



Evidence and indicators in practical strategy & policy implementation

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Executive summary

This report examines the extent to which different policies concerning rural areas address the three transitions explored in the RUSTIK project. It also investigates how evidence, data, and indicators are utilised in the formulation, monitoring, and evaluation of these policies. Research tasks focus on the 2021-2027 Multi-annual Financial Framework. The objective is to determine whether and what types of data are employed to establish the intervention logic of strategies, policies, and programmes related to rural transitions. The analysis is conducted at two levels: (1) the use of indicators/data at selected EU-level policies, and (2) how these EU-level policies and their accompanying indicators are translated at the national level in the countries of the RUSTIK Pilot Regions.

Policies relevant to rural areas aim to respond to socio-economic transition, environmental transition, and digital transition. The Common Agricultural Policy (CAP) and the Long-term vision for Rural Areas both address these transitions, recognizing the role of rural areas in achieving sustainability goals, such as the EU's Green Deal and Farm to Fork targets. Data and indicators are used in these policies. The European Commission collects and analyses data related to agriculture, environmental issues, climate change, social aspects, and economic factors. Administrative data, market prices, farm accountancy data, agricultural surveys, and data from agricultural censuses and samples are some of the sources used.

The European Green Deal (EGD) is a strategy initiated by the European Commission in 2019 with the aim of making the European Union (EU) climate-neutral by 2050. The EGD is not solely focused on climate but also addresses other policy areas relevant to the transition, such as the digital transition and the socio-economic transition. It seeks to promote economic recovery from the COVID-19 pandemic through investments in innovation and clean technologies. Additionally, it aims to create new job opportunities in green sectors and support regions and industries affected by the climate transition through the Just Transition Fund.

To monitor the progress of the EGD, various mechanisms and policies are in place. The Energy Efficiency Directive and the Renewable Energy Directive are two key policy monitoring efforts. The Energy Efficiency Directive promotes energy savings and the consideration of energy efficiency measures in infrastructure projects. The Renewable Energy Directive focuses on reporting obligations for renewable energy shares in each Member State.

The 8th Environment Action Programme (EAP) is another important component of the EGD, which sets long-term objectives and establishes a monitoring framework based on a limited number of headline indicators. Monitoring the EGD presents challenges due to its long-term targets, justice and fairness considerations, and the need for social change. Capturing progress and impacts requires a wide range of indicators and qualitative evidence.

Cohesion Policy is a key policy of the European Union aimed at reducing regional disparities and promoting economic, social, and territorial cohesion. In funding allocation, indicators such as gross domestic product (GDP) per capita, unemployment rates, population density, education levels, greenhouse gas emissions, and migration are used to determine the regions that require





financial support. These indicators reflect regional prosperity, socio-economic factors, and environmental challenges. GDP per capita is the main indicator used to assess economic cohesion, while indicators related to income inequality, poverty, access to services, and employment rates are used to measure social cohesion.

The use of indicators in Cohesion Policy has evolved over time. There has been an evolving shift in the strategic logic from top-down and redistributive approaches to a more place-based approach, which emphasizes the specific needs and strengths of different territories. This change has led to an increased focus on obtaining data at different territorial levels and using alternative data sources, such as open data, big data, and environmental data, to supplement national statistical data. Public perceptions of Cohesion Policy and indicators of citizens' confidence and trust in the policy have also gained importance.

The Just Transition Mechanism (JTM) is part of the European Green Deal and aims to mitigate the adverse socio-economic effects of the climate transition by supporting the most affected territories and workers. It consists of three pillars: a Just Transition Fund (JTF), a Just Transition Scheme under InvestEU, and a public sector loan facility. The funding allocation of the JTF is based on indicators such as carbon-intensive jobs, fossil fuel industrial activity, and GDP per capita, which helps to assess regional and sectoral dependence on fossil fuels and their capacity to finance the necessary transition investments. The implementation of the JTF is based on Member States' Just Transition Fund programmes, which are prepared as part of Cohesion Policy programming. The programmes focus on actions that alleviate the impact of the transition on employment, finance diversification and modernisation of the local economy, and support vulnerable communities.

Regarding policies addressing demographic developments, the European Commission monitors the EU demographic situation and collects statistical data on population change and net migration. The data is used to inform EU policies, including Cohesion Policy and Rural Development Policy, as well as sectoral initiatives. Various reports and analyses have highlighted the interlinkages of demographic change with economic activity, welfare, skills, infrastructure needs, and territorial inequalities. This understanding has led to the development of policies and initiatives that support Member States in addressing demographic challenges.

In terms of digitalization policies for rural areas, the EU has implemented several initiatives to support digital transition. These include the Long-term Vision for Rural Areas, the Digital Declaration, the Digital Age & Strategy for Data, and the Common Agricultural Policy post-2020. These policies aim to strengthen broadband connectivity, develop digital skills, provide advisory services, facilitate investments, promote research and innovation, and enable data sharing. The European Commission monitors digital progress through the Digital Economy and Society Index (DESI), which tracks Member States' performance across various dimensions of digitalization. However, there are challenges in gathering timely and accurate data, especially at the sub-national level and in rural areas, which can hinder the measurement and analysis of the rural digital divide.

EU addresses socio-economic, environmental, and digital transitions in rural areas also through the Digital Europe Programme, including bridging the urban-rural digital divide and supporting rural sustainability. Indicators used include official EU statistics and ICT surveys as context





indicators for monitoring implementation and progress in digital transformation. Data/indicators used include official EU statistics and ICT surveys as context indicators for monitoring implementation and progress in digital transformation. The rationales of using data and indicators in transition-related policies are to track progress, inform decision-making, and ensure effective implementation of the Digital Europe Programme's objectives. Challenges include resource allocation, territorial targeting, and cybersecurity concerns, while trends include data-driven policy-making and the need for robust data protection measures in policy-making processes.

The socio-economic, climate change and environmental, and digital transitions are considered important in national rural policies, but the emphasis varies across countries. The national CAP Strategic Plans of countries like Italy, Finland, Poland, and Slovenia, for example, align with EU Green Deal strategies and incorporate measures to promote sustainability and environmental practices. Similarly, Serbia's rural policies are influenced by the EU's Common Agricultural Policy (CAP), while the United Kingdom's policies, such as the Agriculture Act and Rural England Prosperity Fund, address various aspects of the transitions, with a focus on socio-economic and climate-environmental challenges.

The EU-level policies related to climate change and environmental transition are mentioned in the national-level policies, strategies, and programs of EU countries. These include the European Green Deal, Energy Union, EU biodiversity strategy, EU Energy Policy, EU Common Agricultural Policy, and various EU funds. The national documents also refer to EU directives, regulations, and international agreements such as the European Climate Law, Paris Agreement, and Kyoto Protocol. In Serbia and the UK, there are references to EU policies in the context of waste management and environmental regulation.

The EU-level policies related to the socio-economic transition are prominently present in national-level policies, strategies, and programs across several EU countries. The analysed policies often refer to EU policies such as the European Green Deal and the European Digital Strategy. While all three main transitions (socio-economic, climate-environmental, and digital) are acknowledged, there is a particular emphasis on the socio-economic transition. Countries like Bulgaria, Spain, Finland, Italy, and Poland emphasise rural areas and address issues such as ageing, depopulation, and territorial cohesion in their policies.

The EU-level policies are mentioned in the national-level digital policies and strategies of various countries. However, direct linkages between national and EU policies are challenging to identify, with only Spain explicitly highlighting alignment. The relevance of EU policies for rural areas varies among countries, with some countries having dedicated strategies or chapters for rural areas. Digital indicators are commonly used in digital strategies, while socio-economic indicators are also employed in some cases to assess the current state and challenges.





1. Introduction

1.1. Aim of the report

This report assesses if different policies - relevant to rural areas – address the three transitions investigated in the RUSTIK project and analyses whether and how evidence, data and indicators have supported the formulation, monitoring and evaluation of these policies, with a focus on the 2021-2027 multi-annual financial framework. The primary focus is on the actual – *explicit* - use of indicators in policy documents. The objective is to understand if and what type of data are used to build the intervention logic of strategies, policies and programmes related to the rural transitions. The analysis is performed at two geographical scales with the aim of understanding, first, how EU-level policies use indicators/data and, second, how these EU policies and the various types of indicators accompanying them are translated to national level in the countries where RUSTIK's Living Labs are located.

The data collected and analysed in this report will directly contribute and support activities in RUSTIK's Living Labs:

- The report analyses if current policies affecting rural areas are responsive to transition processes and if they are evidence based;
- The report provides understanding on the key types of data and indicators that these policies use in building a logic for intervention;
- The report's findings provide a basis for further analysis of data gaps and potentials to introduce new type of evidence in policy design to enhance the capacity of policies and local actions to respond to transitions.

1.2. Overall approach and methodology

The report analyses structural, environmental, digital and rural policies, strategies and programmes (referred further collectively as measures) that relate to the transitions defined by the RUSTIK Deliverable 1.1, namely the socio-economic/demographic, environmental and digital transitions. The focus is on the 2021-27 period, however, in some cases, a broader time period is covered striving to capture evolving trends prior 2021 (particularly at the EU level). The selection of measures was made as follows. First, a screening of multiple EU policies/strategies/programmes in the field of rural development, climate and sustainability, economic development and structural change, and digitalisation was carried out. Second, the relevance of these EU measures was assessed in relation to the transitions defined in RUSTIK and to rural areas. As a result of this exercise, the final selection of EU policies/strategies/programmes was made, ensuring a sufficient range of policy domains whose objectives and rationale relate to one or several of the three RUSTIK transitions. The selected policies/strategies/programmes have been grouped thematically based on their main focus as follows – (1) rural, (2) socio-economic and demographic, (3) climate and (4) digital. This classification was developed to ensure that the analysis covers all relevant policy domains, which are often interlinked.

In terms of the selection of types of indicators, choice has been made to use as a main source the EU's Eight Cohesion Report on Economic, Social and Territorial Cohesion (2021), representing the most recent assessment by the European Commission of socio-economic, demographic,





environmental, transport, governance and digitalisation developments in European regions and territories.

This decision was grounded on the similarity between the above-mentioned scope of the report and the transitions in RUSTIK project, as well as on the fact that this report is territorially sensitive and informs a wide variety of EU policies, not least EU Cohesion policy.

The selection of EU-level measures set the basis for the selection of national and regional-level measures. The report thus covers those national measures that stem directly from the selected EU-level ones. Only in the case of the digital domain, this methodology has not been followed as there is no requirement for Member States to transpose the EU framework to the national level.

The national level analysis was carried out in April-May 2023. As part of it, Living Lab coordinators received structured guidelines for the drafting of a summary report and completion of Excel files to carry out this analysis in their respective countries. Analysis consisted of the following steps. First, selected national-level strategies/policies/programmes derived from the EU-level (see section 3) were analysed in eight EU countries (Bulgaria, Spain, Finland, Slovenia, Germany, Italy, Poland, and Austria) and two non-EU countries (UK and Serbia). The aim was to identify if and which of the identified EU measures are translated into the rural, environmental, socio-economic and digital strategies/policies/programmes at the national level. Second, the objective was to understand to what degree they contain perspectives on rural areas and the three main transitions (socio-economic & demographic, climate-environmental, and digital). Next, the description and operationalisation of indicators within these strategies/policies/programmes was analysed. The first step involved identifying indicators in these policies that matched or closely resembled those outlined in the 8th Cohesion Report. Subsequently, the operational use of these indicators within the policy documents was analysed. The usage of qualitative indicators in these policies was also investigated. Findings are reported in section 3 with examples extracted from the national summary reports and excel files.

The analysis aims to broadly respond to the following key questions:

1. Do strategies/policies/programmes relevant to rural areas aim to respond to socio-economic/demographic, environmental and digital transitions?
2. Are data/indicators used in these policies/strategies/programmes and what type of data/indicators?
3. What are the rationales/purposes in using data/evidence and indicators in transition-related policies/programmes or strategies?
4. What are the challenges and trends in the operational use of data/evidence and indicators in policy-making processes? (Question relevant only to the EU-level analysis)

The analysis is based on desk research of strategy/policy/programme documents and a limited number of interviews at the EU-level which aimed at taking stock of experiences and perceptions.





2. Background

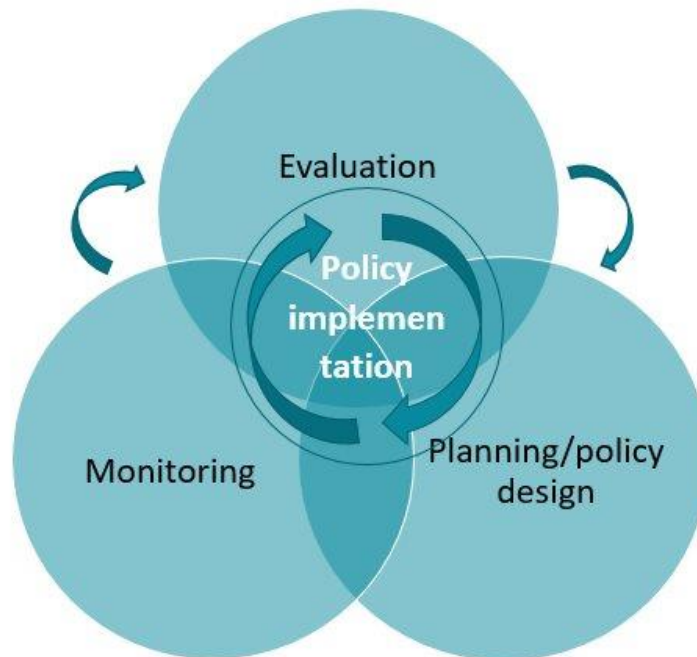
Indicators are developed and used by various stakeholders including researchers, interest groups, policy makers, evaluators. Indicators, and data more broadly, serve various purposes. In terms of policy making, which is the main interest of this report, they are used and may influence different parts of the policy-making cycle directly or indirectly (see Rinne, J., Lyytimäki, J., & Kautto, P. (2013)). Namely, during the phase of agenda setting and policy formulation, *data and indicators may be utilised by policy makers and involved stakeholders to identify problems or to set priorities*. Data and indicators are also used during policy implementation to *monitor results* or to trigger/facilitate policy re-formulation. Indicators are defined in policy documents to allow policy/programme evaluation once it has been completed to assess the accomplishment of targets, to feed to the next cycle, or to communicate results to a wider public. Frequent and reliable data are also relevant for *defining realistic targets in reference to strategic objectives and policy interventions*. The activities outlined above present opportunities for policy makers to directly engage with indicators and when this is the case, these indicators would normally be evident in the concerned policy/strategy/programme documents or accompanying material related to their strategic planning or implementation framework. However, indicators and data may also be used more indirectly (i.e. with no or limited evidence in official documents) to *create shared understanding*, especially on complex issues, during stages of discussions among policy practitioners, international organisations and interest groups, or in participatory processes with citizens and stakeholders where a *change in attitude* and new perspectives *in the long run might be sought*. Under this more indirect function of indicators, data may also be used to generate political pressure and raise awareness on an issue that deserves policy/political attention. At the supra-national level, indicators can be used, for example, for *international comparisons of specific area of performance* (e.g. environmental performance) or for thematic assessments. Finally, data may be used *only to legitimise policy/political decisions that have already been made* and to defend them in the face of opposition (Rinne, J., Lyytimäki, J., & Kautto, P. (2013)).

In the EU, the European Commission's Better Regulation Guidelines call for an evidence-based approach to policymaking. This means that policy decisions need to be based on the best available evidence (i.e. as defined by the Commission, this includes data, information and knowledge from multiple sources, covering quantitative and qualitative data). An evidence-based policy needs relevant data at every stage of the policy cycle (see **Figure 1**). The Commission has published several documents that emphasise the need to improve and maximise the use of data for better policymaking or increase the impact of data-sharing tools in the EU (e.g. Communication on data information and knowledge management at the Commission of 2016; European Commission Digital Strategy of 2018; European Strategy for Data of 2020; Commission proposal for Data Governance Act of 2020).





Figure 1: Data use in the policy cycle



Source: Adapted from ECA's Special Report and the European Commission's Better Regulation Guidelines

3. EU-level analysis

"Timely, reliable, detailed and comparable European statistics are needed to develop and implement policies and activities for the EU's benefit in the areas the EU has competence in"¹

Different EU-level policies, strategies and programmes support socio-economic/demographic, environmental and digital transitions in the rural areas of Europe. These policies, strategies and programmes are in many cases closely inter-linked. The aim of the EU-level analysis is to provide an overview of selected EU-level policies, strategies and programmes which address the key transitions set out in the RUSTIK project. This is not an exhaustive analysis, but rather a summary of the key transition-related policies, strategies and programmes, accompanied by a discussion on which transitions are addressed, and the rationale/purpose of using data/evidence and indicators in these policies, strategies and programmes,

3.1. Rural focus

3.1.1. The Common Agricultural Policy (CAP)

The Common Agricultural Policy (CAP) has provided the agricultural policy framework for the EU since it was launched in 1962. The policy has several (inter-related) objectives addressing

¹ Proposal for a Regulation on European statistics on population and housing, COM (2023) 31 final, 2023/0008(COD)





agricultural production and farmers, as well as environmental, climate and social issues (see **Table 1**). The European Commission is required to assess the performance of the CAP in relation to these general objectives (European Court of Auditors, 2022).

Table 1 - Objectives of CAP for 2014-20 and 2021-27

Period	Economic	Environmental	Social
2014-20*	Viable food production. Focus on agricultural income, productivity & price stability.	Sustainable management of natural resources & climate action. Focus on GHG emissions, biodiversity, soil & water.	Balanced territorial development. Focus on rural employment, growth & poverty in rural areas.
2021-27	Smart, competitive, resilient & diversified agricultural sector ensuring long-term food security.	Environmental protection, including biodiversity & climate action, and contribution to achieving the environmental & climate-related objectives of the EU.	Socio-economic fabric of rural areas.

Notes: (*) 2014-20 period run until 2022 due to delays with the adoption of the CAP (2023-27)

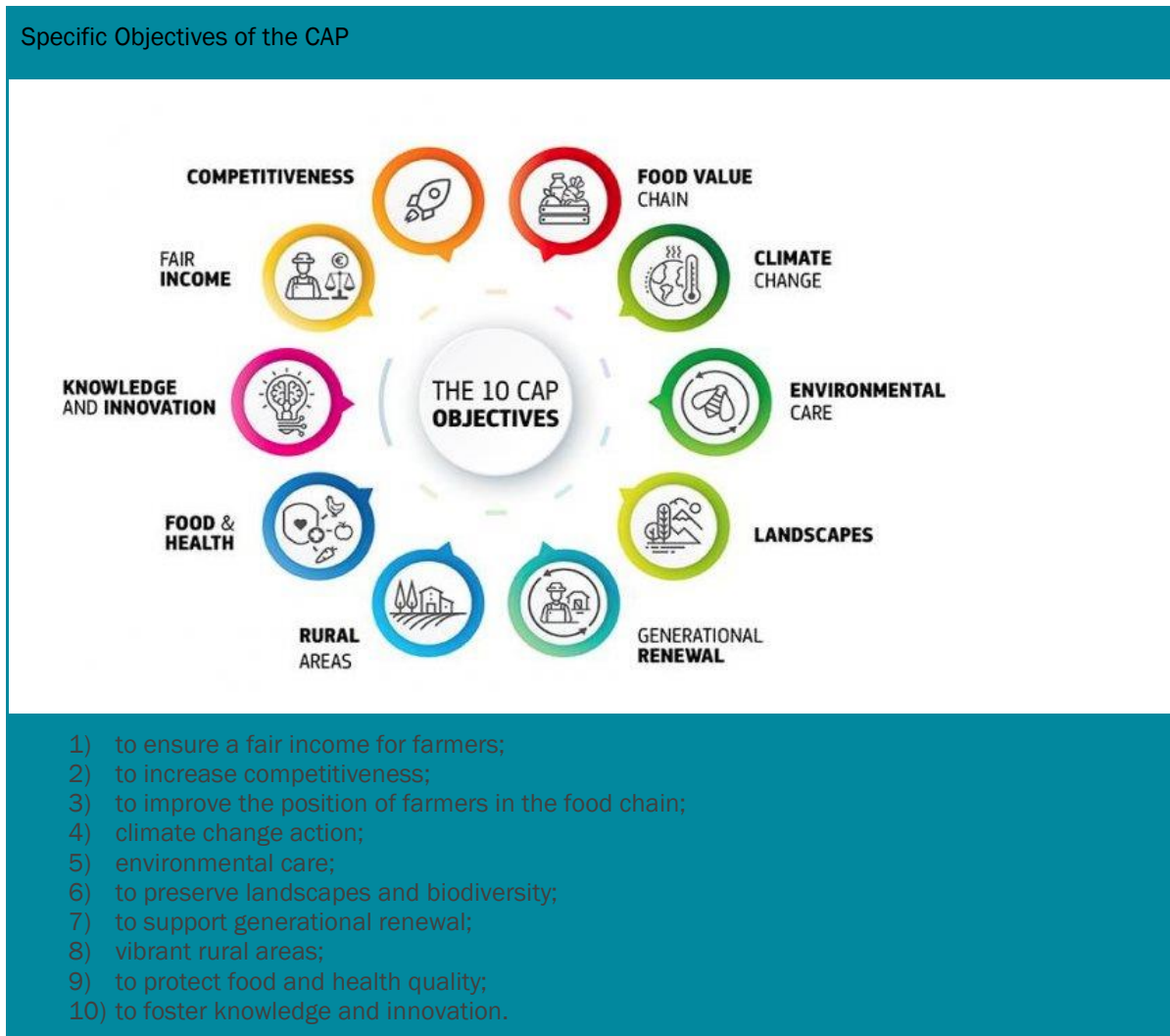
Source: European Court of Auditors, 2022

The CAP 2023-27 plays a key role in agriculture and forestry, and in the delivery of the objectives of the European Green Deal. In addition, the CAP is also a key tool in reaching the objectives of other relevant EU-level strategies, such as the Farm to Fork (agricultural dimension of the Green Deal) and biodiversity strategies (European Commission website, The CAP 2023-27). The EU-level intention has been to modernise and shift the CAP approach from compliance to results and performance in 2023-27. This approach is intended to be more flexible and take into account local conditions and needs, while also aimed to increase the EU's ambitions in terms of sustainability (European Commission website, CAP Strategic Plans). Funding will continue to be allocated in compliance with certain rules. However, in line with the introduced changes, Member States will need to also report on the uptake of specific measures against a range of indicators linked to the CAP's ten economic, environmental and social objectives (see Table 1) (Nyssens C, 2022). It remains to be seen whether these changes will lead to a more result-oriented CAP. Some note that the uptake of these measures alone should not be equated with 'performance' (Nyssens C, 2022) while others view that delivering a more results-oriented CAP is achievable, but this will take time (García Azcárate and Folkesson, 2020).





Table 2: The ten key objectives of the CAP 2023-27



Source: https://agriculture.ec.europa.eu/common-agricultural-policy/cap-overview/new-cap-2023-27/key-policy-objectives-new-cap_en

The EU Member States design their CAP Strategic Plans based on the ten specific objectives, which touch also upon the different transitions set out in the RUSTIK project. For example, three out of the ten specific objectives directly concern the environment and climate, namely climate change, management of natural resources and biodiversity. Similarly, digitalisation is embedded as part of a cross-cutting/horizontal objective concerned with *'modernising the sector by fostering and sharing of knowledge, innovation and digitalisation in agriculture and rural areas, and encouraging their uptake'* (Marquard D, 2022). By adhering to the ten specific objectives, the Member States can tailor the support instruments to their specific territories. Each CAP Strategic Plan includes an intervention strategy, which explains how each country will use CAP instruments to achieve the CAP objectives. They are also intended to deliver EU-level objectives, such as respect the climate and environment ambitions of the Green Deal (European Commission website, CAP Strategic Plans). In other words, the CAP Strategic Plan includes all CAP-related and





CAP-funded instruments that a Member State will implement in 2023-27, including direct payments, interventions specific to certain market sectors and support for rural development. As part of the preparation of the Strategic Plans, the European Commission carried out an assessment of the draft Strategic Plans (all Member States submitted draft plans to the European Commission by 17 March 2022), and published tailor-made/country-specific recommendations (which were not legally binding) as well as a summary document of the observations made (European Commission, 2022). The first CAP Strategic Plans were formally approved by the European Commission on 31 August 2022 (European Commission website, CAP Strategic Plans).

The special report of the European Court of Auditors (ECA) (ECA, 2022, Data in the CAP, Unrealised potential of big data for policy evaluations) provides information regarding the sources, processing and use of CAP data. The report concludes that the European Commission has a large amount of data for CAP design, monitoring and evaluation. These are largely administrative data (e.g. market prices and payments, farm accountancy data) that are mostly received from the Member States. Different data sources are used for the collection of EU agricultural statistics (carried out by Eurostat) which originate from surveys, administrative data, data from farms and other businesses, and farm-level data from agricultural censuses and samples. Another observation made by the ECA report is that the Commission uses conventional tools such as spreadsheets to analyse the collected data from the Member States (rather than e.g. big data techniques such as textual analytics or automated extractions). According to the findings of the ECA special report, the data and tools do not deliver certain elements (e.g. details of the environmental practices, off-farm income) that are needed for well-informed policy-making. A similar observation was made in relation to evaluating the performance of the CAP. Indeed, while the Commission has a large amount of data on economic, environmental, climate and social aspects, the data are not always sufficiently detailed, for example, for evaluating CAP performance (e.g. limited evaluation data on societal issues, lack of data on small regions or socio-economic standing of rural areas, or data are aggregated for the Member State or region, which is not sufficient for territorially-differentiated analyses). Even though the Commission has taken various legislative and non-legislative initiatives to make better use of the existing data, barriers remain, such as a lack of standardisation and limitations due to data aggregation which reduce data availability and usability. Moreover, some actors have voiced caution on sharing certain data (see e.g. Conduct Code by Copa-Cogeca, CEMA, Fertilizers Europe, CEETAR, CEJA, ECPA, EFFAB, FEFAC, ESA, 2018). In its recommendations, the ECA proposes the establishment of a framework for using disaggregated data from Member States (which respects the principles of efficiency to minimise administrative burden and costs on beneficiaries and Member State authorities) and making more use of and develop data sources to meet policy needs (European Court of Auditors, 2022). The new Performance Monitoring and Evaluation Framework (PMEF) of the CAP entails reporting, monitoring and evaluation of the performance (of the policy measures) throughout the implementation of the CAP Strategic Plans from 2023 to 2027. It draws lessons from the 2014-20 programme period (see **Box 1**) and introduces changes with the aim of striving towards better monitoring and measuring of CAP results. The PMEF sets the basis for monitoring the progress towards achieving the targets of the CAP Strategic Plans, assessing the impact, effectiveness, efficiency, relevance and coherence of the interventions of the CAP Strategic Plans and the EU added value of the CAP, as well as supporting the learning process for monitoring and evaluation (European Commission, 2023).



**Box 1: The Common Monitoring and Evaluation Framework (CMEF) of CAP in 2014-20****Lessons from past CMEF**

The Common Monitoring and Evaluation Framework (CMEF) of the CAP included over 200 indicators to monitor the CAP implementation at the EU and national level in 2014-22. The CMEF had a set of performance indicators in four categories: context (socio-economic, sectoral and environmental indicators), output, result and impact. These performance indicators supported by some additional information (e.g. on trade and quality schemes) were then presented as 13 thematic presentations at EU and Member State level. The thematic indicators covered information on: financing of the CAP, farming income support, jobs and growth in rural areas, market orientation, added value, productivity, environment and climate action, climate change and air quality, organic production, water quality and availability, soil quality, biodiversity, and food and health quality protection (European Commission website, CAP 2014-22).

Various lessons can be drawn from the CAP CMEF 2014-20. The strengths include:

- The indicators give comprehensive coverage of different policy areas;
- New indicators were developed (e.g. geographical indications);
- Data quality improved;

However, some shortcomings are also noted (not all of which are linked to the CAP), including:

- Too many indicators and sub-indicators;
- Not all indicators were suitable for their purpose (e.g. data available too infrequently, weak link with the CAP);
- Certain indicators missing (e.g. in relation to climate change);
- Some thematic evaluations were not able to quantify the CAP's contribution due to e.g. data limitations, time lag of policy impacts, external factors, and the difficulty in establishing a direct link between policy and outcome.

More generally, learning had to take place on how to generate evidence to make policy implementation more results-focussed (European Commission website, CMEF implementation).

The PMEF for 2023-27 has fewer indicators (including mandatory indicators on biodiversity, pesticides and animal health) and covers all the specific objectives. This is intended to allow a better measurement of progress in achieving the targets of the CAP Strategic Plans (i.e. tracking of results) (European Commission website, CMEF implementation). The PMEF contains a set of common indicators for monitoring, evaluation and annual performance reporting. The common indicators relate to outputs, results, impacts and context (the full list is of indicators is provided in Annex 1 of the regulations) (European Commission, 2023).





However, the information provided in the PMEF depends on how each Member State designs and implements its national CAP Strategic Plan, particularly as the Plan covers different measures available under direct payments and sectoral programmes, funded by the European Agricultural Guarantee Fund (EAGF), as well as rural development interventions, funded by the European Agricultural Fund for Rural Development (EAFRD) (European Commission, 2023). The PMEF foresees an increased use of EU Member States' data and statistics provided by Eurostat. In addition, a new satellite area monitoring system and more detailed data collection on farming practices will be introduced. The first comprehensive data on 2023-27 CAP implementation are expected to be available in 2025. These together with the ex-post evaluations of the rural development programmes (2014-20), which are due in 2026, will contribute to the assessment of CAP performance (European Commission website, CMEF implementation).

3.1.2. Long-term vision for Rural Areas

The European Commission published its Communication on a 'A long-term vision for the EU's Rural Areas – towards stronger, connected, resilient and prosperous rural areas by 2040' on 30 June 2021. The Communication is a significant policy development in that it puts the specific issues and challenges faced by rural areas at the centre of the different actions that go beyond the CAP's rural development measures. The Communication addresses the challenges and concerns of rural areas by building on the opportunities of the EU's green and digital transitions and on the lessons learned from COVID-19. The Communication addresses all the transitions set out in the RUSTIK project. It notes that rural areas play a key role in the EU's green and digital transitions. Through sustainable food production, preservation of biodiversity and their combat against climate change, rural areas have a key role in achieving the EU's Green Deal, Farm to Fork and biodiversity targets. Similarly, digitalisation plays a central role, not least in providing opportunities for the sustainable development of rural areas beyond farming and forestry. (European Commission 2021a)

The diversity of the Union's rural areas calls for locally-designed responses and solutions which address each territory's specific needs and possibilities. Therefore, territorial development strategies should address rural areas according to their specific characteristics and in relation to their environment. Here the Communication underlines the need to focus on the remote and less developed rural regions in particular (Rossi 2022), but the Long-term vision underlines also the need to pay attention to rural areas affected by industrial transition. The Long-term vision for rural areas is deeply linked to Europe's current demographic challenges, especially with regard to the provision of services in shrinking and ageing rural areas. When we think about the objectives of territorial cohesion a place-based policies are a key approach to overall efforts towards a spatially balanced development in European rural areas. Green Deal objectives is, likewise, creating a need to understand and acknowledge that rural areas play an important role in assuring better ecological livelihoods and climate-neutral regions. Rural areas have to be engaged in the transition as well as connected both physically and digitally. All these dimensions have been considered when building up the Long-term vision for rural areas.

One important dimension of the Long-term vision for rural areas has been the Commission's commitment to set up a Rural Pact, in which the target is to contribute to reaching the shared goals of the vision as well as to implement the United Nation's Sustainable Development Goals and ensuring balanced territorial development. The activities of the Rural Pact comprise three broader objectives: 1) Amplify the voice of rural areas to bring them higher on the political agenda,





2) Structure and enable collaboration and mutual learning between pact members, and 3) Encourage and monitor voluntary commitment for action by Rural Pact community members. The philosophy of the Rural Pact is to acknowledge that the territorial dimension is the scale where all beneficiaries play their part, and that the outcome of their contribution can be achieved only with social trust. Multidisciplinary approaches and better governance must be introduced, not only in projects and proposals, but above all they must be implemented and produce undeniable results across policies. In this context, the Rural Pact should provide resources to explore local potential for rural development and followed by separate indicators. If the Rural Pact could be monitored by separate indicators, it would have a potential to consider social and cultural concerns as well.

In order to understand the rural dimension of economic, social and demographic conditions, the Communication notes the need to set up an EU Rural Observatory. The EU Rural Observatory is tasked to further improve data collection and analysis on rural areas. The Observatory is also expected to provide evidence to inform policy-making in relation to rural development while supporting the overall implementation of the Rural Action Plan. (European Commission 2021a)

3.2. Climate focus

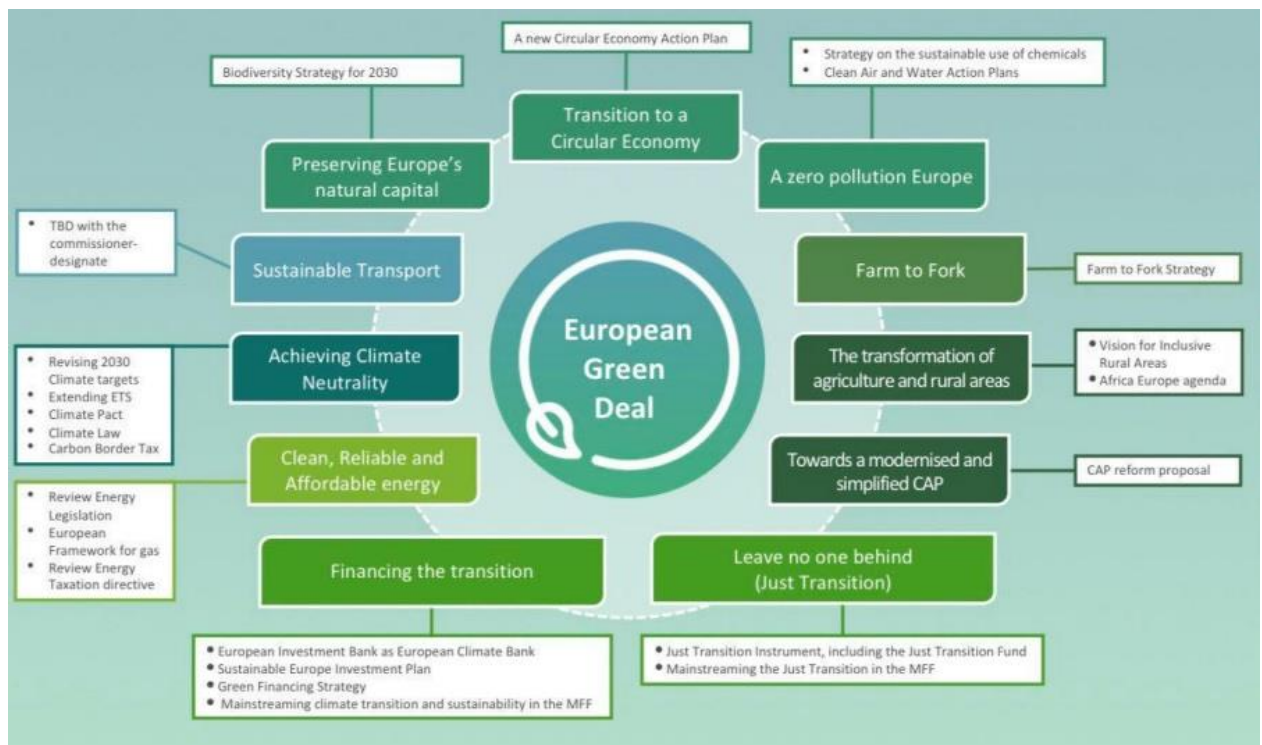
The strategies and policies discussed in this section have as a main aim the transition of the European Union (EU) and its Member States from a fossil fuel-based economy to a 'net-zero future' that respects the environment, uses natural resources efficiently, promotes competitiveness, and supports good quality of life. Such a structural transformation requires agenda-setting with ambitious targets, improved competencies and institutions, and efficient policy implementation. This chapter focuses on two agendas, namely the European Green Deal (EGD), which has been the key driver for the green transition in recent years, making it a cross-cutting theme that all EU policies must address; and the Energy Union, which acted as a foundation for the EGD, and proposed alternative and sustainable solutions to Member States with the intention of achieving resource efficiency and carbon neutrality for Europe.

3.2.1. The European Green Deal

Initiated by the European Commission in 2019, the European Green Deal (EGD) is a cross-cutting strategy for the climate transition, representing a set of policies with the overarching aim of making the European Union climate-neutral by 2050. The EGD covers a broad range of interlinked policy areas/strategies including climate neutrality, energy transition, transition to a circular economy, zero pollution strategy, farm to fork strategy and sustainable transport (see Figure 1). Examples of some of these are discussed below, and in Annex I and Annex II.

Figure 1: European Green Deal and the different components





Source: Gloersen E et al (2022), Implementing the European Green Deal: Handbook for Local and Regional Governments

Aside from the most evident focus on climate, the EGD relates to number of other key policy areas. For example, the EGD is noted to be a driver of Europe's economic recovery from the COVID-19 pandemic, with an emphasis on the digital transition through investment in innovation and clean technologies. Moreover, it promotes socio-economic transition by promoting the creation of new job opportunities in green sectors, namely through the Just Transition Fund (Section 3.3.2) that supports regions and industries most affected by the climate transition.

The EGD uses different mechanisms and policy monitoring to ensure progress towards long-term climate targets. This includes progress reports, impact assessments, peer reviews, and laws. These are detailed below (





Table 2), together with the EU Climate Law, given its importance to this theme. Laurent (2020) suggests the European Semester and its coordination with the Sustainable Development Goals (SDGs) and the EU's Stability and Growth Pact as key monitoring mechanisms for the EGD. However, when considering the contributions of the EGD towards the SDGs, Eurostat notes that while climate and biodiversity dimensions are well covered, there is less focus on statistics supporting the Green Deal on socio-economic dimensions (Eurostat, 2022; Koundouri and Sachs, 2021).





Table 2: Key review mechanisms of the European Green Deal

Mechanism	Short description	Link to EGD	Related policies or instruments
European Semester	Surveillance, monitoring and coordination framework of economic policies across the EU. It consists of an annual cycle of monitoring via MS reporting on progress and implementation of national reform programs, and a provision of policy recommendations.	Monitors and supports the implementation of the EGD, including guidance and recommendations. For example, it drove the proposal for the NECPs, which provide a roadmap for MS to achieve climate and energy targets (Duwe & Velten, 2016). The EC is also aligning European Semester indicators, targets and recommendations to the SDGs.	National Energy and Climate Plans (NECPs) Annual Growth Survey
EU Stability and Growth Pact	Set of rules and guidelines to ensure MS maintain fiscal discipline and stability.	Achieving EGD goals requires investments and policy changes that can impact MS fiscal positions. EC has proposed initiatives to align EDG and SGP objectives, such as the EGD Investment Plan.	EGD / Sustainable Europe Investment Plan
EU Climate Law	Sets a legally binding target for the EU to achieve climate neutrality by 2050. It includes the creation of independent scientific body European Climate Change Council that provides advice on EU climate targets and policies.	The EU climate targets are a key part of the EGD, making the EU Climate Law an important review mechanism as it establishes a clear and binding framework for monitoring and reporting on progress towards this. It provides for a review mechanism that allows the targets to be adjusted if necessary.	European Climate Change Council

Regarding policy monitoring, three efforts are particularly relevant (Schoenefeld, 2021), namely the [Energy Efficiency Directive](#), the [Renewable Energy Directive](#)² and the [Monitoring Mechanism Regulation](#):

² The Energy Efficiency Directive and the Renewable Energy Directive were amended together with the Directive on the energy performance of buildings in 2022, because of the need to accelerate renewable energy projects to reduce the EU's dependence on fossil fuels and energy imports from Russia. The proposal for these amendments can be found here: <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52022PC0222&from=EN>





Energy Efficiency Directive

The Energy efficiency directive is considered a key policy monitoring effort for curbing greenhouse gas emissions in the EU. In this policy area, the focus of the EU has tended to be on policy outcomes, such as promoting energy savings. This directive proposes an energy efficiency first principle, which requires the consideration of energy efficiency measures as the first option when planning and implementing energy infrastructure projects. Additionally, the directive encourages the use of innovative financing mechanisms, such as green bonds or energy service contracts, to support building renovation and increase energy efficiency. Other key indicators in the directive include (Art.3) (**Table 3**):

Table 3: Key Energy Efficiency Directive indicators

Indicator	Expression	Target
Cumulative reduction in annual energy sales	<ul style="list-style-type: none"> • Absolute numbers; • Percentage reductions 	
Renovation rates for public and private buildings	<ul style="list-style-type: none"> • Percentage 	Increased renovation rate of existing buildings in the EU to at least 3% per year.
Final energy consumption	<ul style="list-style-type: none"> • Total amount of energy consumed in the EU for final use (e.g. buildings, transport and industry) 	Reduction of final energy consumption by at least 32.5% by 2030.
Annual energy savings	<ul style="list-style-type: none"> • Amount of energy saved annually as a result of energy efficiency measures 	MS must set indicate annual energy saving targets for the period 2021-2030.

Progress monitoring tasks in this area are allocated to the European Commission (Art. 24), which must report with both retrospective and prospective elements to the European Parliament and the Council, and include the findings in other reporting exercises, such as the Energy Union reports (Schoenefeld & Knodt, 2021). Assessing the energy savings of a given project is still not straightforward, with Member States being free to decide for themselves on their appropriate measuring scheme (Ringel, 2017). At the EU level, this method of policy monitoring has resulted in inconsistent levels of data quality, inadequate transparency of energy-saving calculation methods, and insufficient reporting (Rosenow et al., 2015; Schoenefeld, 2021).

The 2023 call for a recast³ of the Energy Efficiency Directive has highlighted the need for an equal access to energy efficiency measures for all consumers, paying particular attention to groups at risk of energy poverty. Aside from highlighting groups like elderly people, or persons with disability, the recast also highlighted people living in rural or remote areas (60). Additionally, rural and

³ Access the recast document at <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0558>





remote areas are given particular attention in the recast in relation to the improvement of connectivity (68), the creation and promotion of renewable energy communities (92), access to finance for energy efficiency measures (97 and 108), Rural differentiation was not previously present in the Energy Efficiency Directive, demonstrating heightened attention given to these areas not just related to the energy resources available in these territories, but also the particular challenges their communities face. [Renewable Energy Directive](#)

The Renewable Energy Directive is equally of high relevance to tackling greenhouse gas emissions in the EU. Its legal provisions include prescriptions for the standardisation of the calculation of national renewable energy shares (Art. 7), demonstrating further efforts in harmonisation. However, the main emphasis of the provisions is on reporting obligations for the proportion of renewables in each Member State, along with existing and planned policies and measures to attain this goal. Its key indicators include (Art. 3) (**Table 4**):

Table 4: Key Renewable Energy Directive indicators

Indicator	Expression	Target
Share of renewable energy in gross final energy consumption	<ul style="list-style-type: none"> Percentage 	32% by 2030 in the EU (proposed revision of target to 40%)
Share of renewable energy in transport	<ul style="list-style-type: none"> Percentage 	14% by 2030
Renewable energy capacity	<ul style="list-style-type: none"> Total installed capacity of renewable energy sources (e.g. solar, wind, hydro and geothermal) 	Aim to increase overall capacity of renewable energy sources across the EU.
Renewable energy investment	<ul style="list-style-type: none"> Total amount of investment 	Aims to mobilise significant investment in renewable energy projects.
Greenhouse gas emissions savings	<ul style="list-style-type: none"> Amount of greenhouse gas emissions avoided through the use of renewable resources 	Aims to help reduce greenhouse gas emissions across the EU.

The EEA has stated that achieving the EU's target of 32 percent renewable energy by 2030 is uncertain (EEA, 2022). There are significant variations in the uptake of renewable energy across EU Member States. Despite this, the European Commission has proposed amending the Renewable Energy Directive and raising the 2030 target to 40 percent to achieve climate neutrality by 2050 (European Commission, 2021b). This comes as a potential consequence of the current energy crisis, which may have reinforced the need to intensify efforts to promote alternative energy sources such as renewable energy.

Monitoring Mechanism Regulation

The Monitoring Mechanism Regulation – which has now been incorporated in the [Energy Union Governance Regulation](#) (Section 3.2.2) – aims to generate an overview across climate policies in





the EU MS. The monitoring regulation stipulates estimated quantifications of greenhouse gas reductions for each policy (based on territorial emissions) but lacks sufficient ex-post data. The Monitoring Mechanism has been closely linked to the effort-sharing processes at the EU level as another effort to enhance the effectiveness of monitoring (Schoenefeld & Jordan, 2020). It is thus part of broader EU monitoring cycles, which create frequent outputs and trend towards a better alignment of monitoring processes with policymaking.

According to the Energy Efficiency and Renewable Energy directives, ^[6] Member States must report to the European Commission on their energy efficiency and renewable energy initiatives. The relationship is hierarchical, and similar to the previous two directives. Failure to implement monitoring could result in infringement cases before the Court of Justice of the EU (CJEU). The European Environment Agency (EEA) is a third implementer between the MS and the EC in the Monitoring Mechanism. The European Environment Agency (EEA) verifies the monitoring data's quality before making it public and sending it to the EC, which then incorporates it into its own UNFCCC⁴ report (Schoenefeld, 2021).

The Green Deal further builds on several monitoring provisions, relying on existing frameworks that have been enhanced in the context of, for example, the Energy Union (Section 3.2.2). The importance of monitoring has been further amplified by tracking state progress towards achieving carbon neutrality by 2050, as outlined in the EU's new climate law and nationally determined contributions under the Paris Agreement. Just transition monitoring (Section 3.3.2) is expected to be a crucial aspect of the EGD, with implications for both monitoring and evaluation (Schoenefeld, 2021). This alignment is important as it embeds a specific territorial targeting to climate transition monitoring and evaluation, adding to the European Semester's assessment of national policymaking and SDG reporting across all Member States, in support of the Green Deal.⁵

Research (Schoenefeld, 2021; Batterbury, 2006; Laurent, 2020) suggests just transition monitoring may require a broader range of evidence related to, for example, more qualitative aspects and an expansion to non-state actor driven monitoring. The European Commission has launched a dashboard to monitor progress against all EGD objectives, potentially tackling this issue (EC, 2019a, p. 23). As mentioned in the sub-section below, the 8th Environment Action Programme's dashboards that feed into EGD objectives have made efforts to consider some of these aspects, operationalised in a broad set of indicators focused on capacities and vulnerabilities (EC, 2021b). These include social indicators and an integrated approach for measuring wellbeing beyond GDP and the more utilised quantitative indicators.

⁴ The UNFCCC stands for the United Nations Framework Convention on Climate Change, an international treaty signed in 1992 with the objective of addressing the issue of climate change at a global level. Its main aim is to stabilise GHG concentrations in the atmosphere. It thus serves as the basis for international cooperation in this area and sets out a framework for action to mitigate negative impacts. The UNFCCC requires countries to regularly report on their GHG levels and their efforts to reduce them. For more information, access: <https://unfccc.int/>

⁵ The reporting of the European Semester on the Sustainable Development Goals can be accessed here: <https://ec.europa.eu/eurostat/cache/infographs/sdg-country-overview/>





The EGD and its associated legislation present a challenge due to their inclusion of long-term targets, such as carbon neutrality, and concepts such as justice and fairness, which require significant social change. These aspects are complex and cannot be fully captured by single indicators for progress assessment (Charveriat & Bodin, 2020; Laurent, 2020). These aspects may be not just difficult, but impossible to measure, as they have no singular objective meaning. Still, a wide range of indicators and qualitative evidence is required to attempt monitoring of this area. This is included in the integration of the SDGs and their indicators in the EGD, and the dashboards introduced with the new environment action programme (Schoenefeld, 2021).

Further to the above-mentioned directives and mechanisms, the European Commission has published a set of policy and strategy documents for key economic sectors to support the implementation of the European Green Deal and achieve its goals. These documents were released in 2020 and 2021 and have significantly shaped the operation of financial markets and society. A prominent example is the European Climate Law (2021),⁶ which has set greenhouse gas emission targets, and led to the implementation of a number of efficiency and adaptation measures, as well as social measures. Its impact has been far-reaching. The Climate Law has provided policy certainty and a supportive environment for investments in clean energy technologies. It has put forth a clear regulatory framework and long-term direction for green finance and investment, spurring the growth of sustainable finance, and prompting financial institutions and companies to assess and disclose their exposure to climate transition financial risks. Additionally, the Climate Law has reinforced the EU's existing emissions trading system, for example, and has promoted job creation, reskilling and upskilling programs, as well as the development of social safety nets to support workers and regions affected by the transition. Annex I provides an overview of this and other policies and strategies and the indicator areas they encompass. Annex II is a summary of the key indicators monitored in each of these policies.

8th Environment Action Programme

The 8th EAP builds on the objectives of the EGD. The 8th EAP represents the determination of the EU and its Member States to address the climate, biodiversity and pollution crises and to make the EU more resilient to future shocks. The 8th EAP lays down a long-term priority objective for 2050 to live well, within planetary boundaries, and six thematic priority objectives. It also comprises an ambitious framework of 34 'enabling conditions' for achieving these objectives in line with the EGD's 'do no harm' principle and a just and fair transition that leaves no one behind.

To support and strengthen an integrated approach, the 8th EAP puts in place a governance mechanism and tasks the Commission with establishing a new monitoring framework for measuring progress towards its priority objectives - the [8th EAP monitoring framework](#) ('8th EAP MF'). The monitoring framework is to be based on a limited number of headline indicators, including systemic indicators on the links between the environment and social dimensions and the economy, enabling the EU to track progress towards the green transition and to provide high-level strategic political oversight.

The 8th EAP headline indicator set is at the core of the governance mechanism. Under Article 4(3) of the programme Decision, the indicators must build on existing data to minimise administrative

⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R1119>





burden and reflect the latest developments as regards the availability and relevance of data and indicators.

The monitoring framework supports:

- The [EGD visualisation tool](#), which include statistics on the EGD-related to indicators on (1) reducing climate impact; (2) protecting planet and health and (3) enabling a green and just transition;
- [Resilience Dashboards](#): through a broad set of indicators, the resilience dashboards assess the relative strengths and weaknesses of countries through indicators spanning four dimensions: social and economic, green, digital, and geopolitical. They also help the Member State identify areas for further analysis and potential policy actions. [Transitions Performance Index](#), which consists of 28 internationally comparable indicators and country information on progressing towards the [6 priorities of the EC](#) (Green Deal; Fit for digital age; Economy that works for people; European democracy; Promoting our European way of life; Stronger Europe in the world). The transition is measured on 4 dimensions:
 - Economic (education, wealth, labour productivity and research and development intensity, industrial base);
 - Social (health life, work and inclusion, free or non-remunerated time, equality);
 - Environmental (greenhouse gas emissions reduction, biodiversity, material use, energy productivity);
 - Governance (fundamental rights, security, transparency, sound public finances).

3.2.2. Energy Union

The [European Energy Union](#) is a framework strategy for energy policy launched by the European Commission in 2015. The initiative represents a significant evolution in Europe's green transition, as it adopts a comprehensive approach to energy policy and places a strong emphasis on the integration of energy markets, the promotion of energy efficiency, the deployment of renewable energy sources, and the reduction of GHG emissions. The prioritisation of the green transition at the EU level with the Green Deal has granted further influence to the Energy Union.

Since its launch, the European Commission has published several packages of measures and regular progress reports on the topic of ensuring secure, affordable, and sustainable energy for all Europeans.

The Energy Union governance monitoring framework

The Energy Union Governance Regulation outlines and aligns the structures and processes for the post-2020 energy and climate change reporting. The Governance Regulation offers a form of so-called 'soft' governance for energy policy as it is based on a system of coordination with goals set centrally, but where implementation responsibilities are decentralised. The reporting processes that the Regulation sets can be divided into two main categories, with its respective components (Knodt et al., 2020):

- Strategic and long-term energy and climate planning
 - [Integrated National Energy and Climate Plans](#) (NECPs) that Member States are required to design to coordinate their efforts to meet EU 2030 climate and





- energy targets. The NECPs include a list of: (i) required national stakeholder consultations, (ii) a description of national objectives, (iii) an explanation of opportunities for regional cooperation, (iv) an account of national policies and measures, (v) an analysis of the current situation on the five dimensions of the Energy Union, (vi) and an evaluation of the effects of proposed policies to achieve the goals;
- The Low Emission Strategies (LES), which have a 50-year horizon and comprise the EU and Member States' pledges towards achieving GHG reductions of 80-95 percent by 2050 in accordance with the objectives of the Paris Agreement.
 - Short-term reporting
 - Annual progress report;
 - Biennial progress report.

More generally, the Commission has strengthened its position through monitoring, especially in the cases where it can set ambitions and oversee delivery shortfalls (Knodt & Ringel, 2018).

Regarding the reporting by the Member States, both annual and biennial progress reports are submitted to the European Commission for evaluation. The European Commission then issues further recommendations based on the reports. The reports on the state of the Energy Union are also useful for an overview of the challenges and highlights of the energy sector on a yearly basis.⁷ The Energy Union reports have become a prominent platform to showcase energy efficiency and renewable energy data (Schoenefeld, 2021). A web tool⁸ has been made available to explore and monitor Energy Union key indicators, as well as the progress in achieving targets and objectives. Indicators are divided into six main categories, namely: energy security, solidarity and trust; a fully integrated internal energy market; energy efficiency and moderation of demand; decarbonisation of the economy; research, innovation and competitiveness; and socio-economic data. Key indicators thus include measurements of GHG emissions, energy consumption, renewable energy shares, energy intensities, import dependencies, prices, annual switching rates, research investments, patents, household, and population data.⁹ Some territorial differentiation is considered with data on land use and population.

3.3. Socio-economic and demographic focus

Several key policies and strategic frameworks at the EU level deal predominantly with social and economic issues. These include the EU Cohesion Policy which has traditionally aimed to reduce regional socio-economic disparities and address structural change, the Just Transition Mechanism, rolled out in the 2021-27 period, to alleviate the socio-economic cost of the transition to climate neutrality in regions most affected by it, and the EU Pillar of Social Rights, which is a framework that emerged in response to the changing world of work and social challenges. Multiple

⁷ The latest report on the state of the energy union can be accessed here:

https://energy.ec.europa.eu/topics/energy-strategy/energy-union/seventh-report-state-energy-union_en

⁸ This webtool can be accessed here: https://energy.ec.europa.eu/data-and-analysis/energy-union-indicators-webtool_en

⁹ The list of Energy Union indicators can be accessed here https://energy.ec.europa.eu/system/files/2021-05/metadata_for_energy_union_indicators_0.pdf and https://energy.ec.europa.eu/system/files/2021-02/swd-energy-union-key-indicators_en_0.pdf





initiatives and policies, including those just mentioned, include measures to respond to demographic challenges. These are reviewed in more detail in a separate sub-section due to the importance of the demographic transition in the RUSTIK project.

3.3.1. Cohesion Policy

EU Cohesion Policy has been one of the cornerstone policies of the European Union, formally functioning since 1975 when the ERDF was set up. **(During its several decades of operation, Cohesion policy has been undergoing multiple changes, adapting to new realities. Since its conception, it has been driven by a strong economic development rationale, which has been, however, widening** (McCann and Raquel Ortega-Argilés, 2021). This is evident, for instance, in the more recent inclusion within its remit of issues relating to well-being and quality of life (as part of the ESF) and the stronger role of its Cohesion Fund in environmental issues, land rehabilitation, energy infrastructure, etc. Since the Gothenburg Strategy (2001), sustainable development goals have also been increasingly incorporated into the Cohesion Policy logic, and currently, the policy must also deliver on the Union's key political priorities of the green and digital transition, including the European Green Deal and the promotion of the European Pillar of Social Rights.

Cohesion policy has historically been a place-based policy since it is implemented at the regional level and thanks to that, EU policy makers have considered it a key tool among EU instruments to bring the Union nearer to its citizens.¹⁰ **The case for a place-based logic in Cohesion Policy, however, has been significantly strengthened since the Barca report (2009)** arguing for a strong place-based, as opposed to spatially blind, mandate for Cohesion Policy, focusing on unlocking the potentials of all regions (McCann and Raquel Ortega-Argilés, 2021). The impact of the report and the following debates on this approach played a key role in the adoption of territorial delivery mechanisms in Cohesion Policy, where the latter allow for policy measures to be built on the bases of diverse local contexts.

When analysing the use of data in indicators in Cohesion policy, it is important to note that the policy is implemented under shared management between the EU and the Member States. **At the EU level, data and indicators are used in two main ways. First, to determine funding allocations per MS. Second, in setting up the strategic policy framework and defining the areas in which different types of regions and MS invest cohesion funds.** Usage of data and indicators related to the actual programming, project selection, monitoring and programme impact assessments is defined by each MS. This vests Member States with the responsibility to decide to what extent and under what mechanisms (incl. territorial delivery mechanisms) funding is allocated to areas that require particular attention (as per art. 174 TFEU).

Indicators in funding allocation

While the decision on the share of EU budget devoted to Cohesion policy is essentially a political one, indicators feed into the methodology for allocating Cohesion policy funding across Member States and regions. Although Cohesion Policy is available throughout the EU, financial support is concentrated on those regions which are lagging in their economic development. This is in line with the Treaty objective according to which the policy is designed with the aim of closing the gap

¹⁰ e.g. see <https://www.socialistsanddemocrats.eu/sites/default/files/S&D%20Position%20Paper%20-%20EU%20Cohesion%20Policy%20-%20an%20investment%20tool%20for%20the%20benefit%20of%20EU%20citizens%20150930%20en.pdf>





between poor and rich regions. **Indicators used in the methodology for the distribution of Cohesion Policy funding are quantitative** and sourced by national statistical institutes. **Gross domestic product (GDP) per capita** is the main indicator reflecting regional prosperity vis-à-vis the EU average, while other indicators are also reflected relating to socio-economic and environmental factors such as **unemployment**, particularly **youth unemployment**, **low population density**, **education levels**, **greenhouse gas emissions** and **migration**. The last two of these factors were proposed for the first time for the 2021-2027 period. In total, relative wealth determines just over 80 percent of the allocations (ECA, 2019).

Indicators in the strategic design of the policy

Tasked to reduce regional disparities and to promote growth, Cohesion policy relies heavily on data related to the relative positioning (vis-a-vis the EU average) and relative change across Member States and regions in terms of social, economic and territorial convergence and development. This logically raises the question how to define and measure economic, social and territorial convergence and to identify the policy areas that need to be targeted. While there is no formal definition or methodology, the European Commission (DG REGIO in particular) produces, as per Treaty provisions, Cohesion reports every three years providing a comprehensive picture of the state of social, economic and territorial cohesion in the EU, along with other thematic working papers and studies to inform the Cohesion Policy strategic framework. Analyses in these documents have been based on a wide array of indicators. **Table 5 5** provides an overview of the types of indicators used in the most recent – 8th Cohesion report (2021). Along with the Cohesion Reports, cohesion is assessed via various ESPON and Eurostat publications.

- **Economic cohesion** is mainly reflected in the GDP per head indicator. When analysing trends of GDP per head convergence/divergence, Commission reports have been looking into underlying factors related to productivity and employment (along with the share of working age population) as well. Apart from the GDP per head rates, what has captured the Commission's attention has also been the **rates of GDP growth**. These data have underlined problems with low or absent growth of GDP per head in certain regions indicating that some regions are in a so called 'development trap'. Economic cohesion is also concerned with **regional competitiveness** as source of growth and jobs and that includes, among others, rates of **entrepreneurship**, **digitalisation** and **innovation**.
- **Social cohesion** deals with the extent of the disparities or inequalities among European countries and regions with respect to selected aspects of living conditions, represented mostly via **quantitative welfare indicators**. **Inequality of income**, in particular of disposable income and poverty, are among the most prominent dimensions, which in essence **evaluates the inclusiveness of growth**. The understanding of welfare also includes **satisfaction of basic needs** and the respective **access to services** (e.g. to **education**; **health**), which measures equality or disparities of opportunity. Another key aspect is access to the labour market measured via **employment** and **unemployment** rates.
- **Territorial cohesion** has been added to existing objectives of economic and social cohesion in the Lisbon Treaty in 2007, formalising the focus on place and space. It aims to enable **equal opportunities** for citizens and enterprises no matter where they are located, with procedural/governance orientation concerned with **ensuring that sectoral policies are coherent** in the way that they impact given territories. (O'Brien, P. et al. 2017)





Table 5: Indicators in 8th Cohesion report

Type of indicator	Indicators under each type	Quantitative / Qualitative
Economic	<ul style="list-style-type: none"> • GDP per head; changes in GDP per head; • productivity; • expenditure on R&D relative to GDP; • number of patents; • newly created employer firms by type of region; • number of high-growth firms by type of region <p>Composite indices and scoreboards combining a number of indicators to capture complex issues:</p> <ul style="list-style-type: none"> • Regional Innovation Scoreboard • Regional Competitiveness Index 	Quantitative
Social	<ul style="list-style-type: none"> • employment and unemployment rates by group of regions and degree of urbanisation; employment rate of non-EU migrants • proportion of people at risk of poverty or social exclusion (distinguishing b/w population living in severe material deprivation; population in households with very low work intensity) • gender equality (e.g. difference between female and male unemployment rates; Gender gap in tertiary education; gender gap in feeling satisfied with their lives; gender gap in feeling safe walking alone at night) • participation of adults aged 25–64 in education and training • early leavers from education or training • tertiary educated (% of pop. aged 25–64) • regional variation in shares of those aged 25-64 with tertiary education • people's levels of digital skills • food poverty • satisfaction with efforts to deal with the poor <p>Composite indices combining a number of indicators to capture complex issues:</p> <ul style="list-style-type: none"> • EU Regional Social Progress Index • Female Achievement and Disadvantage Index 	
Demographic	<ul style="list-style-type: none"> • Natural population change, net migration and total population change by urban-rural regional typology and by type of metro region, 2010–2019; • Population by type of demographic change (i.e. type of shrinkage) by geographic EU region and by urban-rural typology, 2010–2040; • Total life expectancy at birth by urban-rural regional typology; • Fertility rate by urban-rural regional typology 	Quantitative





Environmental	<p>Reducing greenhouse gas emissions</p> <ul style="list-style-type: none"> • Change in greenhouse gas emissions outside the Emissions Trading System (at MS level); CO2 emissions from fossil fuels per head (at NUTS 2 level); • Change in total CO2 emissions from fossil fuels, 1990–2018 (at NUTS 2 level); <p>Increasing energy efficiency and boosting renewable energy</p> <ul style="list-style-type: none"> • Change in primary energy consumption, 2005-2019 and 2030 target (at MS level); • Share of renewables in gross final energy consumption (at MS level); <p>Achieving low-carbon transport</p> <ul style="list-style-type: none"> • Passenger travel by transport mode (at MS level); • Freight transport by mode (at MS level); <p>Reducing the impact of climate change</p> <ul style="list-style-type: none"> • Economic damage due to flooding under the 3 °C warming scenario, 2100 (at NUTS2 level); • Expected annual damage to infrastructure in 2100 due to inland flooding under a global warming scenario of 3 °C (at NUTS2 level); • Projected change in human exposure to heat/cold waves under a global warming scenario of 3 °C in 2100 (at NUTS3 level); <p>Improving the environment</p> <ul style="list-style-type: none"> • Waste generation per head; • Share of waste recovered, 2010 and 2018; • Concentration of fine airborne particulate matter in NUTS 3 regions; • Concentration of NO2 in NUTS 3 regions; • Years of life lost attributed to exposure to airborne particulate matter; <p>Rural areas are becoming more built up</p> <ul style="list-style-type: none"> • Built-up land and transport infrastructure per head by degree of urbanisation; • Change in built-up land and transport infrastructure per head by degree of urbanisation, 2012-2018; • Expected share of agricultural land abandonment at NUTS 3 level, 2030 	Quantitative
Digital	<ul style="list-style-type: none"> • Households with broadband subscriptions by degree of urbanisation, 2016 and 2020; • Population by average tested broadband connection speed in their LAUs, 2020 • Population in cities and rural areas with an average tested broadband connection speed of 30 & 100 Mbps 	Quantitative





Transport related	<ul style="list-style-type: none"> Speed of rail connections between major urban centres by geographic region; Accessibility, proximity and transport performance by rail plus a short walk (MS) Transport performance by rail (combined with a short walk) (NUTS3); Transport performance by rail (combined with a short bike ride) (NUTS3); Rail performance by degree of urbanisation level 2, Transport performance by car by NUTS 3 region; Road performance by car and degree of urbanisation level 2, Population with a public transport stop within walking distance 	Quantitative
Quality of life/well-being	<ul style="list-style-type: none"> Access to (public) services (incl. data on population within walking distance of the nearest service location (primary schools; pharmacies, banks, train station, hospitals); Overall life satisfaction People's perception of the quality of public services; Mean equivalised net household income 	Predominantly qualitative
Better Governance	<ul style="list-style-type: none"> Trust in national and local government Perception of corruption in national government (NUTS 2 level) Ease of doing business score Proportion of people interacting with public authorities via the internet in the previous 12 months (e-government) Local self-rule indicator <p>Composite indices combining a number of indicators to capture complex issues:</p> <ul style="list-style-type: none"> Rule of Law Index (MS level) European Quality of Government Index (NUTS 2 level) 	Predominantly qualitative

Source: based on the 8th Cohesion report (2021)

Comparative data across these multiple indicators contribute to setting a framework of Cohesion policy priorities at the EU level for each 7-year programme cycle and the definition of how different types of regions could spend EU Cohesion funding via national and regional programmes. Given that Cohesion policy has been historically focused on the regional – NUTS2 level – most of the data under these indicators have been produced at that level. However, this has been changing with data being tracked increasingly at lower territorial levels, including different types of territories such as outermost or rural areas.

As a development policy, Cohesion Policy is targeted at people and, therefore, it is also informed by indicators on **citizens public awareness and perceptions** related to EU regional policy, tracked via Eurobarometer population surveys. The latter are increasingly being used to measure aspects of social cohesion as well.

Indicators in implementation, monitoring and evaluation

Cohesion policy is delivered through three main funds - European Regional Development Fund (ERDF), Cohesion Fund (CF), and European Social Fund Plus (ESF+). In the 2021-27 period,





Cohesion policy is also supported via the Just Transition Fund (JTF) to mitigate the adverse socio-economic effects of the climate transition (see section 2.4.2). The funding provided via these funds is programmed, implemented, monitored and evaluated by EU Member States. Policy decisions and implementation thereof on the national/regional programme investment priorities, specific objectives, project selection criteria, monitoring and evaluation of results are performed by each Member State. As part of this, it is the responsibility of each MS to select indicators (for the 2021-27 period: common output and result indicators) for each specific objective based on a list provided by the EU Regulations. While the Commission is not prescriptive over the choices MS make, it does have certain levers to impact programming and implementation process. Via the specific regulations for the individual funds, the EU sets out their different rationales, target groups, indicative investment themes and implementation methods. It also determines thematic concentration requirements for each type of region (most developed, transition and less developed). Another way the EU institutions impact the programming and implementation process is via the European Semester – the European Union’s framework for the coordination and surveillance of economic and social policies. Based on Commission assessment of investment needs in each country (incl. data from the Cohesion Reports and various scoreboards and indices), it prepares investment-related country-specific recommendations to each Member State (published as Annex D in the country reports).

Changes in the use of indicators

Stronger mandate for a place-based approach

As mentioned earlier, the strategic logic of Cohesion policy has been widening and shifting **from more top-down and redistributive forms of intervention towards more endogenous – place-based – model**. This has been a gradual evolution impacted by multiple factors including research on the **place-contingent nature of economic and institutional factors** (O’Brien, P. et al. 2017). This change in strategic thinking resulted in increased emphasis on fostering the development of territories based on locally specific factors, incl. institutional, cultural and governance dimensions, and building interventions around their attributes and strengths. The introduction of dedicated territorial instruments in the 2014-20 programme period and the Policy Objective 5 ‘Europe closer to EU citizens’ in the 2021-27 period have allowed Member States to better target support to specific areas, albeit constrained in some cases by thematic concentration requirements, based on targeted analysis of territorial needs and potentials and place-based strategic planning, involving local governments and local stakeholders.

Leading to increased availability of data on territorial characteristic, opportunities and challenges

In line with this evolution, the European Commission has shown increased interest in **obtaining more data in different fields by degree of urbanisation** and between cities, towns and villages with the aim to inform negotiation processes, policy design, strategy formation, spending and project choices (at the EU and at national/regional/local levels). Eurostat has increasingly regionalised many indicators at the request of DG Regio and publishes several indicators (ca. 200) according to the degree of urbanisation. Given that territorial cohesion has been largely associated with principles on universal access to services of general interest and management of the natural and the built environment, indicators related to these fields have particularly captured the Commission interest. These indicators are highly relevant to rural towns as they can be indicative of their main functions. Access to services of general interest visibly plays an important role in the





debate on resilience of places as well. For instance, the 8th Cohesion report highlights that depopulation and shrinking of some urban and rural areas will have significant impact on access to services, which is why this is an area where policy action would be required. This direction of thinking indicates an increasing sensitivity in Cohesion policy to transition consequences at the territorial and local community level, where, however, currently data are more challenging to obtain (e.g. in relation to communities' distance to services). Another example is the transition to low-emission mobility which is to contribute to the goals set out in the European Green Deal. While the use of more sustainable transport modes, such as rail or bikes, is being fostered, such transition would be more challenging for rural areas, where distances are larger and accessibility to public transport lower. This will be necessitating higher use of passenger cars in rural areas and posing challenges to transition to low-emission mobility. Recent research of DG Regio has also been accessing [accessibility and performance of rail passenger services](#) (EC, Working Paper 01/2022) at the national, regional and local levels and [road infrastructure](#) (EC, Working Paper 03/2022), where the latter relates road characteristics such as length with territorial characteristics such as population density or dispersal, providing evidence as to why further funding for road infrastructure makes sense in some rural areas.

Increasingly using alternative data sources

To fill data gaps, DG Regio has started using various alternative data sources to supplement national statistical data, such as open data, big data, (e.g. **to study changes in land use and built up area, changes in forest areas**), commercial data, incl. via remote sensing, and environmental data from the European Environmental Agency (e.g. **to track water quality and air pollution**), traffic data (e.g. on **crashes and fatalities, congestions**) to analyse how territories are positioned on these indicators in more detail and to promote policy attention and dialogue.¹¹ These data, however, do not get updated on an annual basis, while the availability of data in time series facilitates the attraction of more public and policy interest.

Looking into public perceptions and what defines the 'geography of discontent'

Another trend that can be observed in terms of usage of indicators is the increased interest in **qualitative evidence on public perceptions of Cohesion policy, which provides indication of Cohesion policy visibility and citizens' confidence and trust in the policy**. The latter has become particularly important in light of growing euroscepticism, following the global financial crisis (2008-09) and the rise of inter-regional disparities across the EU. Academic as well as policy research has analysed the link between 'discontent' as expressed by vote for parties opposed to European integration and territorial characteristics represented by social, demographic and economic factors, revealing that euroscepticism has been more evident among people living in less prosperous regions, who felt left behind by globalisation and technological progress (McCann, P. (2018)). Further to that, a Commission Working paper in 2020 has particularly looked at the urban-rural divide in anti-EU vote with the aim to understand what drives 'rural discontent' (compared to urban one). Such data have given rise to concerns that the growing rural-urban divide is contributing to political polarisation and a feeling among people that they are being denied their democratic rights, fuelling distrust in national institutions, and in the EU. The work on 'places left behind' and the 'geography of discontent' also indicates that **cohesion includes an**

¹¹ based on interview with DG Regio





interpersonal component, namely the perceived and actual individual ‘inclusiveness’ or ‘togetherness’ (Böhme, et.al, 2021), which triggers the question what Cohesion policy shall really invest in and how it can account of these aspects in light of the territorial consequences of various transitions.

As concrete measures, the requirements on citizen engagement in the design of these programmes (the so called partnership principle) have been strengthened since the 2014-2020 programme period. Furthermore, the **stronger result-orientation of Cohesion policy** since the 2014-2020 period, including an obligation for Member States to report on result indicators, has sought to ensure that policy results are clearly and visibly communicated to the public in Member States and their regions. **In the 2021-27 period, the concept of ‘result indicator’ has been amended to match the immediate effects of the intervention** with particular reference to the direct beneficiary. While this will require a more significant monitoring effort by programmes in 2021-2027, the aim of the amendment has been to bring **more clarity on the direct effects of the interventions.**

Ensuring fair transitions – considering the role of qualitative indicators

As mentioned at the start of this section, the design of Cohesion policy has been increasingly shaped by territorial data and analyses related to long-term global challenges. The 8th Cohesion Report focuses on a set of such challenges including demographic change and increased labour/skills shortages, climate transition, globalisation and the associated technological change. The reason why these transitions and challenges are of interest for Cohesion policy is due to the recognition that these will unevenly impact regions and territories and are likely to deepen existing or cause new economic, social and territorial disparities between and within Member States. As a result, in the 2021-2027 period, thematic concentration requirements have directed a large part of the investments in the field of innovation (incl. in digital connectivity and digitalisation, R&I, etc.) and green transition (e.g. in energy efficiency, renewable energy, climate change adaptation, etc.). For these transitions to be fair, however, the Commission has been considering how to integrate in its strategic thinking **indicators that are more inclusive.**¹² It is recognised that **this would require a rather qualitative type of indicators** related to **trust** (e.g. trust in people in your neighbourhood or in your government); **perception of policy discrimination, life satisfaction** including the feeling of happiness or loneliness. It is also visible that progress has been made in this direction with data collected, for instance, by the JRC on loneliness. This thinking is in line with calls from academics for the greater use of qualitative methods and ‘soft’ indicators in rural development policies (Maye, D et al. 2020) and for social indicators to go beyond inequality dimensions and capture aspects of social capital – e.g. in terms of social ties, feeling of belonging to a community, etc. (Berger-Schmitt, 2002). Whether such indicators are included in the strategic design or distribution of Cohesion policy depends on the ongoing negotiations for the next 7-year cycle after 2027.

3.3.2. Just Transition Mechanism

The Just Transition Mechanism (JTM) is part of the European Green Deal and contributes to its objectives to create a climate-neutral economy in Europe by 2050. The specific aim of the Mechanism is to mitigate the adverse socio-economic effects of the climate transition by

¹² Based on interview with DG Regio





supporting the most affected territories and workers, and consequently promoting a balanced socio-economic transition. The JTM consists of three pillars: a Just Transition Fund (JTF) implemented under shared management, a Just Transition Scheme under InvestEU providing a budgetary guarantee, and a public sector loan facility to mobilise additional investments to the regions concerned.

Indicators in funding allocation of the JTF

The EU definition of vulnerability in the framework of the JTF has been associated with **regional and sectoral dependence on fossil fuels**, such as coal, peat and oil shale, or their **dependence on greenhouse gas-intensive industrial processes** accompanied with a lower capacity to finance the necessary investments required by the transition. Data allowing the assessment of these dependences and level of capacity have been key in the distribution of the financial means under Pillar 1. The initial proposal for the eligible JTF regions was developed by the European Commission as part of Annex D of the European Semester country reports in 2020. At this point, ca. 100 territories met the criteria based on three indicators – **carbon intensive jobs, fossil fuel industrial activity and GDP per capita**.

A condition to access the JTF has been the creation by each Member State of territorial just transition plans (TJTPs). The purpose of these plans as defined by the JTF Regulation has been to identify the territories most negatively affected and where JTF support should be concentrated, and to describe specific actions to be undertaken to reach the Union's 2030 targets for energy and climate and a climate-neutral economy of the Union by 2050. **The plans were required to access the challenges and needs of those territories, with specific requirement to consider depopulation risks**. Following bi-lateral negotiations with the Commission, and based on the created TJTPs, the eligible areas changed in some countries. Many of the eligible territories are regions which have been traditionally supported by Cohesion Policy, and are in many cases also rural in their characteristics.

Indicators in programming of the JTF

Implementation under Pillar 1 is based on Just Transition Fund programmes. These programmes are prepared and adopted by Member States as part of the process of Cohesion Policy programming in the 2021-27 period. Therefore, similarly to other Cohesion Policy programmes, policy decisions are made by each Member State based on actions assessed as necessary in their respective TJTPs. Nevertheless, the choice of actions is limited by the JTF's specific objective to *"alleviating the impact of the transition by mitigating the negative repercussions on employment and by financing the diversification and modernisation of the local economy"*, as set out in the dedicated JTF Regulation. This set of actions already defines to a large extent the most relevant data and indicators that shall guide the programming phase, namely in relation to the transition's impact on employment and social cohesion, and the potential for economic diversification. It also implies the need for Member States to use data not only to access the current situation but also to forecast positive and negative effects of the transition in the future. The JTF Regulation highlights in particular the need to support vulnerable communities in the transition requiring policy-relevant evidence on citizens at risk of energy poverty, the situation and role of women in the transition, and the needs of children and elderly in terms of education and care.





Indicators in monitoring and evaluation of the JTF

Common output and result indicators, as set out in Annex III of JTF Regulation and, where justified in the territorial just transition plan, programme-specific output and result indicators shall be used by Member States to monitor and evaluate JTF implementation. Examples of such indicators in the social domain include the creation of jobs; in the economic domain – increase of investments and innovation performance; in the environmental domain – increase of the capacity to produce renewable energy, reduction of greenhouse gases, brownfield rehabilitation.

3.3.3. EU Pillar of Social Rights

The European Pillar of Social Rights (EPSR) was created in 2017 and consists of 20 principles and rights that should help create a strong social Europe that is “fair, inclusive and full of opportunity”.¹³ One of the motivations for the EPSR was the perceived need to respond to emerging social challenges and a changing world of work, notably in terms of new forms of employment often related to new digital technologies.

The EPSR sets out 20 principles in three dimensions of societal progress:

- equal opportunities and access to the labour market (deals with aspects of education, gender equality, etc);
- dynamic labour markets and fair working conditions (dealing with work-life balance, wages and secure employment); and
- public support / social protection and inclusion (dealing with principles of minimum income, long-term care, housing, essential services, etc).

When launched in 2017, the EPSR was supported by a scoreboard to monitor progress on the ground, consisting of 12 key indicators to screen employment and social performances of Member States.¹⁴ The scoreboard was designed to allow measuring both societal challenges and progress, and to benchmark success to ensure improvement. It was supposed to be tangible, holistic, objective and timely. Societal progress is defined as “the capacity to enhance and sustain wellbeing and opportunities, creating conditions for people to reach their full potential and to meet their basic needs”.¹⁵

However, in March 2021, the scoreboard was revised when the European Commission launched its proposal for an Action Plan for the EPSR. The focus is now on three headline targets to be achieved by 2030, covering employment, life-long learning and social exclusion, see Table 6.

Table 6: Headline indicators of the EPSR Action Plan (2021)

	Target minimum for 2030	Value 2019	Expected minimum change
Employment	78.0%	73.1%	+ 4.9 pp

¹³ https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/economy-works-people/jobs-growth-and-investment/european-pillar-social-rights/european-pillar-social-rights-20-principles_en

¹⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX%3A52017SC0200&%3Bfrom=EN>

¹⁵ *Ibid.*





Adult participation rate in learning during the last 12 months	60.0%	37.4%	+ 22.6 pp
At-risk-of-poverty or social exclusion rate	Decline by at least 15 million people	c. 91 million people	Decline by at least 15 million people

The staff working document accompanying the EPSR Action Plan provides justifications for the use of these three indicators. For instance, it argues that the “employment rate is one of the most comprehensive, well established and reliable indicators in the employment and social domains”.¹⁶

3.3.4. Policies addressing demographic developments

The European Commission has the legal obligation to monitor the EU demographic situation and to report on this to EU decision-making institutions.¹⁷ **Collection of statistical data is performed in accordance with the EU legal framework on population statistics and key fields that have been monitored relate to population change and net migration. These quantitative data have been recognised by the EU as important for its economic, social and cohesion policies generally.** These data have raised awareness of the negative demographic trends across Europe, and more recently, of their territorial scope (see **Figure 2**). The EU does not have a separate strategy or policy dedicated to demography, however, the European Commission has taken account of the implications and impact of demographic change in the design of its two key territorially oriented policies - EU Cohesion Policy and EU Rural development policy (CAP), as well as in multiple sectoral initiatives.

¹⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021SC0046&from=en>

¹⁷ As per Article 159 TFEU





Figure 2: Natural population change, net migration and total population change by urban-rural regional typology and by type of metro region during the years 2010-2019

Average annual change per 1000 residents	Natural population change	Net migration	Total population change	Average annual change per 1000 residents	Natural population change	Net migration	Total population change
North-western EU				North-western EU			
Urban	2.5	4.1	6.6	Capital metro	5.1	3.3	8.4
Intermediate	0.1	3.8	3.9	Other metro	0.5	4.5	5.0
Rural	-1.3	2.5	1.2	Non-metro	-0.8	2.7	1.8
Southern EU				Southern EU			
Urban	0.0	2.5	2.6	Capital metro	1.0	2.7	3.7
Intermediate	-1.7	1.9	0.2	Other metro	-0.5	2.5	2.0
Rural	-4.7	1.0	-3.7	Non-metro	-2.5	1.5	-1.0
Eastern EU				Eastern EU			
Urban	-0.5	2.7	2.2	Capital metro	-0.3	4.7	4.5
Intermediate	-1.9	-0.4	-2.3	Other metro	-1.0	0.2	-0.7
Rural	-1.9	-2.3	-4.2	Non-metro	-2.4	-2.3	-4.7
EU-27				EU-27			
Urban	1.2	3.3	4.5	Capital metro	2.7	3.5	6.2
Intermediate	-0.9	2.1	1.2	Other metro	0.0	3.2	3.2
Rural	-2.0	0.4	-1.6	Non-metro	-1.8	0.8	-1.0

Source: Power point presentation of DG Regio (Lewis Dijkstra) on the 8th Cohesion Report

Recognising the need for complex and context-specific policy responses

Data have been an important factor in bringing demographic issues into the EU policy agenda. This process has been supported by multiple EU-level reports¹⁸ and analyses. Among those, a JRC report has presented demographic scenarios arguing that these scenarios need to take account not only of trends in migration, fertility and mortality, but also in terms of **education levels (and skills supply) and labour force participation rates**, which can alleviate pressure from aging (JRC, 2019). Another important source has been the first Report on the Impact of Demographic Change in Europe (2020) which presented facts and figures to kick-start Commission's work in this area and helped to identify how regions and communities most affected can be supported by policy. Evidence in this report provided the foundation for the Commission [Green Paper on Aging](#), and the EU Long-term Vision for Rural areas (discussed earlier).¹⁹ In particular, the Green Paper on Aging points to the **progressive increase in the number of people in need of long-term care which, some argued, amplifies the need for effective EU monitoring mechanisms of long-term care provision**. The most recent [2023 Report on the Impact of Demographic Change](#), which is an update on the 2020 one, highlights further the policy-relevant evidence of **shrinking working-age**

¹⁸ See compilation here https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/new-push-european-democracy/impact-demographic-change-europe_en#latest

¹⁹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52021SC0166>





population and underlines the need for activating available talent, including among underrepresented groups, and continued investment in skills.

The above-mentioned reports together with the data they provided helped to shed light on the interlinkages of demographic change with economic activity, welfare, skills, infrastructure needs, housing and with territorial inequalities. Consequently, formal opinions and resolutions of EU institutions as well as outcomes of consultations under the Conference on the future of Europe and the EU Pillar of Social Rights Action Plan have all drawn attention to broader factors that are key in order to respond or adapt to depopulation and shrinkage such as the **accessibility and affordability of public services including education, and care and assistance (for the elderly), dynamic labour market perspectives, security in the labour market, quality employment and active family and healthy ageing policies**. This input has supported the formation of policy awareness that dealing with demographic change requires holistic and territorially sensitive approaches based on the characteristics of the territory and its population segments (i.e. the need to strengthen the ties between evidence and policy approaches).²⁰

Impacting the design of EU initiatives and policies

Recognising 'demographic transition' and 'demographic change' as a cross-cutting issue requiring mostly policy levers at national/subnational level and in diverse domains, various EU initiatives were recently launched to support Member States in different sectors. Under some of these (notably the Council recommendations cited below), Member States have the obligation to adopt their own action plans and develop monitoring frameworks.

- the [European Care Strategy](#) with the [Council Recommendations on access to affordable, high-quality long-term care and early childhood education and care](#),
- the [EU Comprehensive Strategy on the Rights of the Child](#) and the European Child Guarantee,
- Youth Employment Support Package,
- Commission Recommendation on Effective active support to employment,
- Council Recommendation on ensuring a fair transition to climate neutrality,
- Disability Employment Package,
- [Harnessing Talent in Europe](#) (in light of the shrinking labour force and departure of young people in some regions)

More directly, the European Commission has taken account of the implications and impact of demographic change in the design of its two key territorially oriented policies – the EU Cohesion Policy and EU Rural development policy (CAP). **These policies have given increased attention to demographic change**. On the one hand, this can be seen as a consequence of their evolution to a more place-based approach and the recognition that solutions should be sought within the unique characteristics of (rural) areas (Copus, Andrew, et al. 2021). On the other hand,

²⁰ see for instance European Parliament resolution of 14 November 2017 on the deployment of cohesion policy instruments by regions to address demographic change (2016/2245(INI)); European Parliament resolution of 20 May 2021 on reversing demographic trends in EU regions using cohesion policy instruments (2020/2039(INI)); Opinion of the European Economic and Social Committee (2020/C 232/01) on Demographic challenges in the EU in light of economic and development inequalities





demographic change has become more prominent in the EU cohesion and rural policy agenda thanks to the continuous improvement in the quality of georeferenced demographic data following the introduction of the grid-based methodology for the definition of territorial typologies. Examples include directing investments into the **diversification of economies** facing structural challenges, into the **upgrade of accessibility to services and better quality of life**, into **boosting the efficiency of public administration** and the increased involvement of the regional and local authorities through dedicated and integrated **place-based strategies and instruments**. Cohesion and rural development policies have increasingly accommodated funding that stimulates **inter-municipal cooperation and urban-rural linkages**, which are a type of soft solutions to increase the accessibility and affordability of public services and promote inter-municipal learning. Such types of measures also promote policy solutions to be sought within more 'functional' geographical boundaries that do not necessarily coincide with administrative ones (O'Brien, P. (2015)).

Demography is also a component analysed in the EU Cohesion reports which inform the implementation and the needs for adaptation of the EU Cohesion policy. The most recent Cohesion report (2022) recognises that demographic change will affect all regions, but rural regions first. Key statistical data that the report highlights relate to **shrinkage of the working age population, increase of the share of population living in a shrinking region and the growth of population aged 65+**. This has led to suggestions in the report to support responses in the field of (1) firm adaption to a shrinking labour force via increased youth, women and non-EU migrants' employment, investment in adult learning and labour-saving and augmenting technologies; (2) adjustments in primary and secondary schools to expected lower number of pupils in the future; (3) adjustments in other public services and healthcare to serve a growing number of older residents.

Remaining data challenges

Despite significant advancements in data collection and availability, an evaluation of the European Commission on the current legal framework for European statistics on population indicates several weaknesses that need to be addressed in the ongoing process of its update. In particular, gaps related to statistics' insufficient geographic granularity, including functional typologies and georeferenced data for urban/rural integration have been among the most prominent concerns raised during the public consultation process.

“The rapidly changing nature of some population and housing characteristics, in particular in relation to demographic and migration phenomena, and the corresponding need for a prompt targeting and adaptation of policies means that there is a need for statistics to be available on a timely basis soon after the reference period. The periodicity and timeliness of statistics should be therefore tangibly advanced.”

Source: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52023PC0031>





3.4. Digital focus

EU-level digitalisation policies for rural areas

At the EU-level, there are different digitalisation policies for rural areas. Some of the key framework policies for rural areas concerned with digital transition include: **the Long-term Vision for Rural Areas** (discussed in Section 3.1.2), the Digital Declaration, the Digital Age & Strategy for Data, **the Common Agricultural Policy post-2020** (discussed in Section 3.1.1), as well as the **Green Deal** (discussed in Section 3.2.1) and the Farm to Fork strategies (**Annex I**). The key issues in these policies are concerned with the strengthening of broadband connectivity, supporting the development of digital skills, provision of advisory services, facilitation of investments, promotion of targeted R&I at local and regional level, and provision of data and facilitation of data sharing. In addition, there are also other policy instruments that support digitalisation, such as Horizon Europe, or the Recovery & Resilience Facility (e.g. covering digital and data infrastructure). Furthermore, the **Digital Europe Programme** is relevant given its focus on boosting digitalisation in agriculture, forestry and rural areas by measures such as the Common European Agriculture Data Space/Data Space for Smart Communities; testing and experimentation facilities for AI in agri-food/for smart communities; Digital Innovation Hubs; and, support for advanced digital skills (Marquard D, 2022).

Use of indicators/data/evidence in EU-level digitalisation policies for rural areas

Digitalisation is a vast, complex and rapidly evolving policy area, which partly explains why gathering timely and accurate data can be challenging. The COVID crisis has further highlighted the role of digital technologies and infrastructures, and demonstrated how societies and economies rely on digital solutions (European Commission, 2021d).

The European Commission monitors EU Member States' digital progress through the **Digital Economy and Society Index (DESI)** reports, which have been published annually since 2014. Each year, DESI provides country profiles which identify key actions areas for the Member States and thematic chapters which offer wider European-level data across key digital policy areas, considered to be important for underpinning policy decisions (European Commission website, The Digital Economy and Society Index (DESI)). In summary, DESI serves as a composite index that annually summarises relevant indicators on Europe's digital performance and tracks the progress of Member States across five main dimensions: connectivity, human capital, use of Internet, integration of digital technology, and digital public services (see **Table 7** (European Commission, Digital Economy and Society Index, 2022)).

Table 7: DESI dimensions and indicators

Dimension	Sub-dimension	Indicator
1 Human capital	1a Internet user skills	1a1 At least basic digital skills
		1a2 Above basic digital skills
		1a3 At least basic digital content creation skills





	1b Advanced skills and development	1b1 ICT specialists	
		1b2 Female ICT specialists	
		1b3 Enterprises providing ICT training	
		1b4 ICT graduates	
2 Connectivity	2a Fixed broadband take-up	2a1 Overall fixed broadband take-up	
		2a2 At least 100 Mbps fixed broadband take-up	
		2a3 At least 1 Gbps take-up	
	2b Fixed broadband coverage	2b1 Fast broadband (NGA) coverage	
		2b2 Fixed Very High Capacity Network (VHCN) coverage	
	2c Mobile broadband	2c1 5G spectrum	
		2c2 5G coverage	
		2c3 Mobile broadband take-up	
	2d Broadband prices	2d1 Broadband price index	
	3 Integration of digital technology	3a Digital intensity	3a1 SMEs with at least a basic level of digital intensity
		3b Digital technologies for businesses	3b1 Electronic information sharing
			3b2 Social media
3b3 Big data			
3b4 Cloud			
3b5 AI			





		3b6 ICT for environmental sustainability
		3b7 e-Invoices
		3c e-Commerce
		3c1 SMEs selling online
		3c2 e-Commerce turnover
4 Digital public services	4a e-Government	3c3 Selling online cross-border
		4a1 e-Government users
		4a2 Pre-filled forms
		4a3 Digital public services for citizens
		4a4 Digital public services for businesses
		4a5 Open data

Source: European Commission (2022a) Digital Economy and Society Index (DESI) 2022, Methodological Note

The 2022 DESI has been adjusted to the Commission’s policy programme ‘Path to the Digital Decade’, which sets EU-level targets for 2030 to deliver a comprehensive and sustainable digital transformation across all sectors of the economy (European Commission website, Europe’s Digital Decade). Notably, 11 of the DESI 2022 indicators measure the Digital Decade targets, and the aim is to ensure that future DESI reports would cover all targets. More generally, indicators used for the DESI 2022 reports have undergone improvements in relation to the five main dimensions (including the introduction of some new indicators) (European Commission, DESI 2022, Methodological Note, 2022).

The DESI has been developed according to the guidelines and recommendations in the OECD/JRC’s ‘Handbook on constructing composite indicators: methodology and user guide’ (Nardo M et al, 2008). In terms of sources, the **data of DESI relies largely on data collected or verified by national authorities**, see **Table 8** below.

Table 8: DESI data sources

Data source	Data collection
Eurostat	Data collected & verified by national statistical offices or Eurostat.





Communications Committee (COCOM)	Data collected & verified by national regulatory authorities (by data experts appointed by the members of the Communications Committee in the Member States).
Broadband coverage studies	Data collected by IHS Markit, Omdia and Point Topic & verified by national regulatory authorities (by data experts appointed by the members of the Communications Committee in the Member States).
Retail broadband prices studies	Data collected by Empirica & verified by national regulatory authorities (by data experts appointed by the members of the Communications Committee in the Member States)
e-Government benchmark	Data collected by Capgemini & verified by relevant ministries in the Member States.
Survey of businesses on the use of digital technologies	Data collected by Ipsos and iCite, survey results reviewed by the Digital Single Market Strategic Group.
European data portal	Data collected by Capgemini from representatives appointed by the relevant ministries in the Member States.

Source: European Commission (2022a) Digital Economy and Society Index (DESI) 2022, Methodological Note

Challenges related to the use of indicators/data/evidence in EU-level digitalisation policies for rural areas

The availability of data across the different dimensions of digitalisation varies amongst the countries. For example, the OECD has reported that only a limited number of indicators related to digitalisation can be used for cross-country monitoring and assessment. These indicators tend to be standard and not sufficiently granular to capture the changing dynamics of the digital transformation. Furthermore, the measurement tools may not always evolve in line with the rapid pace of the digital transformation (e.g. they are not necessarily able to capture all the different and emerging sectors that are affected by digitalisation) (OECD, 2019).

The data challenges are more profound when looking at specific territories, such as rural areas, and specific sectors or population groups within these territories. For example, while DESI data is produced for the individual Member States, such data are not available at a sub-national level. Moreover, DESI does not provide sufficient information to measure the rural digital divide (Brunori G et al, 2022). Indeed, DESI has largely focused on tracking the dynamics of inter-country imbalances, but has not specifically addressed the issue of reducing the digital divide between urban and rural areas. This in mind, for example, the European Platform for Rural Innovation (EPRI) has called for a deeper understanding of the differences between urban and rural economies in terms of criteria such as the availability of Internet services and e-commerce, the





use of digital technologies in business and management, and the spread of advanced skills for working with complex digital devices among rural residents (Kondratieva, 2020).

The lack of disaggregated data in relation to rural digitalisation and policy impact is therefore a particular challenge. In the absence of hard quantitative data on digitalisation, data are often collected through qualitative assessments (Marquard D, 2022) and, for example, Commission services rely on multiple sources of data in their search for information.

While there is a vast amount of information on digitalisation, but it is not consistent across the different dimensions, or sufficiently detailed on all the different sectors or territories (e.g. rural areas). There is therefore a recognition that **statistical information systems need to adapt, expand to provide more specific and responsive data, as well as new data on a timely basis, and in an internationally-coordinated way** (e.g. data-linking opportunities). This underlines the need for continuing efforts to develop tools and mechanisms which allow to access specific / micro-data while ensuring data confidentiality. Furthermore, the importance of capacities and resources to implement such systems, as well as to disseminate the information openly are at the centre stage (OECD, 2019). Concerning rural areas in particular, more specific and relevant data are needed based on the different needs of rural areas in order to make well-informed decisions on the best possible actions to boost digital transformation. Recent studies underline the opportunities to align rural digital strategies with national and EU-level strategies, and to improve coordination of national digital strategies (DESIRA, 2022).

3.4.1. Digital Europe Programme (DIGITAL)

The Digital Europe Programme (DIGITAL) is an EU funding programme focussed on bringing digital technology to businesses, citizens and public administrations. With an overall budget of €7.5 billion (in current prices) over a seven-year period, its main multiannual work programme for 2023-24 aims to provide funding to projects in five key capacity areas: supercomputing, artificial intelligence, cybersecurity, advanced digital skills, and ensuring a wide use of digital technologies across the economy and society, for example through Digital Innovation Hubs. More generally, it aims to accelerate the economic recovery and shape the digital transformation bringing benefits to everyone, in particular to SMEs. The Digital Europe Programme aims to complement the funding available through other EU programmes, most notably the Horizon Europe programme for research and innovation, the Connecting Europe Facility for digital infrastructure, the Recovery and Resilience Facility and the Structural Funds (European Commission website, The Digital Europe Programme).

Amongst the key transitions identified in the RUSTIK project, the Digital Europe Programme addresses the **digital and green transitions**. Regarding the digital transition, the Programme notes that *‘the Digital Europe Programme is strategic in supporting the digital transformation of the EU industrial ecosystems.’* In addition, the Programme notes the importance of green transition by stating that *‘the twin transitions to a green and digital Europe remain the defining challenges of this generation [...] The Digital Europe Programme will unleash the powers of digital technologies to reach Europe’s common climate and environmental goals as set out in the European Green Deal, including being climate neutral by 2050...’* (European Commission, 2021e).

The Digital Europe Programme and specifically its investment plan for Europe lists ten investment ideas for Europe’s digital recovery. The investment idea number nine is concerned with ‘bridging





the urban-rural digital divide'. Some limited references to rural areas are also included in other investment ideas, but mostly along the lines of *'will also benefit rural areas'* or *'will benefit both cities and rural areas'*. The investment idea on *'bridging the urban-rural digital divide'* discusses the limited access to fast broadband connections in rural areas, which in turn means inequality of opportunity (i.e. lack of broadband leading to higher unemployment and fewer economic opportunities). The need for increasing funding for high-quality network infrastructure (e.g. fibre, 5G) is underlined especially in areas where private investments will not be able to deliver these on their own. It is acknowledged that many countries have some level of public funding available for this purpose, but that these funds are significantly lower than those for other key infrastructure investments (e.g. roads). This investment idea therefore calls for a rebalancing of resources. In addition to addressing the digital divide, the chapter refers to other key rural sustainability transitions. For example, it is noted that better connectivity could (possibly) help to contribute to alleviating negative demographic developments in rural areas, as well as offering opportunities for local businesses and thus supporting rural sustainability. Moreover, the chapter states that 5G connectivity in rural areas can enable remote working (and create a better work-life balance), which would result to reduced work commuting and a reduced environmental impact. In parallel to these investments, the need for new and appropriate cybersecurity solutions is noted, not least due to the increasing vulnerability of the private and public sector to cyber-attacks. Another *'detailed'* reference to rural areas is provided in investment idea number ten *'boosting growth in traditional sectors through 5G connectivity'*. Here it is stated that *'a more digital and connected agriculture sector will help support rural and remote areas, boosting local industries, including fishing, tourism and farming, and helping rural producers market their products beyond their immediate surroundings by using e-commerce platforms'* (Digital Europe, A digital investment plan for Europe).

The regulations of the Digital Europe Programme contain (measurable) indicators (in Annex II) for the monitoring of the implementation and for the reporting on the progress of the Programme towards the achievement of the specific objectives. Regarding data collection sources, the regulation notes the use of *'official EU statistics, such as regular ICT statistical surveys'* as context indicators. Furthermore, Article 25 of the regulation notes that the Commission *'shall consult national statistical institutes and shall involve them, together with Eurostat, in the initial design and subsequent development of statistical indicators used for monitoring the implementation of the Programme and progress made with regard to digital transformation'* (Regulation (EU) 2021/694). Annex II lists measurable indicators for the five Specific Objectives, namely for SO1 High Performance Computing; SO2 Artificial Intelligence; SO3 Cybersecurity and Trust; SO4 Advanced Digital Skills; and SO5 Deployment and Best Use of Digital Capacity and Interoperability. The indicators listed have no references to territorial targeting.





4. National-level analysis

Based on the EU-level analysis, the following national policies were identified:

Table 9: National level policies

<p>Rural policy</p> <p>a. National CAP strategy</p>
<p>Socio-economic policies</p> <p>a. Cohesion Policy programme (directly related to the LL area)</p> <p>b. Territorial Just Transition Plan (TJTP) (where it covers the LL area)</p> <p>c. National Recovery and Resilience Plan (NRRP)</p> <p>d. National Reform Programme 2022</p>
<p>Climate-Environmental policies</p> <p>a. National Long-Term Strategy 2050</p> <p>b. National Strategy for Climate Change Adaptation and Action Plan</p> <p>c. Integrated National Energy and Climate Plan</p>
<p>Digital policies</p> <p>a. Select relevant National Digital Policy/Strategy/Programme(s)</p>

4.1 Rural focus - National CAP strategy

4.1.1. Presence of EU policies in the national level rural policies

In November 2021, the European Parliament adopted the reform of the EU's Common Agricultural Policy (CAP) for the period 2023-2027, which consists of a package containing three key EU regulations: the Strategic Plan Regulation, the Horizontal Regulation and the Single CMO Regulation. These regulations are intended to take the European CAP in a fairer, greener, and performance-based direction. The emphasis is similar to that of European Cohesion Policy, i.e., the change is described as combining the interventionist logic of agricultural policy with three familiar EU sustainability objectives (social, environmental, economic) and nine related key objectives. It is therefore not surprising that the analysed National CAP Strategic Plans cover mainly the agricultural sector, but they devote less attention to rural areas. Broader territorial questions are mainly dealt with through the lenses of other relevant EU-level policies analysed in this report.

EU countries

Based on the analysis of the national Cap Strategic Plans of eight EU countries' (Bulgaria, Spain, Finland, Slovenia, Germany, Italy, Poland, and Austria), the Strategic Plans are well compatible with the selected strategies and programmes of socio-economic/demographic, environmental and digital transitions analysed in this report. The CAP Strategic Plans contain in most cases references to EU-level climate policies/strategies/programmes, such as the EU Green Deal/Farm-to-Fork, Biodiversity Strategy for 2030, Regulation (EU) 2018/1999 (governance), Regulation (EU) 2018/842 (reduction of emissions), Regulation (EU) 2018/841 (LULUCF), LIFE, Connecting Europe Facility, and the Renewable Energy Directive (2998/28/EC). The main EU Green Deal





strategies in question are the Farm to Fork Strategy and the EU Biodiversity Strategy for 2030 that include different non-binding EU-level targets which are specifically relevant to the CAP and relate to the areas covered by its specific objectives.

In this context, CAP Strategic Plans pay particular attention to and reflect the objectives of the European Green Deal and take them into account to a large extent. The European Commission has verified that the CAP plans are consistent with the general objectives of the Green Deal, and progress towards these objectives will be monitored through the proposed indicators. However, the new European Commission regulations for 2023-2027 also provide some flexibility for the Member States to deliver their objectives of the CAP through the CAP Strategic Plans. This means that the Member States have a manoeuvring space to select individual measures and intervention logic, although these policies must make an input to achieving the CAP objectives set by the European Commission. (European Commission 2022c).

In some CAP Strategic Plans (Italy and Finland), part of the investment in business activities and in animal production and agro-forestry systems is also directed towards improving their sustainability and environmental practices. Such emphases in the Strategic Plans can be interpreted as key factors in promoting climate change and the environmental transition. It should be borne in mind that similar policies or instruments may be identifiable in the other eight EU Member States in this review, but the CAP Strategic Plans were reviewed at a general level and therefore no such policies or instruments were necessarily identified.

The Long-Term Vision for Rural Areas (LTVRA) was launched in June 2021 to identify the challenges and concerns that the European rural areas are facing, as well as to highlight some of the most promising opportunities that are available to these territories. In relation to National CAP Strategic Plans, the intention was that the LTVRA will be developed into a specific and measurable strategy at the EU level and guide the preparation of the CAP Strategic Plans. Therefore, it has been vital that the LVTRA should be entirely incorporated into the preparation of CAP Strategic Plans and implementation of the programme activities at national and regional/local levels. However, the analysis of eight CAP Strategic Plans in this report shows that only four strategic plans (Italy, Poland, Slovenia and Finland) contained a direct reference to the LVTRA. Naturally, the analysis of these eight CAP Strategic Plans does not indicate whether the LTVRA was used as a background document or material in the preparation of the plans.

Serbia and the UK

A total of eight national-level rural policies from Serbia and United Kingdom were analysed to understand the presence of EU policies at the national level socio-economic policies. Policies were also analysed to understand to what degree they emphasise the three main transitions (socio-economic, climate and environmental, and digital). The selection of analysed strategies/policies/programmes was determined by the Living Lab coordinators, rather than pre-determined by the WP4 leads as was the case for the EU countries.

In the case of Serbia, four national rural policies were selected for analysis: *The Strategy for Agriculture and Rural Development of the Republic of Serbia (2014-2024)*, *National Rural Development Programme (2022-2024)*, *The National Program for Agriculture (2022-2024)* and *IPARD III Programme for the Republic of Serbia (2021 - 2027)*. Regarding the presence of EU policies, it was evident that the CAP had significant influence, as three out of the four analysed





policies were aligned with the CAP priorities. Furthermore, *The National Program for Agriculture (2022-2024)*, displayed alignment with the priorities of Representation of the Union of Entrepreneurs and Employers (ZPP). Among the analysed policies, *The Strategy for Agriculture and Rural Development of the Republic of Serbia* addressed socio-economical and climate-environmental transitions. Also, digital transition was mentioned in some of the policies, with a specific mention of the digital divide between rural and urban areas.

For the United Kingdom, two sets of national socio-economic policies were examined: Wales and England. For Wales, analysis encompassed the *Agriculture Bill*, which was specifically designed to establish an alternative framework for agricultural support after Brexit, replacing the CAP. This bill explicitly addresses socio-economic and climate-environmental transitions, highlighting objectives such as sustainable food production and the preservation and enhancement of rural areas and cultural resources.

Regarding England, the policies analysed included *Agriculture Act 2020*, *Health and Harmony: The future for Food, Farming and the Environment in a Green Brexit*, and *Rural England Prosperity Fund*. The *Agriculture Act* made numerous references to EU policies such as the CAP, ERDF, ESF, EAFRD. Additionally, the Direct Payments Regulation was mentioned. The other two policies also contained references to EU policies, including the CAP, EU Free Trade agreements and EU Rural development Fund. The policies varied in their focus on the three transitions. The *Rural England Prosperity Fund* primarily emphasised the socio-economic transition, while some projects within the policy were identified as addressing digital and climate transition challenges. The remaining two policies placed a stronger emphasis on climate-environmental transition challenges.

4.1.2. Description and operationalisation of indicators in the national rural policies

EU countries

As a second stage of the national analysis, the description and operationalisation of indicators within national CAP Strategic Plans was analysed. The first step involved identifying indicators that matched or closely resembled those outlined in the 8th Cohesion Report (see Chapter 2.4.1). Subsequently, the operational use of these indicators within the plans was analysed. The results indicate that the majority of indicators pertained to the environmental domain, followed by social, economic, and digital indicators. These indicators were primarily employed to assess the existing situation in terms of needs, challenges, etc. to monitor implementation/progress; evaluate impact, and assist with forecasting (e.g., by accessing future vulnerabilities).

Serbia and UK

In the case of Serbia, a comprehensive array of indicators similar to those found in the 8th Cohesion Report were identified across all analysed rural policies. The majority of these indicators pertained to social and economic aspects. It was accentuated that *National Rural Development Program* and *IPARD III* contained the most comprehensive set of relevant data. Their main purpose was to help inform a policy issue/assess needs and provide information on policy design and choice. Furthermore, they assisted with forecasting future trends. Conversely, the *Wales Agriculture Bill* lacked indicators that corresponded to those outlined in the 8th Cohesion Report.





Lastly, in the case of England, a limited number of primarily economic indicators were identified, along with occasional indicators related to quality of life and the environment. These indicators were utilised to help inform a policy issue/assess needs and provide information on policy design and choice and assist with forecasting, and monitor implementation/progress; evaluate impact and communicate to the wider public/policy acceptance.

4.2 Climate focus

4.2.1. Presence of EU policies in the national level climate-environmental policies

EU countries

The national-level climate-environmental policies, strategies and programmes analysed are National Long-Term Strategy 2050, National Strategy for Climate Change Adaptation and Action Plan and Integrated National Energy and Climate Plan.

National Long-Term Strategy 2050

The National Long-Term Strategies of the EU countries' aim to meet the commitments of the Paris Agreement and the objectives of the Energy Union to achieve the economic transformation needed to hold the increase in the global average temperature below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C. The national long-term strategies have a perspective of at least 30 years. The strategies must be updated every ten years or earlier when necessary.

The analysed documents are the National Long-Term Strategies of Bulgaria, Spain, Germany, Austria, Slovenia, Italy and Finland. All the documents refer to the EU Common Agricultural Policy (CAP) as a mechanism to reduce greenhouse gas emissions in the agriculture sector. The most relevant EU policies mentioned in the national strategies (1-2 documents mentioning each) are:

- Strategy level: European Green Deal, Energy Union, EU biodiversity strategy 2020 & 2030
- Policy/Programme level: EU Energy Policy, Just Transition Mechanism
- Fund level: Innovation Fund, LIFE, ERDF, ESF+, JTF

Several laws or law packages are also mentioned. These are the

- European Climate Law,
- The Energy Performance of Buildings Directive,
- 2020 Climate & Energy package,
- Clean energy for all Europeans package and
- the EU Effort Sharing Regulation (EU) 2018/842.

Other mentioned strategies, policies, programmes and funds are the Farm to Fork Strategy, Clean Planet for all, A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy, Action Plan: Financing Sustainable Growth COM/2018/097, Horizon Europe Programme, the InvestEU Programme, Natural 2000 network, EU Emissions Trading





System and the LULUCF regulation. The Paris Agreement, International Platform on Sustainable Finance and the Santiago Action Plan are also mentioned.

National Strategy for Climate Change adaptation and Action plan

The National Strategies for Climate Change adaptation build on the EU Adaptation Strategy. The first EU Adaptation Strategy was published in 2013 and since then all EU Member States have prepared their own national adaptation strategies. The new EU Strategy on Adaptation to Climate Change was published in 2021. According to the Strategy, The European Climate Law proposal commits the EU and its Member States to make continuous progress to boost adaptive capacity, strengthen resilience and reduce vulnerability to climate change.

The analysed documents are the national strategies of Bulgaria, Poland, Spain, Germany, Austria, Slovenia and Finland. None of these national strategies mention any cross-cutting EU policy documents. Among the most relevant EU policies, the following references are made:

- Strategy level: European Green Deal, Energy Union, EU Biodiversity strategy for 2030, EU Adaptation Strategy
- Policy/Programme level: EU Energy Policy, EU Common Agricultural Policy (CAP)
- Fund level: LIFE, ERDF, ESF+, CF, EAFRD, EAGF

Other mentioned strategies, policies, programmes and funds are the

- Clean Planet for all,
- A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy,
- the European Industrial Strategy,
- Horizon 2020 Programme,
- Horizon Europe Programme and
- European Maritime and Fisheries Fund.

European Climate Law and various EU directives such as the Water Framework, Water rights Act, Nitrates Directive, Floods Directive, Internal Energy Market Directive and Ecodesign Directive are also mentioned.

Integrated National Energy and Climate Plan

The National Energy and Climate Plans were introduced under the Regulation on the Governance of the Energy Union and Climate Action (EU)2018/1999. The national plans outline how the Member States intend to address the dimensions of the Energy Union: decarbonisation, energy efficiency, energy security, internal energy market and research, innovation and competitiveness. The Member States have to submit a progress report every two years.

The analysed documents are the Integrated National Energy and Climate Plans of Bulgaria, Poland, Spain, Germany, Austria, Italy, Poland, Slovenia and Finland. Among the most relevant EU policies, the following references are made:

- Strategy level: Energy Union, European Green Deal, EU Adaptation Strategy





- Policy/Programme level: EU Energy Policy, EU Common Agricultural Policy (CAP), Environment action programme (EAP), Just Transition Mechanism
- Fund level: the European Structural Funds, Innovation Fund, Connecting Europe Facility

Other mentioned strategies, policies, programmes, funds and laws are the

- 2050 long-term strategy,
- InvestEU Programme,
- 2020 Climate & Energy package,
- Action Plan for Energy Efficiency: Realising the Potential,
- Energy Performance of Buildings Directive,
- Energy Efficiency Directive,
- Regulation concerning measures to safeguard the security of gas supply,
- the Effort Sharing Regulation,
- LULUCF regulation,
- the European fund for strategic investments (EFSI),
- Horizon Europe Programme and
- the Treaty of the Functioning of the European Union.

Paris Agreement and Kyoto Protocol to the United Nations Framework Convention on Climate Change are also mentioned.

Serbia and UK

The Serbian policies, programmes and strategies analysed are the Water management strategy in the territory of the Republic of Serbia (2017-2034), Action plan for the implementation of the water management strategy on the territory of the Republic of Serbia (2021-2023) and the Waste management Programme of the Republic of Serbia (2022 – 2031). The Water management strategy and Action plan do not refer to EU-level policies, but the Waste Management Programme refers to the EU Green Deal.

The UK policies, programmes and strategies analysed are the 25 Year Environment Plan, Environmental Improvement Plan 2023, Environment Act 2021, Climate Change Act 2008, Net-Zero Strategy, Energy Security Strategy, Future Wales: The National Plan 2040 (2021), Prosperity for All: A Climate Conscious Wales (2019) and Prosperity for All: A Low Carbon Wales (2019). Among these, the 25 Year Environment Plan mentions EU environmental regulation, CAP and LIFE; the Environmental Improvement Plan 2023 mentions CAP and the Net-Zero Strategy mentions the European Regional Development Fund, CAP and the EU Emissions Trading System. Future Wales: The National Plan 2040 (2021) notes the continued uncertainties following UK withdrawal from the EU. Prosperity for All: A Climate Conscious Wales (2019) + Prosperity for All: A Low Carbon Wales (2019) analyse the future of agricultural support following CAP withdrawal. Links to European level policies are briefly acknowledged through continued Welsh membership of the Network of Regional Governments for Sustainable Development. The documents also mention several EU-funded programmes that have enabled biodiversity, coastal adaptation, and rural development initiatives and note the importance of EU directives for decarbonization.





4.2.2. Description and operationalization of indicators in the national climate-environmental policies

EU countries

National Long-Term Strategies 2050

The National Long-Term Strategies 2050 contain environmental, social, economic, and digital indicators. Indicators are used to assess the current state of play in terms of needs and challenges, in order to inform policy design and choice, to highlight the connection between sectoral policies and to integrate solutions, to assist with forecasting, to monitor the implementation and progress and to evaluate impact. The most commonly used indicators were the Share of renewables in energy consumption and GHG emissions in the transport sector. Other environmental indicators used were CO₂ emissions from fossil fuels, agricultural land abandonment, biodiversity, and waste generation. Economic indicators referred to GDP, innovation, government investment & expenditure and productivity. Transport indicators used were rail performance, road performance and accessibility. Employment rates and people at risk of poverty are examples of social indicators used.

Rural areas are mentioned in the strategies in reference to issues such as reducing carbon emissions in agriculture, adaptability of different measures in rural areas, bioeconomy, and mobility in rural conditions. The strategies naturally refer mostly to the climate-environmental transition, but social, economic and digital transitions are also at least briefly mentioned in regard to social justice, demographic change, gender equality, food security and health and wellbeing. Digitization is considered as a possible solution to operate climate-neutrally but also as a generator of increasing electricity consumption.

National Strategy for Climate Change Adaptation and Action Plan

The National Strategies for Climate Change Adaptation contain environmental, socio-economic, and digital indicators. Indicators are used to assess the current state of play in terms of needs and challenges, to inform policy design and choice, to highlight the connection between sectoral policies and to integrate solutions, to assist with forecasting, to monitor the implementation and progress and to evaluate impact. Environmental indicators include biodiversity, share of renewables in energy consumption and water quality. Examples of economic indicators are GDP, productivity, innovation and government investment & expenditure. Examples of social indicators are employment and unemployment rates, proportion of people at risk of poverty and gender equality.

The National Strategies for Climate Change Adaption are not targeted to rural areas specifically but the strategies deal with rural themes such as agriculture, forestry and natural resource management. Agriculture is defined as one of the key sectors in need for climate change adaptation actions. Rural areas are also reflected in socio-economic transitions such as polarisation between rural and urban areas, migration from rural to urban areas, ageing, decreasing rural population and challenges of rural employment and economic dependency. The impacts of climate change and different adaptation measures on the rural environment are also considered. The digital transition is not mentioned except in reference to using high-tech digital services as potential adaptation measures.





Integrated National Energy and Climate Plan

The Integrated National Energy and Climate Plans contain environmental, social, demographic, economic and digital indicators. Indicators are used to assess the current state of play in terms of needs and challenges, to inform policy design and choice, to highlight the connection between sectoral policies and to integrate solutions, to assist with forecasting, to monitor the implementation and progress and to evaluate impact. Share of renewables in energy consumption and GHG emissions in the transport sector are present in all the analysed documents. Other environmental indicators present are CO₂ emissions from fossil fuels, waste generation, biodiversity, water quality and agricultural land abandonment. Transport indicators present are rail performance, road performance and accessibility. Economic indicators present are GDP, innovation, government investment & expenditure and productivity. Examples of socio-demographic indicators present are employment rates, fertility rate, proportion of people at poverty risk and gender equality.

None of the strategies is targeted to rural areas, but the strategies deal with rural issues especially via references to agriculture and forestry. In some cases, the strategies also consider the adaptability of the proposed measures in rural areas. The strategies are fully aligned with the environmental-climate transition. Socio-economic and digital transitions are present to a minor degree in terms of e.g., social justice, sustainability and digital solutions but are not subject to direct or detailed analysis.

Serbia and the UK

The Water management strategy in the territory of the Republic of Serbia (2017-2034), Action plan for the implementation of the water management strategy on the territory of the Republic of Serbia (2021-2023) and Waste management Programme of the Republic of Serbia (2022 – 2031) contain environmental and socio-demographic indicators. The indicators are used to inform policy issues and assess needs, to provide information on policy design and choice, to enhance the connection between sectoral policies, to assist with forecasting, to monitor implementation and progress and to evaluate impact. No digital indicators are used. Environmental indicators present in the documents are water quality, waste generation and biodiversity. Socio-economic indicators present are GDP and employment rates. Demographic indicators are also used.

The 25 Year Environment Plan, Environmental Improvement Plan 2023, Environment Act 2021, Climate Change Act 2008, Net-Zero Strategy and Energy Security Strategy of England use indicators to inform policy issues and assess needs, to provide information on policy design and choice, to enhance the connection between sectoral policies, to assist with forecasting, to monitor implementation and progress, to evaluate impact and to communicate to the wider public to enhance policy acceptance. No digital indicators are used, but environmental, transport, economic, social and demographic indicators are used widely.

The Future Wales: The National Plan 2040 (2021), Prosperity for All: A Climate Conscious Wales (2019) + Prosperity for All: A Low Carbon Wales (2019) use indicators to inform policy issues and





assess needs, to provide information on policy design and choice, to assist with forecasting, to monitor implementation and progress, to evaluate impact and to communicate to the wider public to enhance policy acceptance. Prosperity for All: A Climate Conscious Wales (2019) + Prosperity for All: A Low Carbon Wales (2019) contain mainly environmental indicators but the Future Wales: The National Plan 2040 (2021) also contains several digital indicators in addition to the environmental, transport, social, economic and demographic indicators. Examples of digital indicators are business and household broadband availability, access to fast broadband and households and businesses with full fibre access. In addition, the plan refers to indicators that measure quality of life such as access to services and people's perception of the quality of services.

4.3 Socio-economic and demographic focus

4.3.1 Presence of EU-level policies in the national socio-economic policies

Four national-level socio-economic policies derived from higher EU-level socio-economic policies (Cohesion Policy, Just Transition Fund, Recovery and Resilience Plan and European Semester) were analysed in eight EU countries (Bulgaria, Spain, Finland, Slovenia, Germany, Italy, Poland, and Austria) to understand the presence of EU policies in national level policies. Policies were also analysed to understand to what degree they emphasize rural areas and the three main transitions (socio-economic, climate-environmental, and digital).

Firstly, regarding national *Cohesion Policy* programmes, it becomes apparent that a direct comparison was not feasible in Bulgaria and Germany. This was mainly due to reason that the former has multiple sectoral and regional operational programmes, and the latter has decentralised planning process. Throughout the analysis, the most referred EU-level policies were:

- Strategy level: the European Green Deal, European Digital Strategy
- Fund level: Just Transition Funds, ESF+, ERDF, EAFRD, Cohesion Fund

Most of the analysed programmes showed some emphasis on rural areas. While all three main transitions were referenced, the socio-economic transition stood out prominently. Issues such as ageing, depopulation, and territorial cohesion were particularly emphasised. Furthermore, the connection between three transitions was emphasised.

In case of the *Territorial Just Transition plans*, only those national plans which have an overlap with the LL area were analysed. The most frequently referred EU-level policies were:

- Strategy level: the European Green Deal, EU Digital Strategy, Biodiversity Strategy 2023
- Policy/Programme level: Cohesion Policy
- Fund level: Just Transition Funds, ESF+, ERDF, EAFRD

Most of the analysed Just Transition plans placed a strong emphasis on rural areas, which tend to be significantly impacted by the transition challenges. While all three transitions were identified, a strong focus was placed on the climate-environmental transition, particularly in relation to mitigating harmful social effects of the climate-environmental transition, such as depopulation. Also, the relation between climate-environmental and socio-economic transition was underlined.





In the case of National *Recovery and Resilience plans*, all covered EU countries had prepared national Recovery and Resilience plans in response to the Recovery and Resilience Facility. The most frequently referenced EU-level policy across these plans were:

- Strategy level: the European Green Deal, the European Pillar of Social Rights, EU Digital Strategy, Biodiversity strategy 2023, Energy Union
- Policy/Programme level: REACT-EU, Cohesion Policy, Common Agricultural Policy, Flagship Programs
- Fund level: Just Transition Fund

While most plans made some reference to rural areas, their overall focus was broader. All transitions were strongly integrated into the plans, with climate-environmental transition standing out in most countries.

Finally, within *National reform programmes*, the most frequently mentioned EU-level policies were:

- Strategy level: European Pillar of Social Rights, Green Deal
- Fund level: RRF, ERDF, ESF, ESF+, JTF

While these plans did not specifically target rural areas, many proposed actions, such as digitalization goals, were expected to have an impact on these areas as well. Each of the three transitions was acknowledged within these programmes.

Serbia and the United Kingdom

A total of eight national-level socio-economic policies from Serbia and United Kingdom were analysed to understand the presence of EU policies at the national level socio-economic policies. Policies were also analysed to understand to what degree they emphasize rural areas and the three main transitions (socio-economic, climate-environmental, and digital). The selection of the analysed strategies/policies/programmes was done by the Living Lab coordinators, rather than being predetermined by the WP4 leads, as was the case for EU countries.

In the case of Serbia, two national socio-economic policies were selected for analysis: *Economic reform programme 2023–2025* and *Strategy of Smart Specialization in the Republic of Serbia 2020 - 2027*. In the analysis, there was no significant presence of EU-level policies identified. This observation is attributed to the intricate nature of the EU accession process and the EU's strict requirements for the formulation of planning documents (such as action plans) for various negotiation chapters. Moreover, it was stressed that Serbia has yet to establish the necessary legal framework for the implementation of cohesion policy. No strong rural focus in either of the policies was identified either, although it was pointed out that rural areas are seen as part of broader strategy (e.g., competitiveness of the agriculture, improving infrastructure and digitalization). Finally, specifically the *Economic reform programme* addressed all three main transitions.

In the case of the United Kingdom, two sets of national socio-economic policies were analysed: Wales and England. For Wales, *Well-being of Future Generation Act 2015* and *Wales Infrastructure Investment Strategy 2021*. The findings indicated a limited presence of EU policies





in the analysed policies, primarily in the form of references to EU funding, including the pre-BREXIT ERDF. Notably, the analysis highlighted the uncertainty surrounding the replacement of strategic funding in the aftermath of Brexit. Despite the relatively low presence of EU policies, it was underscored that the Welsh Government has demonstrated a pro-EU stance, with a certain degree of "Europeanization" apparent in Welsh policy, aimed at distinguishing Wales within the United Kingdom. This entails a commitment to maintaining or surpassing EU standards, although no formal monitoring mechanism has been established for this purpose. Plans were not found to be specifically targeted for rural areas. The transitions that stood out were socio-economic and climate transitions, with an emphasis on advancing sustainable development.

In the case of England, policies examined included the *Build Back Better*, *Levelling up White Paper*, *Levelling up and Regeneration Bill* and *England Shared Prosperity Fund*. The analysis revealed numerous references to EU-level policies and funding instruments, such as the EU single market, Common Agricultural Policy (CAP), and Structural and Investment Funds. Three of the analysed policies exhibited a certain degree of focus on rural areas, with particular attention given to the need for funding in such regions and the concept of rural proofing. The analysed plans exhibited a strong emphasis on the socio-economic transition, accompanied by some references to the digital and climate-environmental transitions.

4.3.1 Description and operationalisation of indicators in national level socio-economic policies

Next, the description and operationalisation of indicators within these socio-economic policies was analysed. The first step involved identifying indicators in these policies that matched or closely resembled those outlined in the 8th Cohesion Report (see Chapter 2.4.1). The presence of qualitative indicators in these policies was also investigated. The findings demonstrate that from four reviewed policies/strategies/programmes, indicators were most frequently utilized within the national Recovery and Resilience plans, closely followed by Cohesion Policy programmes. Indicators fell primarily into the social category, followed closely by environmental and economic indicators. The indicators were predominantly employed to assess the existing situation in terms of needs, challenges, etc. to inform policy design and choice, and to monitor implementation/progress and to evaluate impact. Qualitative indicators were not common and mainly related to consultations with stakeholders (workshops, focus groups, interviews etc.).

In the national *Cohesion Policy programmes*, indicators were primarily concentrated in the social, economic, and environmental categories. The most common use of indicators in these programmes was "to help assess the current state of play in terms of needs, challenges, etc. to inform policy design and choice", followed by "monitoring implementation/progress; evaluate impact", and "to help to highlight the connection between sectoral policies (i.e., help to integrate solutions)". Qualitative indicators mentioned included for example "performance of the strategy" drawn from qualitative methods, such as stakeholder workshops and expert consultations.

In the case of the national *Just Transition Programmes*, most indicators fall into the category of environmental, social, and economic indicators. The main operational uses of these indicators were "to help assess the current state of play in terms of needs, challenges, etc. to inform policy design and choice", and "monitor implementation/progress; evaluate impact". Qualitative indicators mentioned included qualitative data for results and impact monitoring and stakeholder consultations.





In national *Recovery and Resilience plans*, indicators covered many indicators from social, economic, and environmental categories, with also a significant presence of digital indicators. The main reported operational use was “to help assess the current state of play in terms of needs, challenges, etc. to inform policy design and choice”. Qualitative use of indicators such as Eurobarometer survey and qualitative assessment of the national/regional challenges and opportunities are mentioned.

Finally, in the case of *National Reform Programmes*, most indicators identified were within the social category, followed by economic and environmental indicators. The most common use was also “to help assess the current state of play in terms of needs, challenges, etc. to inform policy design and choice”. Qualitative indicators mentioned included for example taxation structure reorientation and dependence of locational attractiveness.

Serbia and the UK

In the case of Serbia, an extensive range of diverse indicators matching or comparable to those found in the 8th Cohesion Report was found specifically in the *Economic Reform Programme*. It was highlighted that this programme refers to the fulfilment of the recommendations of the Council of the European Union on economic and financial issues for Serbia. It was also evaluated that the reason for the wide extensive range of indicators is the existence of an updated official databases and the need to present them in a way comparable to European statistics. The purpose of indicators was to help inform a policy issue/assess needs regarding all three main transitions, to provide information on policy design and choice, and to assist with forecasting in the economy. In the *Strategy of Smart Specialization in the Republic of Serbia 2020 – 2027*, only economic indicators from the 8th Cohesion Report were identified. The purpose of the use of indicators was to help inform a policy issue/assess the needs of the economy.

In Wales’ *Well-being of Future Generation Act 2015*, a wide range of indicators was identified, covering all main categories from the 8th Cohesion Report except better governance. In the *Infrastructure Investment Strategy*, mainly environmental and economic indicators were applied. The operational use of indicators was mainly to inform a policy issue/needs, provide information on policy design and choice, and provide information on policy design and choice. Moreover, indicators were also utilised to emphasise the need for Structural Fund replacement. Some use of qualitative indicators was identified in both policies, mainly in form of self-reported survey data.

In England’s *Levelling Up White Paper* and *Build Back Better*, an extensive array of indicators encompassing all categories of the 8th Cohesion Report were employed, while in *Levelling up and Regeneration Bill*, and *UK Shared Prosperity Fund*, almost no indicators were identified. Indicators were mainly utilized to provide information on policy design and choice and enhance the connection between sectoral policies. Notably, many qualitative indicators were utilized in the *Levelling Up White Paper*, regarding institutional capital, social capital, and intangible capital.

4.4 Digital focus

4.4.1. Presence of EU policies in the national level digital policies

EU countries





A total of 19 different EU policies are mentioned in national digital policies of Finland, Bulgaria, Austria, Italy, Slovenia, Spain and Germany. Digital Europe, Horizon Europe and Cohesion Policy are mentioned twice, and the others have only one mention. The following policies are mentioned with the national policy that mentions them in brackets:

- European Agricultural Fund for Rural Development (ES)
- European Agricultural Guarantee Fund (ES)
- Cohesion Policy (ES, SI)
- Digital Europe Programme (ES, BG)
- EU Cybersecurity Act (UK)
- Horizon Europe (BG, SI)
- New Industrial Strategy for Europe (BG)
- European Plan for Implementation of European Rail Traffic Management System (BG)
- Single European Sky Air Traffic Management Research Programme (BG)
- Europe 2020 (BG)
- Digital Markets Act (DE)
- European Chips Act (DE)
- European Media Freedom Act (DE)
- EU Global Gateway (DE)
- EU Digital Strategy (AT)
- 5G For Europe Action Plan (AT)
- Recover and Resilience (SI)
- European Green Deal (SI)
- Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society; Digital Compass; Digital strategy (SI)

For the most part it is challenging to identify direct linkages between national digital and EU policies. Only Spain reports on explicit reference to interaction between national and EU-level policies, highlighting that the national digital policy is aligned with EU-level policies. Other reports do not have similar references. Germany's report states that a "...strong reference is made to EU and international levels...". Bulgarian report contains two different national policies, which put together, mention eight different EU-level policies, but the connection between these is unclear.

Relevancy for rural areas differs greatly between countries, from having only implicit mentions of rural areas to having dedicated chapters or even a dedicated digital strategy for agriculture, forestry, and rural areas. While Spain has a wider strategy, it also has elaborated a separate digital strategy dedicated to rural areas. Instead, Finland only makes implicit mentions to rural areas via improving electronic municipal services. Germany has a chapter on rural areas and Austria aims to help "undersupplied residences gaining access to broadband", which refers to low residential density areas. Bulgaria's strategy also has relevancy for rural areas through broadband infrastructure building and other indirect means like digitalization to help enterprises generate more income and create jobs.

Serbia and the United Kingdom





Serbia's three different digital policies mention Europe 2020, European Network and Information Security Directive and The New Skills Agenda for Europe and Inclusive Growth. UK's digital strategy contributes to EU Cybersecurity act, but Digital Strategy for Wales has no mentions of any EU or other higher-level policy.

UK Digital Strategy has an explicit UK-wide goal (UK Shared Rural Network) of improving rural connections, both physical and digital, and therefore is relevant for rural areas. Wales' digital strategy refers to this paper but otherwise it has no mentions or goals relevant for rural areas. Serbia's policies have a clear rural emphasis. They highlight the need to improve physical internet infrastructure, developed better agricultural statistics and improve rural inhabitants' digital skills to mention a few ways the policies are relevant for rural areas.

4.4.2. Description and operationalisation of indicators in the national digital policies

EU countries

Digital indicators are the most used in digital strategies as expected. Only one strategy has no digital-related indicators used. In all other cases, digital indicators are used to inform policy and help assess the current state of play. In five cases, socio-economic indicators, such as employment and unemployment rate, GDP per head and innovation, are also used to assess current situation and challenges. To highlight sectoral connections, five reports mentioned the use of digital indicators in the policies, while in two cases socio-economic indicators are used for this purpose. In four countries indicators were used for forecasting: in three of them both digital and socio-economic indicators were used, such as productivity and innovation, while in one case only digital indicators were employed. Five reports noted the use of indicators for monitoring implementation, of which five used digital, four used socio-economic and two used better governance indicators for this purpose. This would include the use of electronic governmental services and increased coverage of highspeed broadband for example. None of the reports noted use of indicators for other purposes.

In 13 cases some type of indicator was used for assessing the current state of play and seven of them were digital indicators, five were socio-economic indicators and one was better governance indicator. Indicators were used for monitoring implementation on 11 occasions and assisting with forecasting on seven occasions. Digital indicators were used to monitor implementation on five occasions, socio-economic indicators on four and better governance on two occasions. For forecasting, digital indicators were used on four occasions and socio-economic on three occasions. For example, if a national strategy used digital and socio-economic indicators for monitoring implementation, this would count as two occasions of an indicator being used for this purpose.

Serbia and the United Kingdom

Serbia's policies use digital indicators for assessing the current situation and providing information on policy design and choice. The Welsh digital strategy has no explicit mention of any indicators. The UK digital strategy makes use of several indicators. Digital indicators are used for following purposes: informing issues, helping with policy choices, cross cutting between sectors,





forecasting and policy communication. Together with digital indicators, socio-economic and climate change indicators are used to build connections between different policy sectors.





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Annex I

Policy / Strategy	Emissions	Renewable energy	Resource efficiency	Natural resource protection	Indicators						Monitoring framework
					Climate	Innovation	Supply chains	Finance	Social	Connectivity	
Industrial Strategy for Europe (2020 & 2021)	✓	✓	✓			✓	✓	✓	✓	✓	<ul style="list-style-type: none"> • Annual reports • Scoreboards • Performance dashboards • Sector-specific monitoring
Circular Economy Action Plan			✓	✓		✓	✓				<ul style="list-style-type: none"> • Regular reporting • Overview of trends • Annual Circular Economy stakeholder conference (feedback & input)
EU Biodiversity Strategy for 2030	✓	✓		✓	✓	✓	✓	✓			<ul style="list-style-type: none"> • State of Nature report every 6 years
Farm to Fork Strategy	✓		✓	✓			✓				<ul style="list-style-type: none"> • Annual monitoring report
EU Hydrogen Strategy	✓	✓				✓	✓			✓	<ul style="list-style-type: none"> • Annual monitoring report
Europe's 2030 Climate Target Plan	✓	✓	✓		✓	✓					<ul style="list-style-type: none"> • Annual progress reports
EU Chemicals Strategy for Sustainability	✓		✓		✓	✓	✓				<ul style="list-style-type: none"> • Annual progress reports
EU Strategy to Reduce Methane Emissions	✓										<ul style="list-style-type: none"> • Annual progress reports
Europe's Renovation Plan	✓	✓	✓						✓		<ul style="list-style-type: none"> • Annual progress reports • MS required to develop long-term renovation

Policy / Strategy	Indicators										Monitoring framework
	Emissions	Renewable energy	Resource efficiency	Natural resource protection	Climate	Innovation	Supply chains	Finance	Social	Connectivity	
											strategies to contribute to targets – EU to monitor implementation and provide support
Recommendation on Energy Poverty		✓	✓						✓		<ul style="list-style-type: none"> Annual progress report
Offshore Renewable Energy Strategy of Europe	✓	✓					✓		✓		<ul style="list-style-type: none"> Regular reporting
Smart Mobility Strategy	✓	✓	✓						✓	✓	<ul style="list-style-type: none"> Regular reporting
EU Strategy on Adaptation to Climate Change				✓							<ul style="list-style-type: none"> MS to develop National Adaptation Strategies Regular MS reporting Regular EC assessments and evaluations
Directing Finance Towards the European Green Deal									✓		<ul style="list-style-type: none"> Regular reporting
EU's Blue Economy for a Sustainable Future		✓		✓			✓				<ul style="list-style-type: none"> Annual Economic Report on the EU Blue Economy



Policy / Strategy	Indicators										Monitoring framework
	Emissions	Renewable energy	Resource efficiency	Natural resource protection	Climate	Innovation	Supply chains	Finance	Social	Connectivity	
											<ul style="list-style-type: none"> MS required to report on their progress towards objectives
European Climate Law	✓				✓				✓		<ul style="list-style-type: none"> Annual progress reporting MS required to develop and report on National Climate and Energy plans, reviewed by EC
Strategy for Financing the Transition to a Sustainable Economy					✓			✓			<ul style="list-style-type: none"> Regular reporting European Supervisory Authorities (ESAs) are responsible for monitoring the implementation
European Strategy for Low-Emission Mobility	✓	✓	✓			✓				✓	<ul style="list-style-type: none"> Annual progress reporting

Annex II

Strategy / Policy

Key indicators

<p><u>Industrial Strategy for Europe</u></p>	<p>Monitoring framework for the industrial strategy is based on the European Semester.</p> <ul style="list-style-type: none"> • Monitoring GHG emissions to reduce the carbon footprint of Europe's industries to at least 50% by 2030 and neutrality by 2050; • Measuring the deployment of renewable energy sources, for example with the target of achieving at least 40 GW of offshore wind power capacity by 2030; • Share of renewable energy in the industrial sector's mix; • Rates of resource use, waste generation and recycling; • Share of investment in innovation and deployment of new renewable energy technologies, with an overall goal to increase investment in R&I to at least 3% of the EU's GDP; • Number of new circular economy-related jobs created in all sectors and industries, with target of 700,000 by 2030.
<p><u>Circular Economy Action Plan</u>²¹</p>	<p>35 total indicators. Key ones include:</p> <ul style="list-style-type: none"> • Food waste (million tonne); • Generation of municipal waste per capita (kg/per capita); • Circular material use rate (%); • Recycling rate (waste, packaging, etc) (%); • Number of patents related to recycling and secondary raw materials; • Persons employed (% of total employment).
<p><u>EU Biodiversity Strategy for 2030</u></p>	<p>Set of 27 indicators organised into six thematic areas: (1) nature protection, (2) restoration of ecosystems, (3) sustainable use, (4) funding, (5) knowledge, and (6) global leadership.</p> <ul style="list-style-type: none"> • Share of protected land and sea areas in the EU, with a target of 30% by 2030; • Land area of degraded ecosystems restored (km²), with a target of 25,000km² by 2030; • Share of agricultural land under organic farming, with a target of 25% by 2030; • Share of pollution reduction, with a target of 50% of the use of chemical pesticides, and 20% of the use of fertilisers by 2030; • Share of uptake of green infrastructure and nature-based solutions, with a target of at least 30% by 2030.
<p><u>Farm to Fork Strategy</u></p>	<p>Monitoring framework with 27 indicators organised into four thematic areas: (1) sustainable food production, (2) sustainable food processing and retail, (3) sustainable food consumption, and (4) reducing food waste.</p> <ul style="list-style-type: none"> • Share of public and private investment in sustainable food systems, with a target for this to increase by at least 10% by 2024; • Share of fruit and vegetable consumption, with a target of 30% by 2030;

²¹ This monitoring framework can be accessed here: <https://ec.europa.eu/eurostat/web/circular-economy/indicators/monitoring-framework>



<p><u>EU Hydrogen Strategy</u></p>	<ul style="list-style-type: none"> • Volume and share of food waste, with an aim to reduce food waste throughout the supply chain. <p>14 indicators organised into three main categories: (1) production, (2) demand and end-use, and (3) enabling framework.</p> <ul style="list-style-type: none"> • Share and tonnes of renewable and low-carbon hydrogen, with a target of 10 million tonnes by 2030; • Area of hydrogen pipelines, with at least 6,000km envisioned for this by 2030; • Number of hydrogen refuelling stations for cars, trucks and buses, with a 2,000 planned target by 2030.
<p><u>Europe's 2030 Climate Target Plan</u></p>	<p>The monitoring framework organises 10 indicators into five main categories: (1) greenhouse gas emissions, (2) renewable energy, (3) energy efficiency, (4) climate adaptation, and (5) research and innovation.</p> <ul style="list-style-type: none"> • Share of renewable energy, with a target to increase it by at least 38-40% of the EU's energy consumption by 2030; • Share of building emissions, aiming to reduce it by at least 60% by 2030; • Share of energy consumption and efficiency, with a target of 32.7% improvement by 2030.
<p><u>Chemicals Strategy for Sustainability</u></p>	<ul style="list-style-type: none"> • Share of use of chemical substances of concern, with a reduction target of at least 25% by 2030; • Share of "green" chemicals placed on the market, with target of at least 30% by 2030.
<p><u>EU Strategy to Reduce Methane Emissions</u></p>	<ul style="list-style-type: none"> • Monitoring share of methane emissions with a view to reducing them in: <ul style="list-style-type: none"> ○ energy sector, with target reduction of > 10% by 2030; ○ agriculture sector, with target of > 30% by 2030; ○ waste sector, with target of > 50% by 2030.
<p><u>Europe's Renovation Plan</u></p>	<ul style="list-style-type: none"> • Rate of energy efficiency of buildings, with target improvement of 60% by 2030 and 80-90% by 2050; • Rate of building renovations, with target of 3% per year by 2030; • Total new jobs in the renovation sector, with a target of creating > 160,000 additional green jobs by 2030.
<p><u>Recommendation on Energy Poverty</u></p>	<ul style="list-style-type: none"> • Share of renewable energy in energy mix, with target of > 32% of final energy consumption from renewable sources by 2030; • Proportion of households that cannot afford to keep their homes adequately warm; • Proportion of households that are in debt to their energy supplier; • Proportion of households that spend > 10% of their income on energy bills. • Proportion of households receiving financial assistance.





<p><u>Offshore Renewable Energy Strategy of Europe</u></p>	<ul style="list-style-type: none"> • Energy capacity of installed offshore renewable, to target of >60GW by 2030 and 300GW by 2050; • Mobilisation of >€800 billion in investment; • Tonnes of GHG, with target of reduction by 100 million by 2030 and 350 million by 2050.
<p><u>Smart Mobility Strategy</u></p>	<ul style="list-style-type: none"> • Rate of urban congestion, aiming to reduce it by 50% by 2050; • Accessibility to 5G networks, with 100% share envisioned for all Europeans; • Modal share of sustainable transport modes; • Tracking of vehicle efficiency data.
<p><u>EU Strategy on Adaptation to Climate Change</u></p>	<ul style="list-style-type: none"> • Number of buildings and infrastructure assets that have been retrofitted or designed to be climate-resilient; • Area of farmland and forestland that has been managed sustainably; • Area of protected ecosystems; • Number of species that have been conserved or restored; • Extent of habitat connectivity; • Number of green spaces and urban forests created or restored; • Number of cities and regions that have developed and implemented climate adaptation plans; • Number of policies and plans that have integrated climate adaptation; • Amount of funding allocated to climate adaptation measures; • Level of public awareness and engagement on climate adaptation. • Share of EU 2021-27 budget spent on climate action (>25% target).
<p><u>Directing Finance Towards the European Green Deal</u></p>	<ul style="list-style-type: none"> • Share of sustainable investments in total investments; • Share of green bonds issued; • Number of investments in climate-resilient infrastructure; • Share of investments in vulnerable regions; • Number of financial institutions implementing sustainable finance practices.
<p><u>EU Blue Economy for a Sustainable Future²²</u></p>	<ul style="list-style-type: none"> • Level of pollution and litter in the marine environment; • Water quality; • Installed capacity of offshore wind; • Electricity generation of offshore wind; • Investment levels in offshore wind; • Economic performance of fisheries sector; • Growth of blue economy while ensuring sustainability (GVA, employment levels, number of businesses operating in the maritime sector); • Achieving maximum sustainable yield for fish stocks.

²² This monitoring framework can be accessed here: https://blue-economy-observatory.ec.europa.eu/blue-economy-indicators_en





European Climate Law

- Net GHG emissions reduction of > 55% by 2030 and 100% by 2050, compared to 1990 levels;
- Number and efficiency of adaptation measures implemented;
- Implementation of social measures.

Strategy for Financing the Transition to a Sustainable Economy

- Number of financial institutions adopting the EU Taxonomy;
- Share of EU long-term budget and NextGenEU funds spent on climate objectives (>25%);
- Share of NextGenEU funds raised through green bonds (>30%);
- Number of electric vehicle charging points, with target of 1 million by 2025;
- Rate of building emissions reduction (>50% by 2030);
- Rate of offshore wind capacity increase (>50% by 2030).

European Strategy for Low-Emission Mobility

- GHG emissions in the transport sector, with target of >60% reduction by 2050 compared to 1990 levels;
- Share of energy consumption in the transport sector (>14% by 2030);
- Number of infrastructure projects (e.g. electric vehicle charging stations, hydrogen refuelling stations);
- Share of utilisation of alternative sustainable fuels in transport;
- Tracking of vehicle registration data and uptake of clean and energy-efficient vehicles, with target of >30% new passenger cars as zero- or low-emission vehicles by 2030, and all zero-emission by 2050;
- Tracking R&I investment in low-emission mobility.

Annex III

EPSR Scoreboard (2021)

	<i>Headline indicators</i>	<i>Secondary indicators</i>	SDG
Equal opportunities	<p>Adult participation in learning during the last 12 months</p> <p>Share of early leavers from education and training</p> <p>Individuals' level of digital skills</p> <p>Youth NEET rate (15-29)</p>	<p>Tertiary education attainment</p> <p>Underachievement in education (including in digital skills)</p> <p>Participation of low-qualified adults in learning</p> <p>Share of unemployed adults with a recent learning experience**</p> <p>Gap in underachievement between the bottom and top quarter of the socio-economic index (PISA)</p> <p>Gender gap in part-time employment</p> <p>Gender pay gap in unadjusted form</p> <p>Income share of the bottom 40% earners (SDG)</p>	<p>4. Quality education</p> <p>5. Gender equality</p> <p>10. Reduced inequalities</p>





	Gender employment gap		
	Income quintile ratio (S80/S20)		
Fair working conditions	<p>Employment rate</p> <p>Unemployment rate</p> <p>Long-term unemployment rate</p> <p>GDHI per capita growth</p>	<p>Activity rate</p> <p>Youth unemployment rate</p> <p>Employment in current job by duration</p> <p>Transition rates from temporary to permanent contracts</p> <p>Share of involuntary temporary employees</p> <p>Fatal accidents at work per 100,000 workers (SDG)*</p> <p>In-work-at-risk-of-poverty rate</p>	8. Decent work and economic growth
Social protection and inclusion	<p>At risk of poverty or social exclusion rate (AROPE)</p> <p>At-risk-of-poverty rate or exclusion for children (0-17)</p> <p>Impact of social transfers (other than pensions) on poverty reduction</p> <p>Disability employment gap</p> <p>Housing cost overburden</p> <p>Children aged less than 3 years in formal childcare</p> <p>Self-reported unmet need for medical care</p>	<p>At-risk-of-poverty rate (AROP)</p> <p>Severe material and social deprivation rate (SMSD)</p> <p>Persons living in a household with a very low work intensity</p> <p>Severe housing deprivation (owner and tenant)</p> <p>Median at-risk of poverty gap</p> <p>Benefit recipients rate [share of individuals aged 18—59 receiving any social benefits (other than old-age) among the population at-risk-of-poverty]</p> <p>Total social expenditure by function (% of GDP): Social protection, healthcare, education, long-term care</p> <p>Coverage of unemployment benefits [among short-term unemployed]</p> <p>Coverage of long-term care needs</p> <p>Aggregate replacement ratio for pensions</p> <p>Share of the population unable to keep home adequately warm (SDG)</p> <p>Connectivity dimension of the Digital Economy and Society Index</p> <p>Children from age 3 to mandatory primary school age in formal childcare</p> <p>Out-of-pocket expenditure on healthcare</p> <p>Healthy life years at age 65: Women and men</p>	<p>1. No poverty</p> <p>3. Good health and well-being</p>





		Standardised preventable and treatable mortality (SDG)*	
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