EUROPEAN
COMMISSION

Brussels, 27.3.2024
SWD(2024) 79 final

PART 12/23

COMMISSION STAFF WORKING DOCUMENT
Accompanying the document

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 final}

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 popu- lations 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 emis- sions 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 east- ern 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

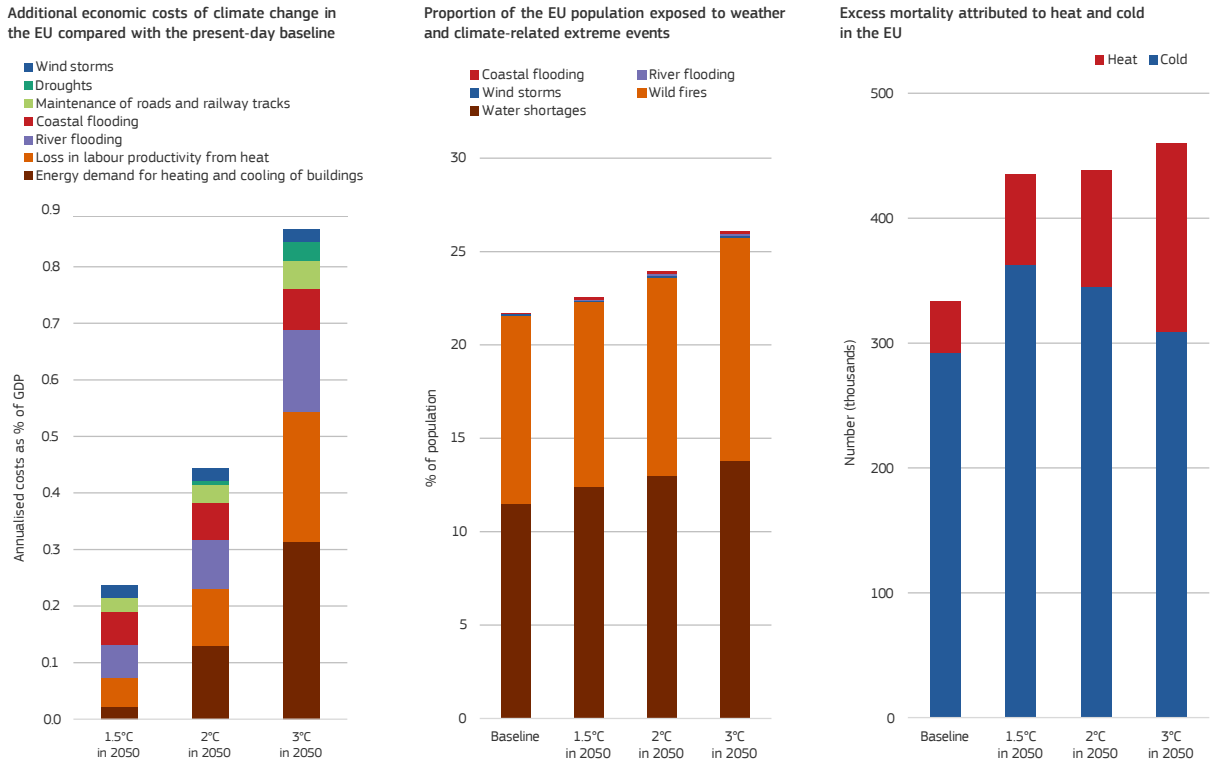
Sector	Description of the climate effects
Coastal flooding	Coastal Europe faces rising sea levels and more intense storms, increasing economic losses and population exposure. Inadequate flood protection may amplify the damage, varying with coastal features and wealth distribution. Urbanisation exacerbates 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.

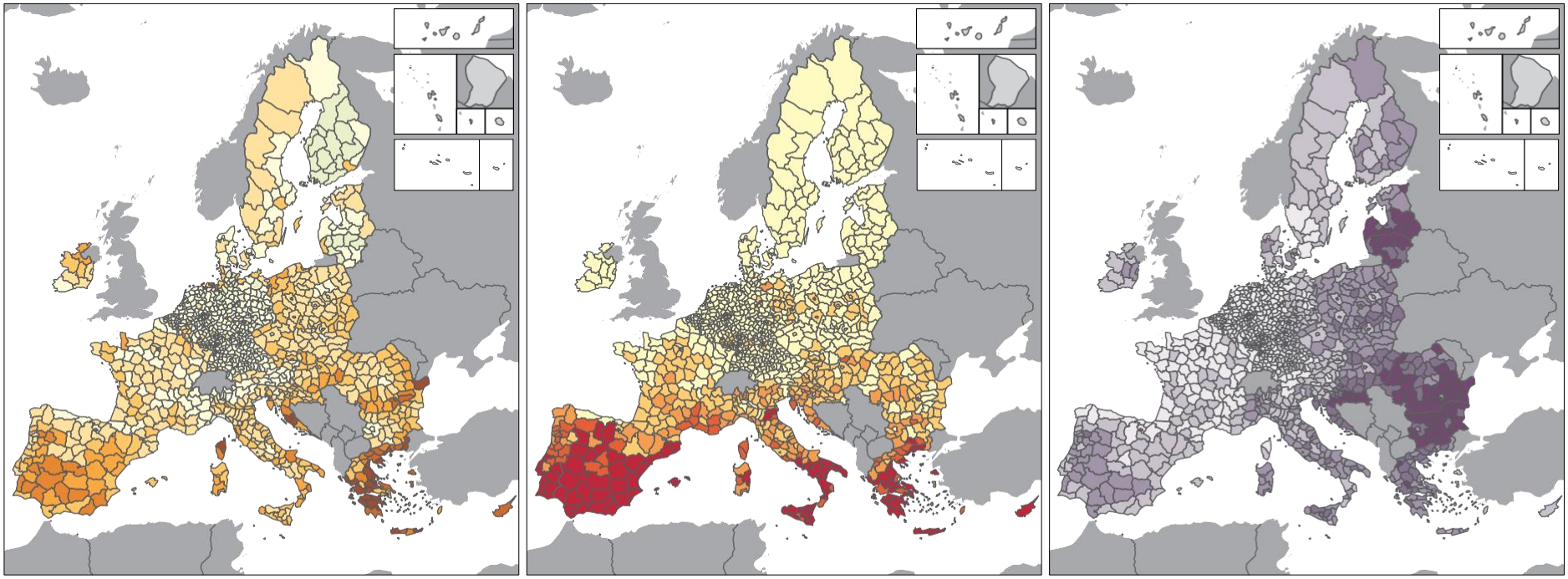
Heat and cold are recognised environmental risk factors for human health. The current excess mortality from cold and heat in the EU amounts to 334 000 people, with the majority dying from the cold. Overall mortality is projected to increase to 438 000, with a larger proportion dying from heat than at 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.

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.

0 1 000 km

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

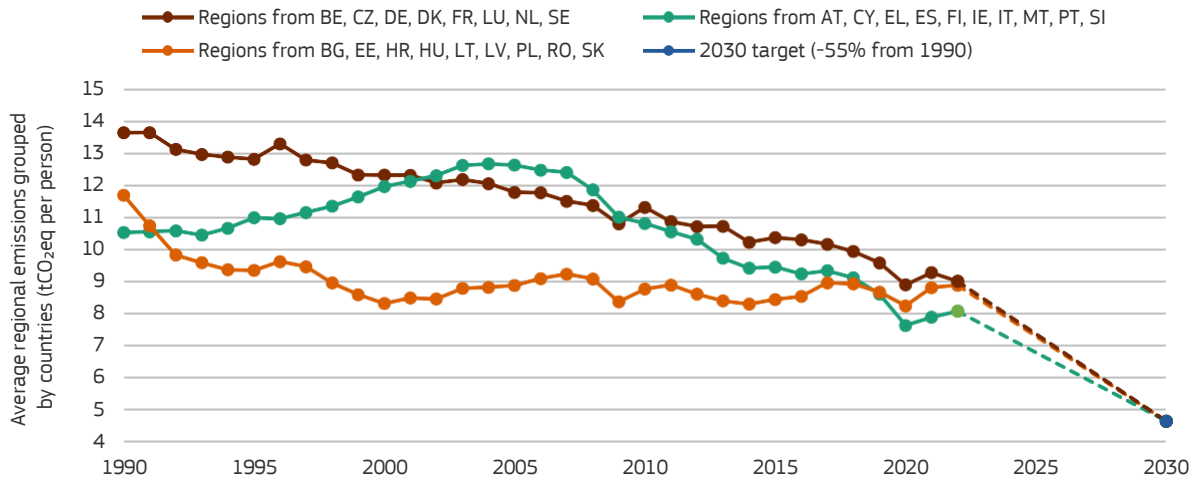
8 International Bank for Reconstruction and Development / World Bank (2021).

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 %.

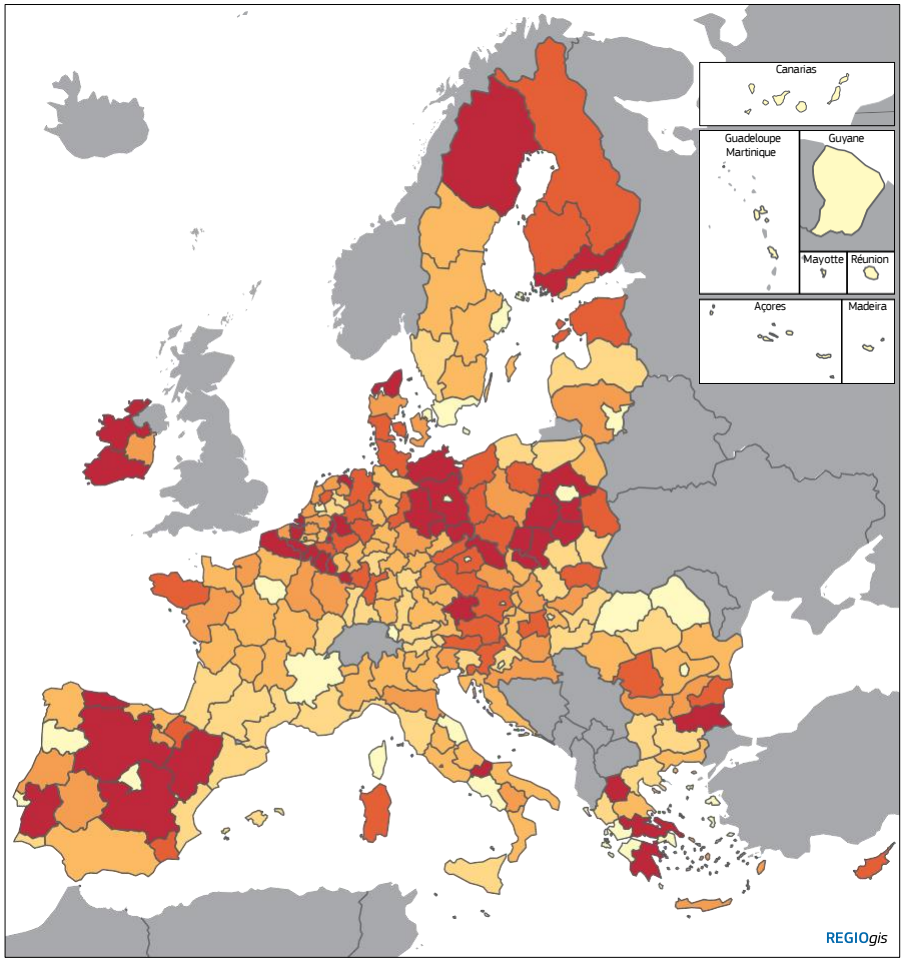
The challenges that regions face to reduce emissions differ (Map 4.3, which uses a different colour for the sector contributing most to total GHG emissions in 2022, indicates some of these). Agriculture contributed most to GHG emissions in the Irish and Danish regions. Transport was the most important 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).



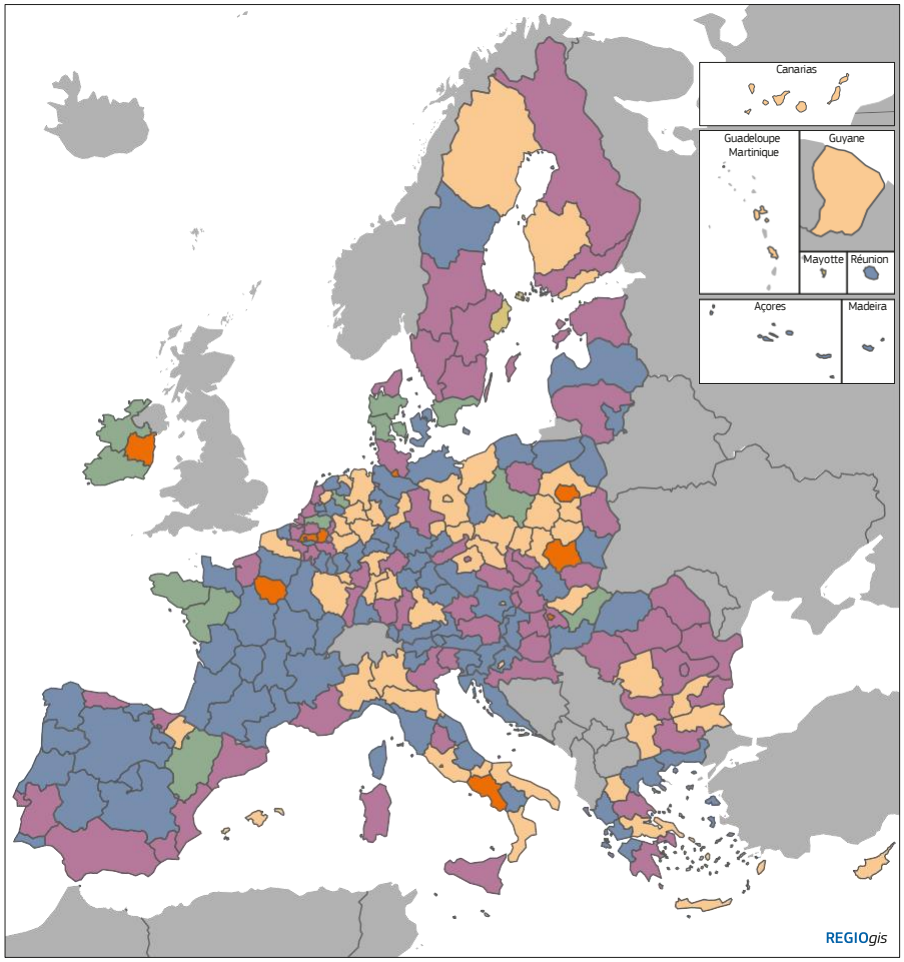
Map 4.2 Greenhouse gas emissions per person by NUTS 2 region, 2022

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

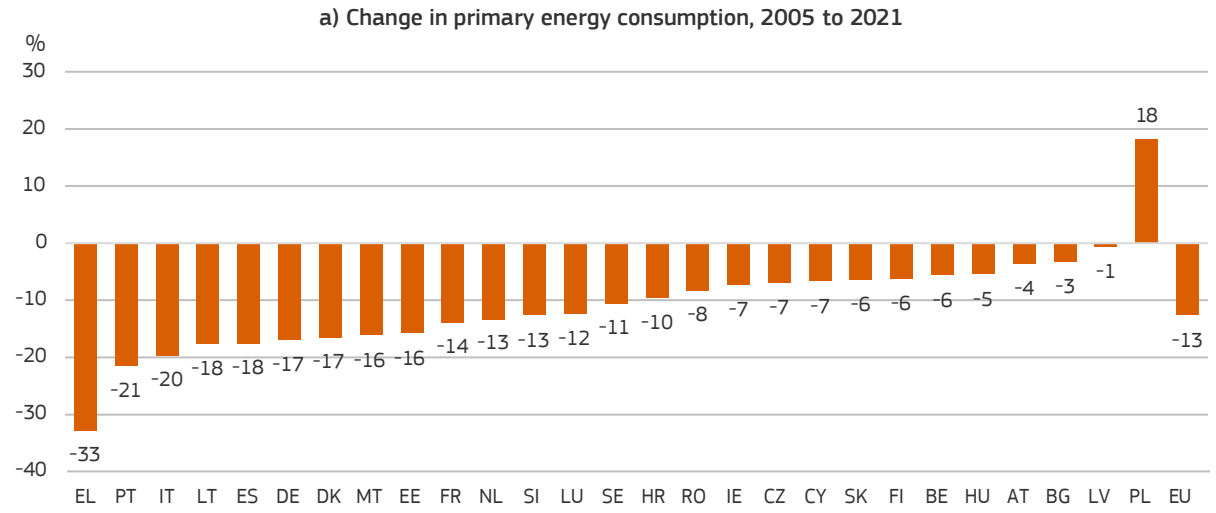
Sector

- agriculture
- buildings
- energy
- industry
- transport
- waste

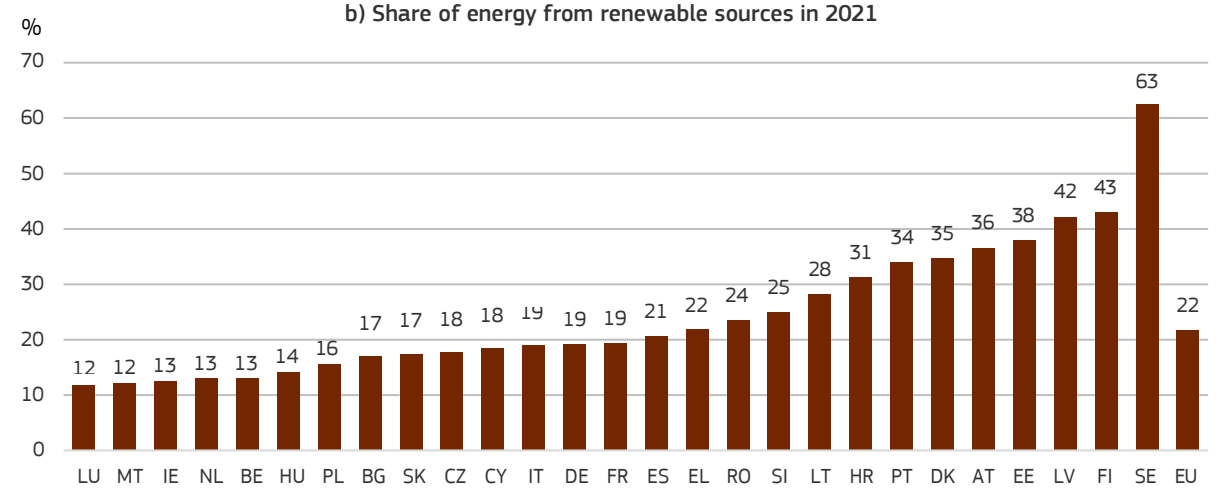
This map uses a different colour to show the sector that contributes most to greenhouse gas emissions in each region in 2022.
Source: JRC-EDGAR.

0 500 km

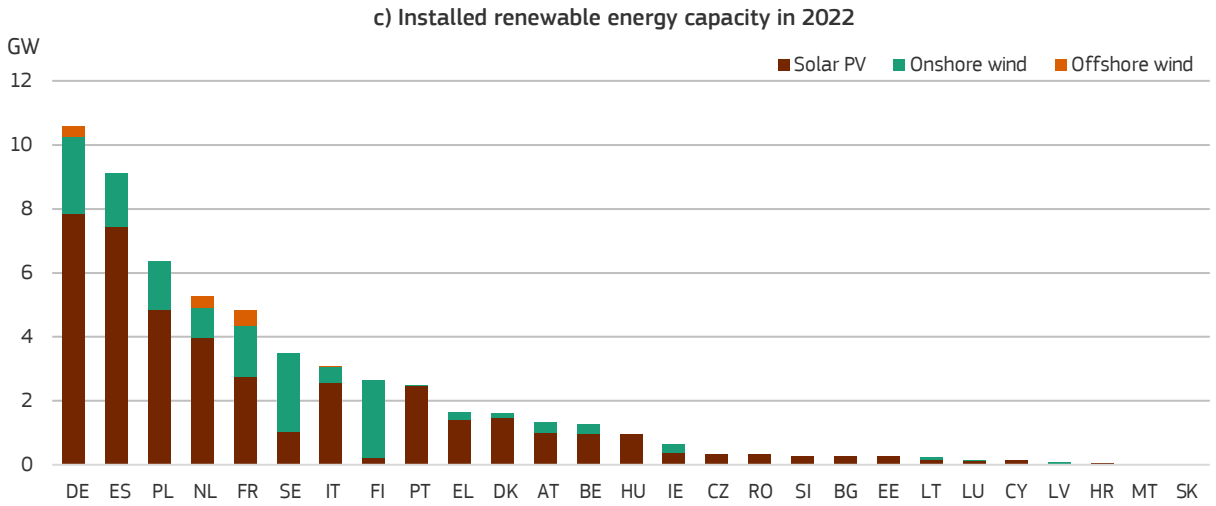
Figure 4.3 Energy statistics by country



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].

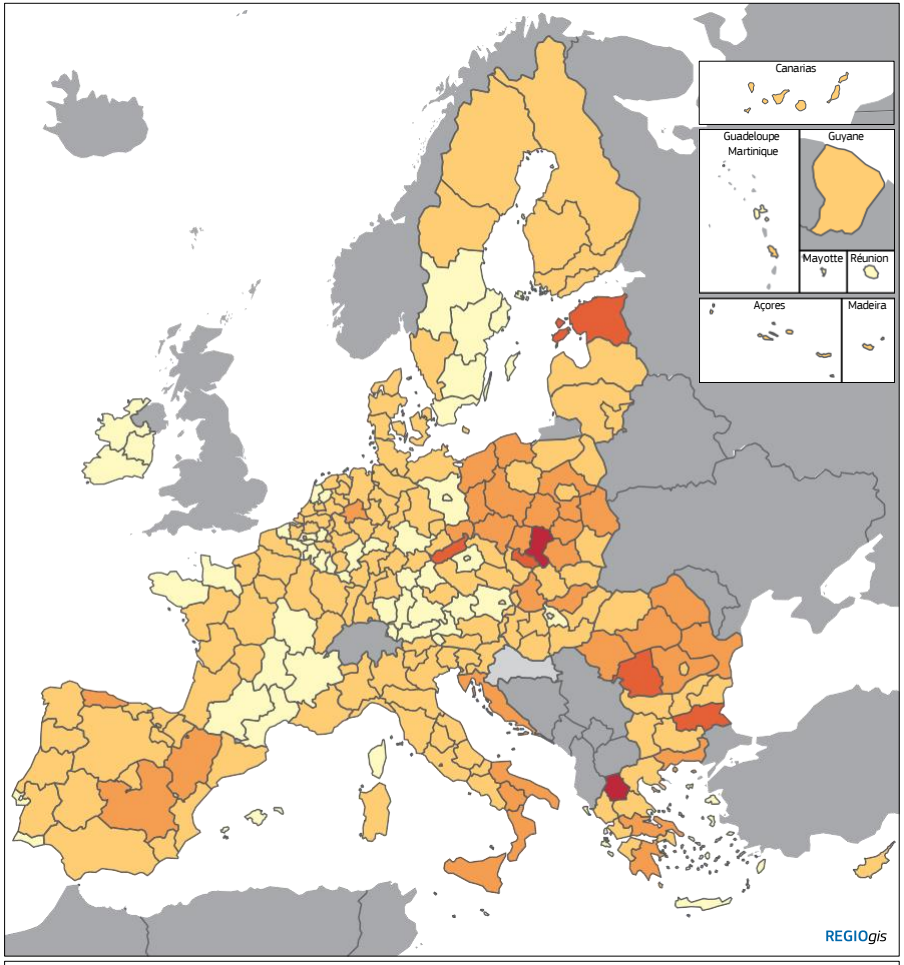
In 2023, solar, wind and hydro power installed in the EU together produced 972 terawatt hours (TWh) of electricity. But this represents only a fraction of the technically available potential, estimated at 12 485 TWh a year, divided between solar PV (88 %), onshore wind (11 %) and hydro power (1 %). The 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).

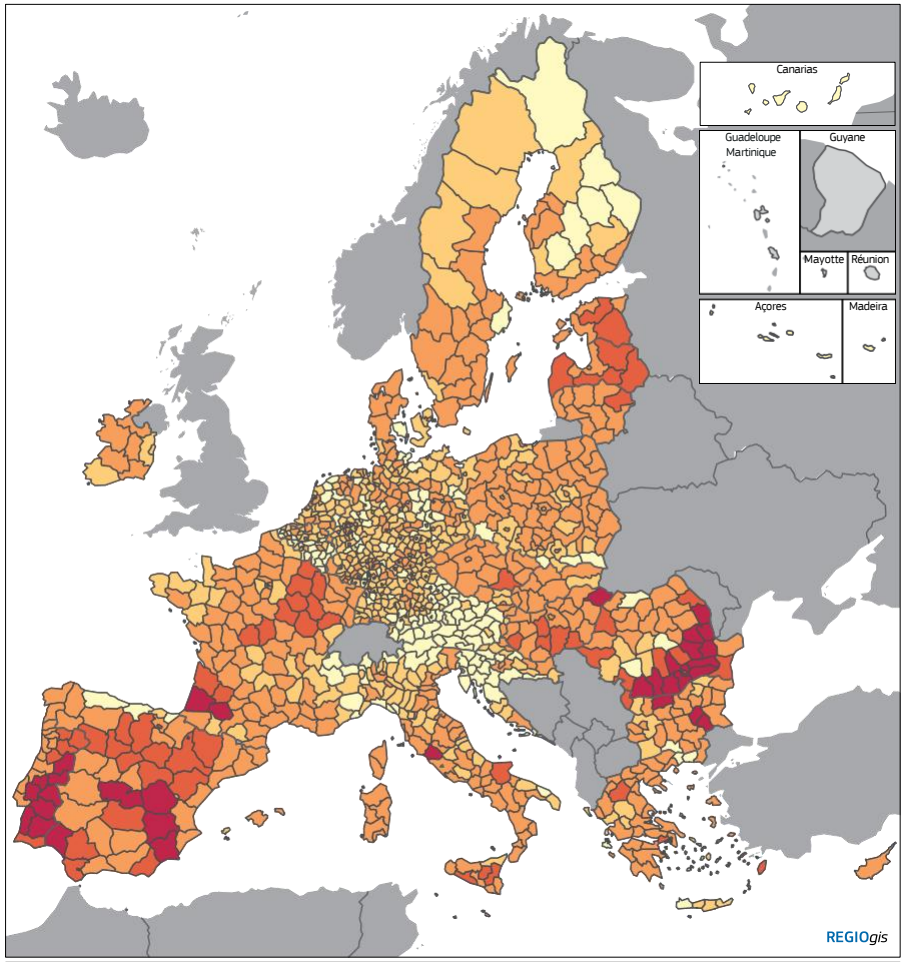


Map 4.4 Socio-economic risks associated with the green transition by NUTS 2 region

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/km²/year
- <= 500
- 500 – 1000
- 1000 – 5000
- 5000 – 10000
- > 10000
- no data

Potential annual production per unit area.
Source: JRC.

0 500 km