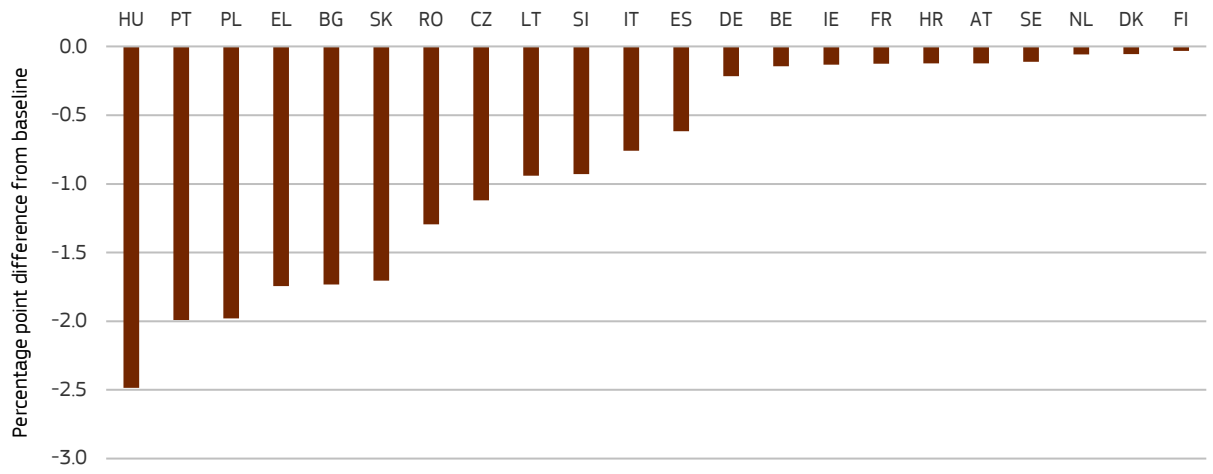
Table 9.3 Impact of Cohesion Policy programmes 2014–2020 and 2021–2027 on GDP per head in NUTS 2 regions according to the Theil index

	2017 Theil index	Change in 2023	Change in 2030	Change in 2043
Within	0.03	-3.52 %	-5.36 %	-2.61 %
Between	0.11	-5.34 %	-7.89 %	-3.98 %
Overall	0.14	-4.95 %	-7.35 %	-3.69 %

Note: Only Member States with more than four NUTS 2 regions are included to enable the Theil index to be calculated.
Source: RHOMOLO simulations.

39 See: Crucitti et al. (2023a).

Figure 9.8 Impact of Cohesion Policy programmes 2014–2020 and 2021–2027 on the coefficient of variation, GDP per head in 2030, NUTS 2 regions



Source: RHOMOLO simulations.

The impact of the policy on regional disparities is confirmed by changes in the Theil index, another measure of dispersion, which enables between-country and within-country differences to be distinguished[40], which is estimated to decline by over 7 % by 2030 (Table 9.3). Both the 'between' and the 'within-country' components of the index decline, implying that disparities in GDP per head in regions within Member States are reduced (by 5.4 %), as well as disparities between Member States (by 7.9 %).

8.6 Some considerations

The analysis suggests that Cohesion Policy has significant positive effects on the EU economy and those of the Member States and regions. The magnitude of the impact is particularly large in the less developed regions of the EU, but more developed regions also benefit from the policy, especially in the long run. This, to some extent, is explained by the strong spatial spill-over effects generated by the policy, as interventions implemented in the less developed regions also benefit more developed ones. This is notably the case in more developed regions with strong trade links with less developed ones or those with companies with a strong competitive advantage in sectors that benefit from Cohesion Policy investment, whether directly or indirectly.

Research suggests that investing in the less developed regions tends to reduce regional disparities within countries while at the same time boosting national growth (see Box 9.8 for a review of the literature on this).

The evidence is that Cohesion Policy plays an important role in reducing regional disparities in the EU in line with its mandate. It helps the less developed regions to catch up with the more developed ones, while fostering aggregate growth at EU level and in all Member States.

40 The index enables the extent of regional disparities across the EU to be decomposed into those that arise from disparities between Member States and those that arise from disparities within them.

Box 9.8 Where do we need to invest to support the least developed regions?

It is sometimes argued that the support provided to less developed regions under Cohesion Policy comes at the expense of economic performance at the national or EU level since it implies that, without it, investment could have been higher in more developed areas. The empirical evidence on this is mixed. Examining the economic impact of Cohesion Policy in Bulgaria and Romania, two studies[1] find that, for certain categories of investment, the returns tend to be higher if the investment takes place in the most developed capital city regions than if it occurs in other regions. However, the evidence varies depending on the type of investment and the spill-overs it generates. For instance, support for non-transport infrastructure and business investment yields the highest returns when implemented in less developed regions, notably because of the spill-overs to the rest of the country. In such cases, investments in less developed regions both reduce intra-country disparities and have the largest impact on national GDP.

A forthcoming 2024 study[2] uses a dynamic spatial general equilibrium model to analyse the issue in Bulgaria, Czechia, Greece, Spain, Hungary, Italy, Poland, Portugal and Romania. The results indicate that both country characteristics and types of investment determine whether cohesion and growth go hand-in-hand or not. While investments in more developed regions generally yield higher returns, they also generate very few spill-over effects. These are much larger for certain types of investment when implemented in less developed regions, leading in some cases to a larger national impact.

The results also suggest that the growth trickling down from investments in more developed regions to less developed ones is limited, which implies that, in order to reduce regional disparities, investments need to take place in the less developed regions. This is particularly relevant in central and eastern Member States where capital cities have grown much faster than the national average over the past 20 years. Cohesion Policy can and does help the other regions keep pace with capital city ones.

1 Crucitti et al. (2021, 2022).

2 Barbero et al. (2024).

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