European Commission

Resilience Dashboards

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Abstract

The European Commission's resilience dashboards assess resilience as the ability to make progress towards policy objectives amidst challenges. Following the prototype dashboards in the 2020 Strategic Foresight Report, the final dashboards were first launched in 2021. They aim to provide a holistic assessment of resilience in the EU and its Member States in relation to ongoing societal transformations and challenges ahead. This report includes the technical information underlying the update of the European Commission's resilience dashboards as of May 2023. This most recent version of the dashboards is based on data up to 2021. It also includes some additional refinements and adjustments to selected indicators, to further align the dashboards with the information set used in the Country Reports of the European Semester. The report also contains a short overview of the methodology applied, details on the resilience indicators and their changes.

1 Introduction

The resilience dashboards (RDBs)[1] were developed by the European Commission as a follow up to the 2020 Strategic Foresight Report (European Commission, 2020) and were first published in November 2021 (European Commission, 2021). They support the transition-led EU policy agenda as they provide a holistic assessment of the Member States' ability to make progress amid challenges.

The dashboards cover four interrelated dimensions of resilience to future crises and societal transformations. The social and economic dimension includes indicators that illustrate the potential social impact of the green and digital transitions; health education and work; economic and financial stability and sustainability. The green dimension covers aspects of climate change mitigation and adaptation; sustainable use of resources; ecosystems biodiversity and sustainable agriculture. The digital dimension aims to illustrate the impact of the transition on the personal sphere, industries and public space, as well as cybersecurity aspects. The geopolitical dimension relates to Europe bolstering its 'open strategic autonomy' and global leadership role.

The dashboards feature 124 quantitative indicators across the four dimensions, derived from publicly available data sources and selected in coherence with other Commission monitoring tools. They help Member States identify areas for further analysis and potential policy actions in relation to ongoing societal transformations and future challenges by identifying vulnerabilities (features that can exacerbate the negative impact of crises and transitions, or obstacles that may hinder the achievement of long-term strategic goals) and capacities (enablers or abilities to cope with crises and structural changes and to manage the transitions).

Synthetic resilience indices at different levels of aggregation can be calculated using the dashboard indicators. These indices are well-suited to provide an overall assessment of Member States' resilience vulnerabilities and capacities relative to the rest of the EU by dimension and area. While providing a useful overview, these synthetic measures should always be read together with the full set of indicators in the dashboards.

The dashboards were updated and aligned with the indicators in the European Semester in spring 2022 (Pagano et al., 2022). The current report refers to the version of the RDBs that was released in May 2023. Compared to the previous edition, the dashboards now refer to data up to 2021. This last revision also includes some additional refinements and adjustments to selected indicators, to further align the dashboards with the information set used in the Country Reports of the European Semester.

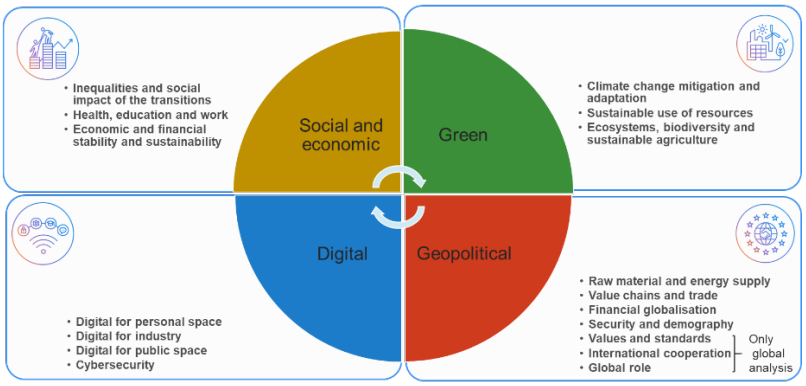
The structure of this report is as follows. Section 2 provides the updated methodology, followed by the presentation of the dashboards. Section 3 presents the synthetic indices. Section 4 provides details on the indicators and corresponding data sources followed by section 5 summarizing the changes with respect to the spring 2022 version of the RDBs.

[1] The dashboards are available at https://commission.europa.eu/strategy-and-policy/strategic-planning/strategic-foresight/2020-strategic-foresight-report/resilience-dashboards_en

2 The resilience dashboards

The dashboards aim to capture vulnerabilities (features that can exacerbate the negative impact of crises and transitions, or obstacles that may hinder the achievement of long-term strategic goals) and capacities (enablers or abilities to cope with crises and structural changes and to manage the transitions in the four dimensions: social and economic, green, digital and geopolitical. Overall, they include 124 indicators split in a balanced way over the dimensions. The selection of the indicators was based on an extensive analysis of available indicators and data, followed by a collective assessment of their relevance, forward-looking perspective, clarity, cross-country comparability, quality and availability and source. To guide readers, within each dimension, the indicators are organised in broad areas (see Figure 1).

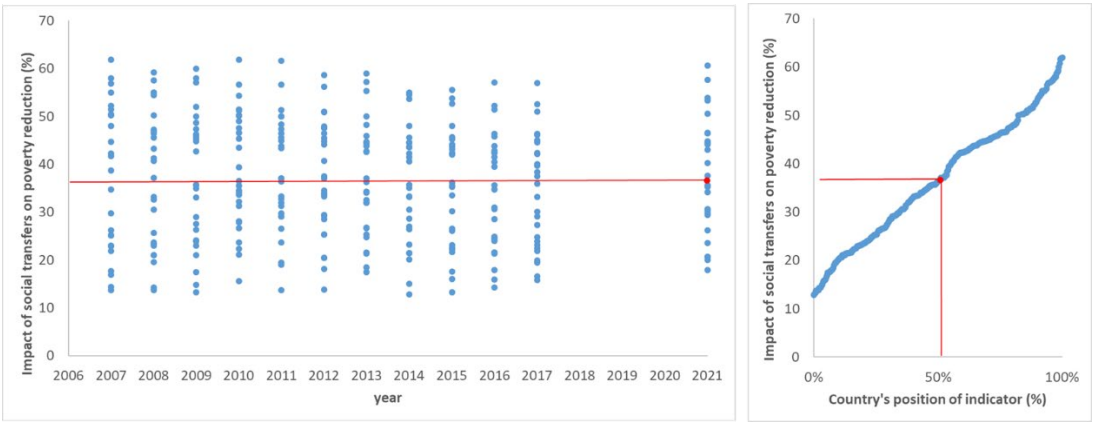
Figure 1: Areas covered in the four dimensions of the resilience dashboards



The resilience dashboards present an assessment of countries' vulnerabilities and capacities in relative terms. They use a scale of five colours, which indicates each country's relative situation in the latest available year (usually 2018-2021), compared to the collection of values of that indicator for all Member States and all years in the reference period 2007-2017.

Following the methodology used in the previous versions of the dashboards (see the annexes in European Commission, 2021), the choice of the reference period depends on the data coverage and the appropriate amount of data to build a base sample. It represents the longest possible common reference period. Across countries, data availability may vary from year to year, and countries with longer available data series consequently have somewhat more representation in the reference distribution. With the overall aim to have a representative reference distribution, in case less than four years of data is available for an indicator in the 2007-2017 reference period, it is checked if the alternative (more recent) reference period from 2015-2021 contains more data. If so, this alternative reference period is used which is then indicated with an asterisk in the dashboard. In the digital dashboard and for one specific technology-related indicator in the green dashboard (Electric and hydrogen passenger fleet), we have imposed the reference period of 2015-2021, because of the fast pace of technological development in these areas.

Figure 2. Assessing the position of a country in the reference dataset for impact on social transfers on poverty reduction.



Source: Own elaboration

Figure 2 sheds light on the mechanics of the relative assessment approach. Its left panel shows the distribution of the values of an indicator across years and all countries. Each dot represents a country. The red dot is the value of the indicator for a specific country in the latest year. The right panel presents the overall distribution of the values of this indicator across countries and years, constructed by pooling together and ordering all values from the left panel. The red dot is the position of the specific country in the latest available year in this distribution. The corresponding value on the horizontal axis is the position used for determining the country's relative situation. A value of 70%, for example, means that exactly 70% of the values in the reference dataset are smaller than the red dot.[2]

Indicators that are located in the top 12.5% of the overall distribution (an indicator position above 87.5%) are coloured dark blue; light blue indicates countries falling between the top 12.5% and 37.5% (indicator position between 62.5% and 87.5%); dark orange indicates values that are in the bottom 12.5%; light orange between the bottom 12.5% and 37.5% of the reference data; grey is used to indicate values in the middle, falling between the 37.5th and 62.5th percentile of the reference sample. Figure 3 summarizes this classification, distinguishing between vulnerabilities and capacities as their sign is opposite.

Figure 3: Colouring scheme for the dashboards.

Vulnerabilities	Capacities
Bottom 12.5% (<12.5%)	Top 12.5% (>87.5%)
12.5%-37.5%	62.5%-87.5%
37.5%-62.5%	37.5%-62.5%
62.5%-87.5%	12.5%-37.5%
Top 12.5% (>87.5%)	Bottom 12.5% (<12.5%)

Note: Numbers are percentiles of the reference data collection (all Member States and all years in the reference period).

In addition, the dashboards present the corresponding EU-level position for each indicator.[3] EU-level values are taken from the same data source as for the Member States, whenever available. If not available, they are calculated as an appropriately weighted average over all Member States, where the weights are chosen to obtain the corresponding EU-level statistical measure for the specific indicator (most frequently GDP or population-based weights, depending on the indicator).

The dashboards also show arrows, which indicate the direction of recent changes. An upward arrow indicates a sizeable improvement with respect to the preceding five years (the average value in 2013-2016)[4] , while a downward arrow indicates a sizeable worsening. A change is called sizeable if the absolute change between the most recent data and the four-year average from five years earlier (average 2013-2016) is larger than half of the size of the central range (size of the grey bucket in term of the indicator's values) of the reference data collection used for the colour scheme. A dot indicates that no sizeable change has taken place over the most recent five years. An empty cell indicates that the five-year change cannot be calculated.[5]

Figures 4 to 7 present the updated dashboards across their four dimensions.

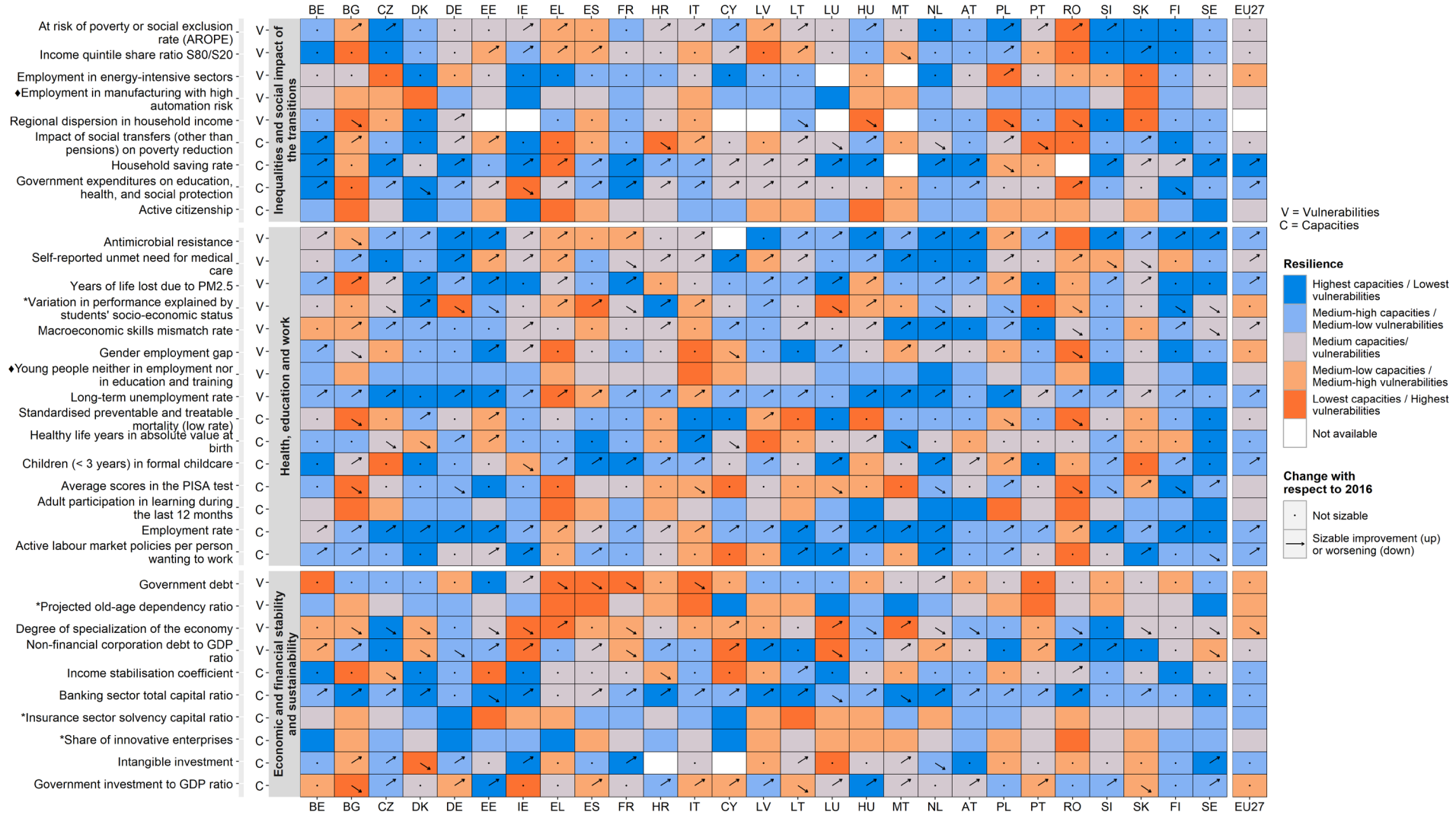
[2] If the distribution of one indicator is made of 100 values, then 0.7 means that the country today ranks 70th in this distribution from the bottom.

[3] For a set of indicators that relate to partner concentration measures, EU-27 has not been reported as these indicators are not comparable with Member States' level values. (i.e. for supplier concentration in base metals; supplier concentration in energy carriers; supplier diversification for base metals, rate of change; supplier diversification for energy carriers, rate of change; concentration of value chain partners; Extra-EU import partner concentration; Extra-EU export partner concentration; inward FDI partner concentration and outward FDI partner concentration).

[4] The change is relative to the average value of the indicator in the period 2013-16. This choice is due to the fact that some indicators may not be available in all years, and taking such an average decreases the impact of missing data. Moreover, the average smoothes potential outliers or short-term fluctuations in the time series.

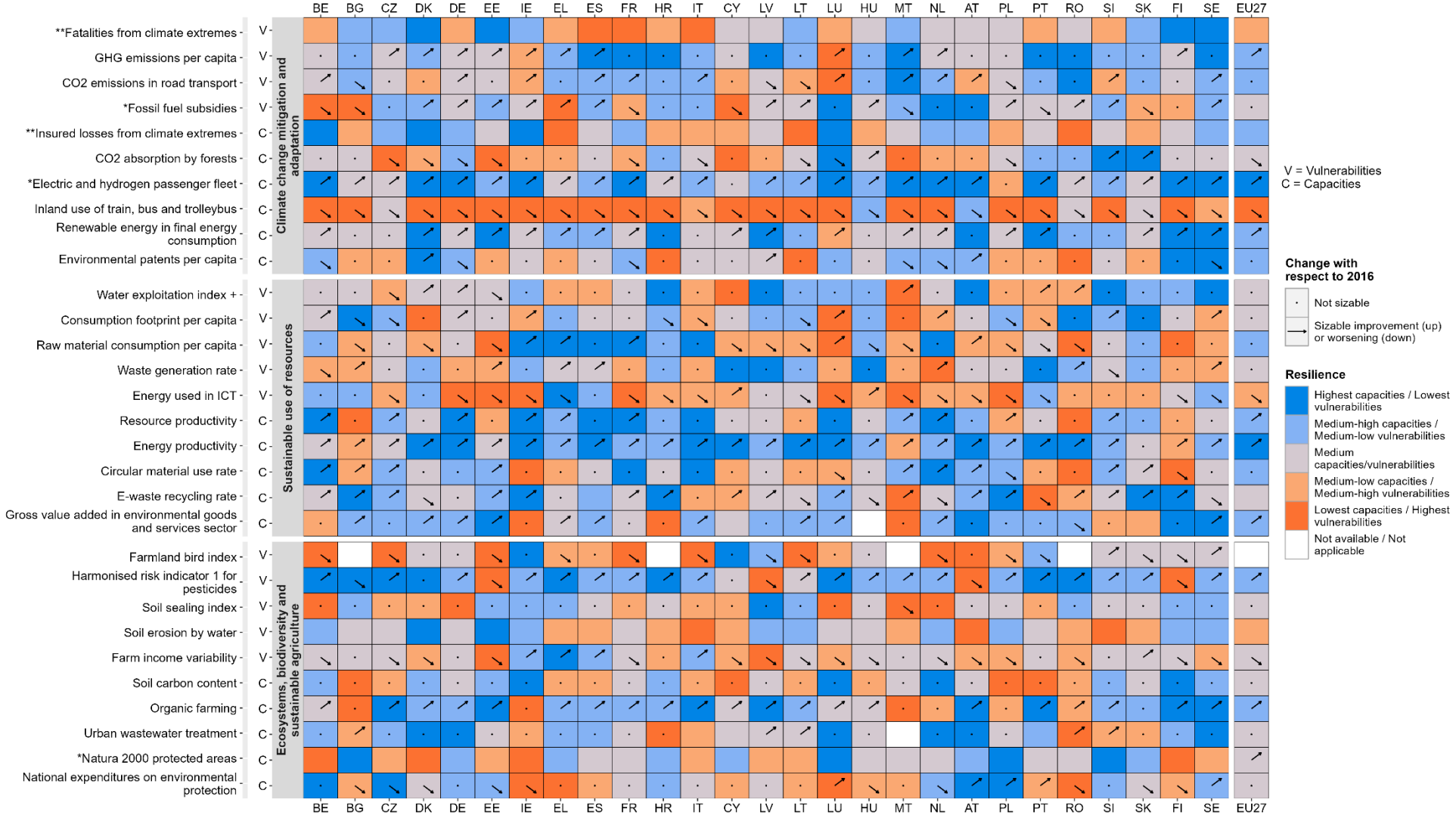
[5] Due to some methodological changes of the LFS, the series based on this source exhibit a systematic break in 2021. In those cases, the assessment for change has been manually removed. It relates to Employment in manufacturing with high automation risk and Young people neither in employment nor in education and training in the social and economic dimension, Employees not using telework and ICT specialist gender gap in the digital dimension and Employment gap (EU versus non-EU nationals) and Share of non-EU citizens in total employment in the geopolitical dimension.

Figure 4: Social and economic dashboard - latest available year for each indicator up to 2021



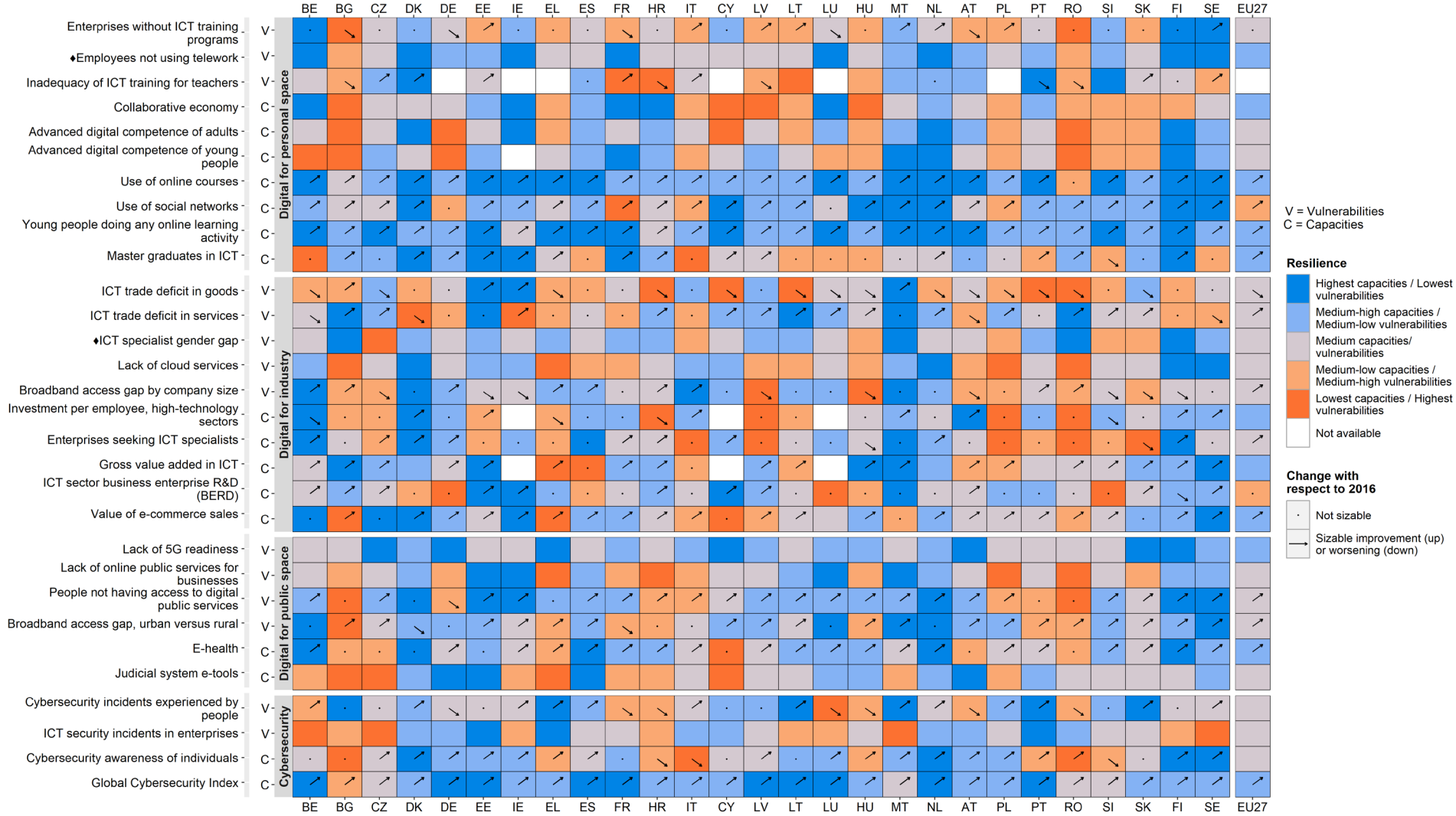
The dashboard includes a set of indicators that show the level of vulnerability and resilience capacities within a country, relative to other countries. Data typically refers to 2018-2021. Download from Eurostat as of 28 April 2023. The colours indicate the position of a country in the distribution of all available values for EU countries in the 2007-2017 reference period (2015-2021 for indicators with an asterisk). An upward pointing arrow for a vulnerability indicates a substantial reduction (improvement). This information is not presented for indicators with a recent structural break in the time series (indicated with a diamond). See Section 4 for further details on the indicators.

Figure 5: Green dashboard - latest available year for each indicator up to 2021



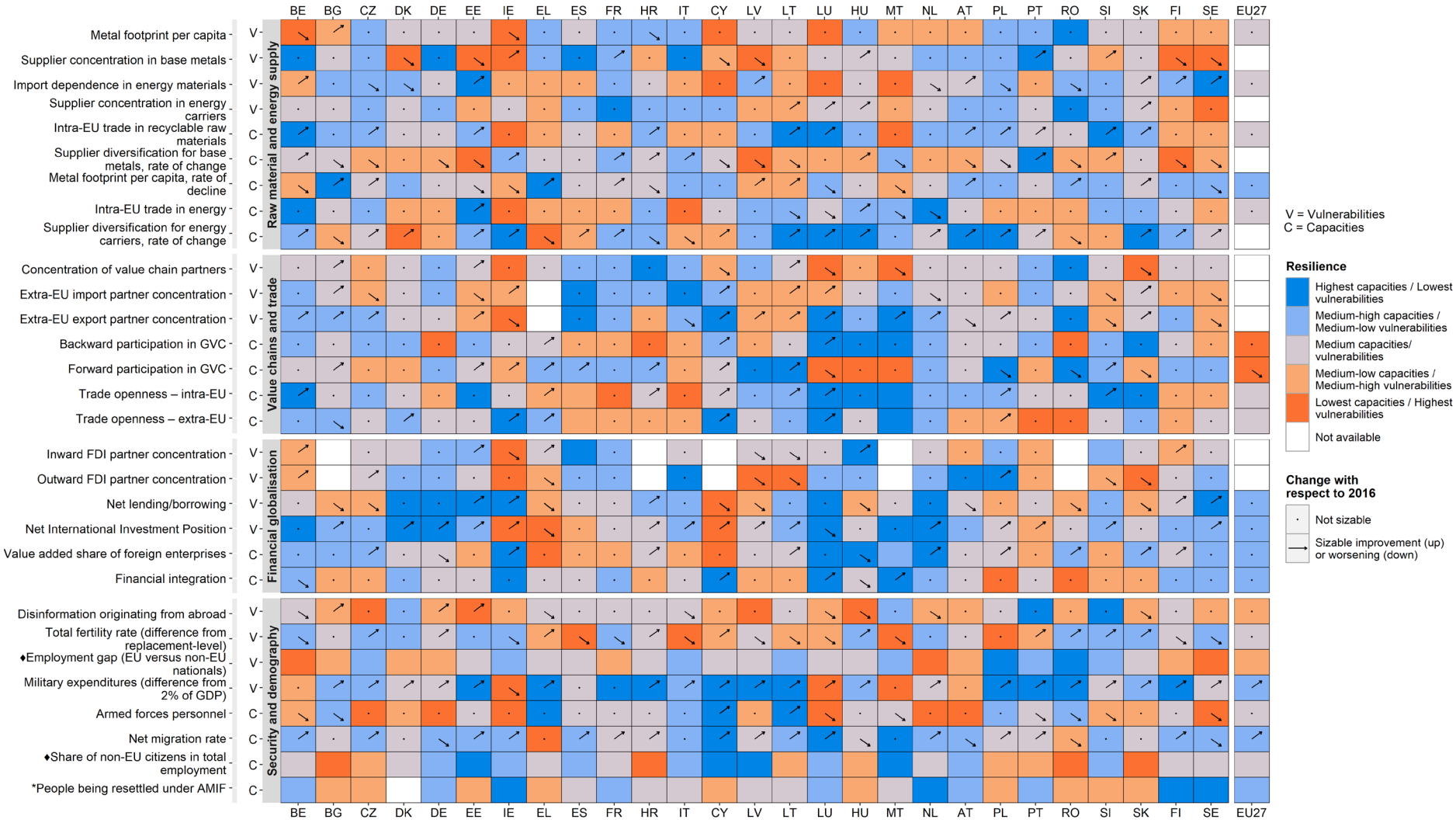
The dashboard includes a set of indicators that show the level of vulnerability and resilience capacities within a country, relative to other countries. Data typically refers to 2018-2021. Download from Eurostat as of 28 April 2023. The colours indicate the position of a country in the distribution of all available values for EU countries in the 2007-2017 reference period (2015-2021 for indicators with an asterisk, and cumulative value for the 1981-2019 and 1981-2020 period for indicators with a double asterisk)). An upward pointing arrow for a vulnerability indicates a substantial reduction (improvement). See Section 4 for further details on the indicators. Data for Inland use of train, bus and trolleybus refers to 2020 and has been affected heavily by COVID-19 restrictions on mobility.

Figure 6: Digital dashboard - latest available year for each indicator up to 2021



The dashboard includes a set of indicators that show the level of vulnerability and resilience capacities within a country, relative to other countries. Data typically refers to 2018-2021. Download from Eurostat as of 28 April 2023. The colours indicate the position of a country in the distribution of all available values for EU countries in the 2015-2021 reference period. An upward pointing arrow for a vulnerability indicates a substantial reduction (improvement). This information is not presented for indicators with a recent structural break in the time series (indicated with a diamond). See Section 4 for further details on the indicators.

Figure 7: Geopolitical dashboard - latest available year for each indicator up to 2021



The dashboard includes a set of indicators that show the level of vulnerability and resilience capacities within a country, relative to other countries. Data typically refers to 2018-2021. Download from Eurostat as of 28 April 2023. The colours indicate the position of a country in the distribution of all available values for EU countries in the 2007-2017 reference period. The indicators with an asterisk has 6-year cumulative values. An upward pointing arrow for a vulnerability indicates a substantial reduction (improvement). This information is not presented for indicators with a recent structural break in the time series (indicated with a diamond). See Section 4 for further details on the indicators.

3 Synthetic Indices

To illustrate Member States' overall performance in terms of vulnerabilities and resilience capacities in each of the four dimensions and underlying areas, the dashboards are complemented by synthetic resilience indices.

The methodology behind the synthetic indices of this version of the dashboards remains unchanged compared to previous versions of the dashboards.

The synthetic resilience indices are constructed following a relative assessment consistent with the indicators in the dashboards. The overall vulnerabilities (capacities) index is obtained for a country by the median value over all the vulnerability (capacity) indicator positions. Similarly, synthetic indices by areas are computed by taking the median value over all the vulnerability (capacity) indicator positions that are included in the considered area. A high vulnerabilities/capacities index for a country indicates high vulnerabilities/capacities compared to other countries.

Tables 1 to 4 summarise the detailed composition of each synthetic index in terms of indicators.

These indices allow both cross-country comparisons within a given year, and assessments of changes over time for a given country[6] and, going forward, at the EU level as the basis for comparisons with third countries. In addition, they allow the comparison of the situation across dimensions.

Table 1: Synthetic indices and their underlying indicators – Social and economic dashboard

Synthetic indices per area	Area	Variable name	Variable code	Synthetic indices per dimension
SE1(V)	Inequalities and social impact of the transitions	At risk of poverty or social exclusion rate (AROPE)	SE_v01	SE(V)
		Income quintile share ratio S80/S20	SE_v02	
		Employment in energy-intensive sectors	SE_v03	
		Employment in manufacturing with high automation risk	SE_v04	
		Regional dispersion in household income	SE_v05	
SE2(V)	Health, education and work	Antimicrobial resistance	SE_v06	
		Self-reported unmet need for medical care	SE_v07	
		Years of life lost due to PM2.5	SE_v08	
		Variation in performance explained by students' socio-economic status	SE_v09	
		Macroeconomic skills mismatch rate	SE_v10	
		Gender employment gap	SE_v11	
		Young people neither in employment nor in education and training	SE_v12	
		Long-term unemployment rate	SE_v13	
SE3(V)	Economic and financial stability and sustainability	Government debt	SE_v14	
		Projected old-age dependency ratio	SE_v15	
		Degree of specialization of the economy	SE_v16	
		Non-financial corporation debt to GDP ratio	SE_v17	
SE1(C)	Inequalities and social impact of the transitions	Impact of social transfers (other than pensions) on poverty reduction	SE_c01	SE(C)
		Household saving rate	SE_c02	
		Government expenditures on education, health, and social protection	SE_c03	
		Active citizenship	SE_c04	
SE2(C)	Health, education and work	Standardised preventable and treatable mortality (low rate)	SE_c05	
		Healthy life years in absolute value at birth	SE_c06	
		Children (< 3 years) in formal childcare	SE_c07	
		Average scores in the PISA test	SE_c08	
		Adult participation in learning during the last 12 months	SE_c09	
		Employment rate	SE_c10	
		Active labour market policies per person wanting to work	SE_c11	
SE3(C)	Economic and financial stability and sustainability	Income stabilisation coefficient	SE_c12	
		Banking sector total capital ratio	SE_c13	
		Insurance sector solvency capital ratio	SE_c14	
		Share of innovative enterprises	SE_c15	
		Intangible investment	SE_c16	
		Government investment to GDP ratio	SE_c17	

[6] The possibility to extend the indices backward could present challenges due to missing data. Future editions of the dashboards will nevertheless allow obtaining future values of the index.

Table 2: Synthetic indices and their underlying indicators – Green dashboard

Synthetic indices per area	Area	Variable name	Variable code	Synthetic indices per dimension
G1(V)	Climate change mitigation and adaptation	Fatalities from climate extremes	G_v01	G(V)
		GHG emissions per capita	G_v02	
		CO2 emissions in road transport	G_v03	
		Fossil fuel subsidies	G_v04	
G2(V)	Sustainable use of resources	Water exploitation index +	G_v05	
		Consumption footprint per capita	G_v06	
		Raw material consumption per capita	G_v07	
		Waste generation rate	G_v08	
		Energy used in ICT	G_v09	
G3(V)	Ecosystems, biodiversity and sustainable agriculture	Farmland bird index	G_v10	
		Harmonised risk indicator 1 for pesticides	G_v11	
		Soil sealing index	G_v12	
		Soil erosion by water	G_v13	
		Farm income variability	G_v14	
G1(C)	Climate change mitigation and adaptation	Insured losses from climate extremes	G_c01	G(C)
		CO2 absorption by forests	G_c02	
		Electric and hydrogen passenger fleet	G_c03	
		Inland use of train, bus and trolleybus	G_c04	
		Renewable energy in final energy consumption	G_c05	
		Environmental patents per capita	G_c06	
G2(C)	Sustainable use of resources	Resource productivity	G_c07	
		Energy productivity	G_c08	
		Circular material use rate	G_c09	
		E-waste recycling rate	G_c10	
		Gross value added in environmental goods and services sector	G_c11	
G3(C)	Ecosystems, biodiversity and sustainable agriculture	Soil carbon content	G_c12	
		Organic farming	G_c13	
		Urban wastewater treatment	G_c14	
		Natura 2000 protected areas	G_c15	
		National expenditures on environmental protection	G_c16	

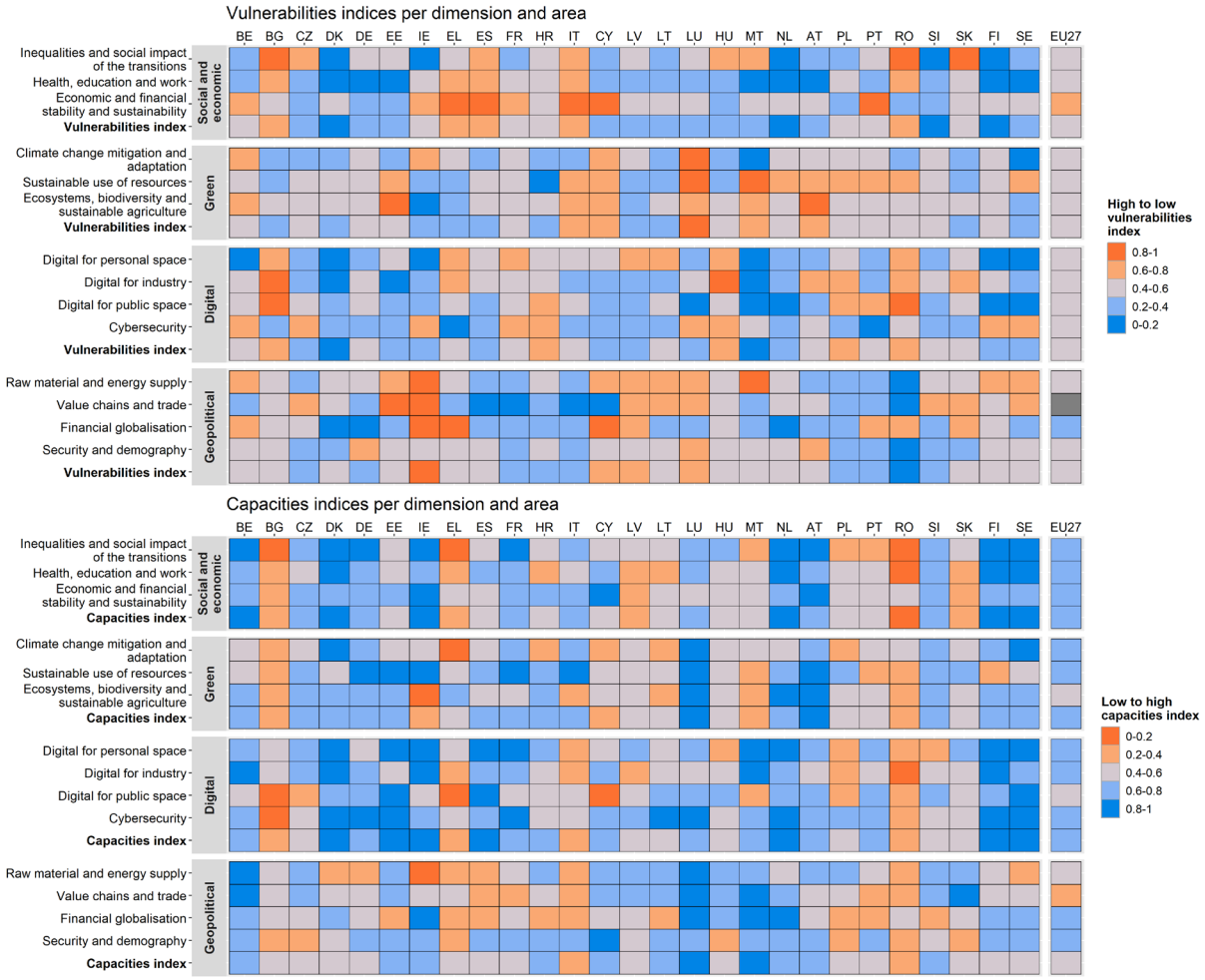
Table 3: Synthetic indices and their underlying indicators – Digital dashboard

Synthetic indices per area	Area	Variable name	Variable code	Synthetic indices per dimension
D1(V)	**Digital for personal space**	Enterprises without ICT training programs	D_v01	**D(V)**
		Employees not using telework	D_v02	
		Inadequacy of ICT training for teachers	D_v03	
D2(V)	**Digital for industry**	ICT trade deficit in goods	D_v04	
		ICT trade deficit in services	D_v05	
		ICT specialist gender gap	D_v06	
		Lack of cloud services	D_v07	
		Broadband access gap by company size	D_v08	
D3(V)	**Digital for public space**	Lack of 5G readiness	D_v09	
		Lack of online public services for businesses	D_v10	
		People not having access to digital public services	D_v11	
		Broadband access gap, urban versus rural	D_v12	
D4(V)	**Cybersecurity**	Cybersecurity incidents experienced by people	D_v13	
		ICT security incidents in enterprises	D_v14	
D1(C)	**Digital for personal space**	Collaborative economy	D_c01	**D(C)**
		Advanced digital competence of adults	D_c02	
		Advanced digital competence of young people	D_c03	
		Use of online courses	D_c04	
		Use of social networks	D_c05	
		Young people doing any online learning activity	D_c06	
		Master graduates in ICT	D_c07	
D2(C)	**Digital for industry**	Investment per employee, high-technology sectors	D_c08	
		Enterprises seeking ICT specialists	D_c09	
		Gross value added in ICT	D_c10	
		ICT sector business enterprise R&D (BERD)	D_c11	
		Value of e-commerce sales	D_c12	
D3(C)	**Digital for public space**	E-health	D_c13	
		Judicial system e-tools	D_c14	
D4(C)	**Cybersecurity**	Cybersecurity awareness of individuals	D_c15	
		Global Cybersecurity Index	D_c16	

Table 4: Synthetic indices and their underlying indicators – Geopolitical dashboard

Synthetic indices per area	Area	Variable name	Variable code	Synthetic indices per dimension
GP1(V)	**Raw material and energy supply**	Metal footprint per capita	GP_v01	**GP(V)**
		Supplier concentration in base metals	GP_v02	
		Import dependence in energy materials	GP_v03	
		Supplier concentration in energy carriers	GP_v04	
GP2(V)	**Value chains and trade**	Concentration of value chain partners	GP_v05	
		Extra-EU import partner concentration	GP_v06	
		Extra-EU export partner concentration	GP_v07	
GP3(V)	**Financial globalisation**	Inward FDI partner concentration	GP_v08	
		Outward FDI partner concentration	GP_v09	
		Net lending/borrowing	GP_v10	
		Net International Investment Position	GP_v11	
GP4(V)	**Security and demography**	Disinformation originating from abroad	GP_v12	
		Total fertility rate (difference from replacement-level)	GP_v13	
		Employment gap (EU versus non-EU nationals)	GP_v14	
		Military expenditures (difference from 2% of GDP)	GP_v15	
GP1(C)	**Raw material and energy supply**	Intra-EU trade in recyclable raw materials	GP_c01	**GP(C)**
		Supplier diversification for base metals, rate of change	GP_c02	
		Metal footprint per capita, rate of decline	GP_c03	
		Intra-EU trade in energy	GP_c04	
		Supplier diversification for energy carriers, rate of change	GP_c05	
GP2(C)	**Value chains and trade**	Backward participation in GVC	GP_c06	
		Forward participation in GVC	GP_c07	
		Trade openness – intra-EU	GP_c08	
		Trade openness – extra-EU	GP_c09	
GP3(C)	**Financial globalisation**	Value added share of foreign enterprises	GP_c10	
		Financial integration	GP_c11	
GP4(C)	**Security and demography**	Armed forces personnel	GP_c12	
		Net migration rate	GP_c13	
		Share of non-EU citizens in total employment	GP_c14	
		People being resettled under AMIF	GP_c15	

Figure 8 Synthetic indices across all areas and all dimensions (data up to 2021)



4 Details on the indicators in the Member State level analysis

Table 5: Detailed list of indicators included in the **Social and economic dashboard**

Variable	Label	Rationale	Definition	Source	Latest available year
Social and economic dimension: Inequalities and social impact of the transitions VULNERABILITIES					
At risk of poverty or social exclusion rate (AROPE)	SE_v01	People at risk of poverty or social exclusion are likely to be strongly hit by distress, and they often have fewer resources or capacities to cope with shocks and challenges. Megatrend: widening inequalities.	Share of the population who is at risk of poverty after social transfers, severely materially deprived or living in households with very low work intensity. Merged data old AROPE 2007-2014 as April 2022 (ilc_peps01) with new AROPE (sdg_01_10) from 2015.	Eurostat: sdg_01_10	2021
Income quintile share ratio S80/S20	SE_v02	Elevated income inequality undermines social cohesion and increases the perception of unfairness of the poorest towards the richest. Moreover, high levels of inequality have negative implications for political stability, crime and corruption. All of these factors contribute to a more vulnerable society. Megatrend: widening inequalities.	The ratio of total income received by the 20% of the population with the highest income (top quintile) to that received by the 20% of the population with the lowest income (bottom quintile). Income refers to household equivalised disposable income.	Eurostat: tessi180	2021
Employment in energy-intensive sectors	SE_v03	People employed in energy-intensive sectors may face important sectoral shifts due to the green transition. Workers employed in these sectors might be at risk of unemployment, hence it is advisable to support them with reskilling programmes, to requalify their competencies and fit into a changing labour market. Megatrend: changing nature of work.	The share of people employed in the following sectors, relative to total employment: B (mining and quarrying), C20 (manufacture of chemicals and chemical products), C23 (manufacture of other non-metallic mineral products), C24 (manufacture of basic metals), and C29 (manufacture of motor vehicles, trailers and semi-trailers).[7] Note that the series has a significant break for 2021 data, due methodological updates.	Eurostat: nama_10_a64_e	2021, 2020 (DE, ES, FR, IT, LT, LV, PT, RO, SE, EU27), 2019 (LV, EU27), N.A. (LU, MT)
Employment in manufacturing with high automation risk	SE_v04	Manufacturing represents the industry sector where automation and the acceleration of the digital transition could hit workers the hardest. Megatrend: changing nature of work.	Share of jobs at risk of automation in the manufacturing sector. The following types of activities have been considered: OC3: Technicians and associate professionals; OC4 Clerical support workers; OC5 Service and sales workers; OC8 Plant and machine operators and assemblers; OC9 Elementary occupations.	Eurostat: lfsa_eisn2	2021

[7] This particular choice is in line with Chapter 5 of the 2019 Employment and Social Developments in Europe Annual Review (European Commission Directorate-General for Employment, Social Affairs and Inclusion, 2019): the sectors are the same as in Figure 5.1. Though mining is not included, its employment share is relatively low.

Variable	Label	Rationale	Definition	Source	Latest available year
Regional dispersion in household income	SE_v05	This indicator monitors the dispersion of household income between regions of a country. While the EU will undergo the transitions, it is paramount to involve all regions in this process and leave no one behind. Megatrend: widening inequalities.	Regional income dispersion is measured as the ratio of the maximum to the minimum regional value of household income in the same country (at NUTS2 level). Calculations do not include the 5 French outermost regions. Household income is measured in purchasing power standard, per inhabitant.	Eurostat: nama_10r_2hhinc	2021 (CZ, DE, SI), 2020, N.A. (CY, EE, IE, LU, LV, MT, EU27)
Social and economic dimension: Inequalities and social impact of the transitions CAPACITIES					
Impact of social transfers (other than pensions) on poverty reduction	SE_c01	The ability of social transfers to reduce poverty shows that the government can use its welfare system to insulate people from poverty. It can thus respond to financial and economic distress with lower well-being (distributional) losses. Megatrend: widening inequalities.	Reduction in percentage of the risk of poverty rate, due to social transfers (based on the ratio of at-risk-of poverty rates before social transfers and those after transfers; pensions are not considered as social transfers in these calculations).	Eurostat: tespm050	2021
Household saving rate	SE_c02	Households' savings create a buffer that can help to better absorb economic and financial distress and smooth the effects of income shocks, at least in the short run. Megatrend: widening inequalities.	The net saving rate of households (including Non-Profit Institutions Serving Households) is the net saving (ESA 95 B.8n) as percentage of net disposable income (ESA 95 B.6n). Net saving is the part of the net disposable income which is not spent as final consumption expenditure.	Eurostat: nasa_10_nf_tr	2021, 2017 (BG)N.A. (MT, RO)
Government expenditures on education, health, and social protection	SE_c03	Government social expenditures are critical for building a more resilient society. Government intervention is necessary to help vulnerable groups, and to provide education and health for all of its citizens. Social expenditures are a pre-condition of a society based on fairness where no one is left behind. Megatrend: widening inequalities.	Government expenditures on education, health, social protection and long-term care as a percentage of GDP.	Eurostat: gov_10a_exp	2021
Active citizenship	SE_c04	Active citizenship advocates the civic engagement of people to take responsibilities on various actions related to social, environmental or rights issues. The proxy used is voluntary activities, which provide concrete social support and constitute an important social buffer in time of crises. Megatrend: widening inequalities.	Share of people in the population participating in formal or informal voluntary activities. This variable will be most likely part of EU SILC from 2022.	European Quality of Life Surveys (Eurofound, 2016)	2016

Variable	Label	Rationale	Definition	Source	Latest available year
Social and economic dimension: Health, education and work VULNERABILITIES					
Antimicrobial resistance	SE_v06	Antimicrobial resistance (AMR) is the "silent pandemic" that is recognised as a global health security threat. Monitoring AMR is a priority in the public health agenda of the current Commission. It is key to ensure that we develop effective policies to keep it in check (and even reverse it) and to safeguard our resilience. Megatrend: shifting health challenges.	Antimicrobial resistance (AMR) is the ability of microbes to develop resistance to existing medicines like antibiotics. The indicator provides antimicrobial consumption for the community (primary care) sector expressed as the number of defined daily doses (DDD) per 1000 inhabitants per day.	European Centre for Disease Prevention and Control (2022)	2021, N.A. (CY)
Self-reported unmet need for medical care	SE_v07	Individuals with unmet health needs may have unresolved health problems or be at risk of developing an illness, therefore they are more vulnerable. Megatrend: widening inequalities.	Share of the population aged 16 and over reporting unmet needs for medical care due to one of the following reasons: 'Financial reasons', 'Waiting list' and 'Too far to travel' (all three categories are cumulated).	Eurostat: tespm110	2021
Years of life lost due to PM2.5	SE_v08	This indicator measures the impact of atmospheric pollution on human lives. The higher the score the bigger the vulnerability due to pollution. Megatrend: shifting health challenges.	Absolute number of years of life lost due to PM2.5 per 100,000 inhabitants.	Eurostat: sdg_11_51	2020
Variation in performance explained by students' socio-economic status	SE_v09	Students' socio-economic status plays a role in determining positive achievement in education. A strongly positive relationship between socio-economic status and PISA performance suggests a low equality of opportunity within the country. An inclusive and resilient country is where the education system mitigates obstacles due to socio-economic status. Megatrend: widening inequalities.	Gap in education achievement measured by the difference of the PISA index score between the top and bottom quartile, by socio-economic status of students.	OECD PISA data based on OECD (2019)	2018
Macroeconomic skills mismatch rate	SE_v10	A high score in skills mismatch suggests that there is a large gap between the skills that the population has and the skills that the economy needs. It may represent an obstacle during transitions or indicate a potential vulnerability in case of an economic shock. The indicator provides a proxy of the need to update the education system to the job market demand to better cope with structural changes. Megatrend: changing nature of work.	The indicator is the relative dispersion of employment rates across broad skill groups (high, medium, low skills). The indicator is calculated as the sum, over the three skill groups, of the absolute difference between the share of a skill group in employment and its share in the population. The higher the indicator the bigger the gap between available and demanded skills.	LFS[8]	2021

[8] DG ECFIN and DG EMPL calculations. The methodology is as described in Kiss and Vandeplas (2015).

Variable	Label	Rationale	Definition	Source	Latest available year
Gender employment gap	SE_v11	The gender employment gap is linked to lower prosperity and progress because of a reduction in the pool of talent participating in the labour market. It creates a distortion in labour market dynamism and a suboptimal use of resources, which in times of crises represents an obstacle to an effective crisis response, recovery and eventual bouncing forward. Megatrend: widening inequalities.	Difference between the employment rate of men and women of working age 20-64.	Eurostat: sdg_05_30	2021
Young people neither in employment nor in education and training	SE_v12	Young people neither in employment nor in education and training tend to lack the qualifications, skills and competences to successfully enter the labour market. They are also more vulnerable to shocks, and less able to respond/adapt to the dynamic needs of the labour market, especially during the green and digital transition. Megatrend: widening inequalities.	Young people neither in employment nor in education and training (in percentage of the population aged 15 to 29). Note that the series has a significant break for 2021 data, due methodological updates.	Eurostat: sdg_08_20	2021
Long-term unemployment rate	SE_v13	Long-term unemployment depletes human capital and makes the return to employment more difficult, with important social consequences. Megatrend: widening inequalities (changing nature of work).	The long-term unemployment rate is the share of people unemployed for 12 months or longer in the labour force (i.e. economically active population, aged 15-74).	Eurostat: une_ltu_a	2021
Social and economic dimension: Health, education and work CAPACITIES					
Standardised preventable and treatable mortality (low rate)	SE_c05	A low level of avoidable mortality shows the ability of the national health system to provide the necessary health treatments via prevention as well as timely healthcare intervention, which is particularly important in time of distress. Megatrend: shifting health challenges.	Preventable mortality refers to mortality that can mainly be avoided through effective public health and primary prevention interventions. Treatable mortality can mainly be avoided through timely and effective health care interventions, including secondary prevention and treatment. The data are presented as the negative of standardised death rates (per 100,000 persons aged less than 75 years), meaning they are adjusted to a standard age distribution in order to measure death rates independently of different age structures of populations.	Eurostat: sdg_03_42	2020

Variable	Label	Rationale	Definition	Source	Latest available year
Healthy life years in absolute value at birth	SE_c06	It is an indication of overall good health, as well as environmental and social conditions which result in longer healthy life expectancy. Megatrend: widening inequalities (shifting health challenges).	Healthy life years is defined as the number of years that a person is expected to live in a healthy condition. It is based on age-specific prevalence (proportions) of the population in healthy and unhealthy conditions and age-specific mortality information. A healthy condition is defined as one without limitation in functioning and without disability.	Eurostat: hlth_hlye	2020
Children (< 3 years) in formal childcare	SE_c07	Formal childcare is the first and most important part of a socialization process and building of human capital. It reduces inequality, increases the likelihood of a better outcome in education for children and finally it reduces disincentives to female labour force participation. Megatrend: widening inequalities.	Percentage of children (under 3 years old) cared for by formal arrangements other than by the family. The indicator is based on EU-SILC.	Eurostat: tepsr_sp210	2021
Average scores in the PISA test	SE_c08	Better reading, mathematics and science skills are a key indicator of the quality of education, as it is a proxy for the basic individual ability to understand and process complex phenomena. Megatrend: diversification of education and learning.	Average PISA scores in reading, mathematics and science, among students aged 15. The three average scores are first calculated separately and then aggregated at the country level.	OECD PISA data based on OECD (2019)	2018, 2015 (ES, EU27)
Adult participation in learning during the last 12 months	SE_c09	Reskilling and upskilling can help employees (and the self-employed) to make a smooth transition to other tasks or jobs. This makes adult learning a key capacity for recovery and adaptation to the future of work. Megatrend: diversification of education and learning.	Share of adults (aged 25-64) who stated they received formal and non-formal training in the last 12 months preceding the survey.	Adult Education Survey[9]	2016
Employment rate	SE_c10	Being employed makes individuals economically independent and more empowered. People at work also maintain their skills and qualifications. Economies with a higher share of employed may be better positioned in facing economic shocks and transitions. Megatrend: widening inequalities (changing nature of work).	Percentage of employed persons in the total population (aged 20 to 64).	Eurostat: lfsi_emp_a	2021

[9] This indicator is based on an ad hoc extraction performed by Eurostat. It corresponds to the Council decision of the target that at least 47% of adults aged 25 – 64 should participate in learning during the previous 12 months by 2025. As of now, the data source is the Adult Education Survey. In the future, this variable should be regularly part of the Labour Force Survey. This indicator is aligned with the Social Scoreboard

Variable	Label	Rationale	Definition	Source	Latest available year
Active labour market policies per person wanting to work	SE_c11	Active labour market policies (ALMP) are government programmes to help and support the unemployed and other disadvantaged groups in the transition from unemployment or inactivity to work. They enable labour market resilience by sustaining and stimulating job creation, especially in case of transitions and shocks. Megatrend: widening inequalities.	Government expenditures on active labour market policies in PPS adjusted Euro per person wanting to work. They include labour market services, training, employment incentives, supported employment and rehabilitation, direct job creation, start-up incentives, out of work income maintenance and support, early retirement. By looking at expenditures per person wanting to work, it corrects for cyclicality and hence enables comparison across countries and over time.	LMP_IND_EXP[10]	2020
Social and economic dimension: Economic and financial stability and sustainability VULNERABILITIES					
Government debt	SE_v14	Countries with high public debt have less room for fiscal interventions to support the economy and they are less attractive to foreign investors. Government debt is one aspect of the broader concept of fiscal sustainability, which should be considered together with variables like 'Government investment to GDP' and the 'Old-age dependency ratio'.	The total consolidated gross debt at nominal value in the following categories of government liabilities (as defined in ESA 2010): currency and deposits (AF.2), debt securities (AF.3) and loans (AF.4), expressed as a percentage of GDP. The general government sector comprises the subsectors of central government, state government, local government, and social security funds.	Eurostat: sdg_17_40	2021
Projected old-age dependency ratio	SE_v15	The higher is this ratio, the higher is the pressure from ageing on the welfare state and the higher the economic burden on young people. It is worth noting that the projected old-age dependency ratio is a key ingredient for assessing the implications of ageing, but the phenomenon is complex and has further important determinants. Megatrend: increasing demographic imbalances.	This indicator is the estimated ratio between the number of persons aged 65 and over (age when they are generally economically inactive) and the number of persons aged between 15 and 64. The model to calculate this indicator takes into account assumptions on future age-specific fertility rates, probabilities of dying and net migration levels. 2050 projections based on data up to 2019.	Eurostat: tps00200	2021

[10] This indicator was sourced from the European Commission Directorate-General for Employment, Social Affairs and Inclusion; data and methodology available in European Commission Directorate-General for Employment, Social Affairs and Inclusion (2018).

Variable	Label	Rationale	Definition	Source	Latest available year
Degree of specialization of the economy	SE_v16	It is established in the economic literature that a high degree of diversification shields countries and regions from being excessively hit by a sectoral shock. Sectoral/micro shocks, therefore, do not translate into macro disturbances. For the EU as a whole, however, country-level specialisation may lead to higher competitiveness. Megatrend: growing consumption (aggravating resource scarcity, expanding influence of east and south).	Herfindahl index across sectors (NACE2), represents the sectoral concentration of domestic production. The lower the less vulnerable, as highly diversified economies are more resilient.	Eurostat: nama_10_a64, JRC elaboration	2021, 2020 (BE, CY, DE, ES, FR, IT, LT, LV, PL, PT, SE, EU27)
Non-financial corporation debt to GDP ratio	SE_v17	It is an indicator of the leverage and debt sustainability of non-financial corporations (NFC). When debt is low relative to the level of economic activity, NFCs have a higher capacity to raise additional funds (via loans or capital markets) and to obtain better funding conditions in general. A low leverage mitigates the impact of potential rising interest rates on NFCs' balance sheets, and generally provides higher capacity to withstand shocks.	Consolidated non-financial corporation (NFC) debt (debt securities and loans) to GDP.	ECB	2021
Social and economic dimension: Economic and financial stability and sustainability CAPACITIES					
Income stabilisation coefficient	SE_c12	Automatic stabilizers (taxes, social insurance contributions and income-related benefits) are timely and do not depend on policymakers' actions. They immediately provide relief where necessary and dampen the economic cycle. Megatrend: widening inequalities.	Share of a shock in market income (before taxes and transfers) which is absorbed by a country's tax and benefit system and is not transmitted into disposable income (after taxes and transfers).	JRC calculations[11]	2021
Banking sector total capital ratio	SE_c13	It is an indicator of the losses that the banking sector can absorb with available capital before other liabilities are hit. The higher the total capital ratio the higher is the banking sector capacity to provide lending to the economy and to absorb individual or systemic shocks.	The total capital ratio provides a measure of how much capital (equity + subordinated liabilities) the banking sector holds in comparison to the risks faced (credit, market and operational risks). It is calculated as: own Funds/ Total Risk Exposure Amount.	ECB	2021

[11] Using the Euromod simulation model as per European Commission (2018).

Variable	Label	Rationale	Definition	Source	Latest available year
Insurance sector solvency capital ratio	SE_c14	The solvency ratio provides an indicator of how much resources the insurance sector holds to offset unexpected losses arising from investments and insurance risks. A high value indicates that the insurance sector is able to absorb unexpected losses/pay-outs, so it is resilient to financial and other shocks. Weaknesses of the insurance sector may spill over to the financial system.	The ratio is calculated as: eligible own funds (capital and subordinated liabilities) over solvency capital requirements as defined in Solvency II (data included from 2017 onwards).	European Insurance and Occupational Pensions Authority (EIOPA, 2023)	2021
Share of innovative enterprises	SE_c15	Innovation stimulates competitiveness and helps an economy to be flexible to changes, to adapt faster and eventually to be able to transform. Megatrend: accelerating technological change and hyperconnectivity.	Share of innovative enterprises as a percentage of all enterprises. Innovative enterprises are classified as those that had innovation activities during the period under review (2014-2016), regardless of whether the activity resulted in the implementation of an innovation or not. Data refers to business process innovation.	Eurostat: inn_cis12_spec, inn_cis11_spec	2020
Intangible investment	SE_c16	Intangible assets are at the heart of what makes firms competitive. They are vital for productivity, economic growth, innovation and transformation. Megatrend: accelerating technological change and hyperconnectivity.	The stock of intangible capital at current prices over gross output. Intangibles include computer software and database, research and development, and other innovative properties and assets.	EUKLEMS & INTANProd Database as per Bontadini et al. (2023)	2019, 2018 (EE, ES, IE, LT, LU, LV, PL, PT, SE, EU27), 2017 (RO), 2015 (EL), N.A. (CY, HR)
Government investment to GDP ratio	SE_c17	Higher investment rates imply more capital for production. Government investment highlights the role of the government as an active investor. Government investment increases the capacity to face economic shocks by having buffers and being able to channel resources to new sectors during adaptation and (if needed) transformation.	It is defined as gross fixed capital formation (GFCF) of the government sector as a percentage of GDP.	Eurostat: nasa_10_ki	2021, 2020 (RO), 2017 (BG)

Table 6: Detailed list of indicators included in the **Green dashboard**

Variable	Label	Rationale	Definition	Source	Latest available year
Green dimension: Climate change mitigation and adaptation VULNERABILITIES					
Fatalities from climate extremes	G_v01	Understanding climate-related losses is crucial to improve the accuracy of climate risk assessment. Countries with higher risk of severe losses might require more important effort in terms of climate change adaptation plans, which can represent a challenge to the green transition. Megatrend: climate change and environmental degradation.	Number of fatalities to weather or climate-related extreme events over the periods 1980-2019 and 1980-2020, per 1 million population.	European Environment Agency (2023)	2020
GHG emissions per capita	G_v02	Greenhouse gas (GHG) emission is a major driver of climate change. Countries with higher GHG emissions may need to devote more efforts to achieve climate neutrality. Megatrend: climate change and environmental degradation.	Total national emissions of greenhouse gases in tonnes per capita. Different gases are integrated into a single indicator expressed in units of CO2 equivalents. The indicator does not include emissions and removals related to land use, land-use change and forestry (LULUCF), but it includes international aviation.	Eurostat: env_air_gge	2020
CO2 emissions in road transport	G_v03	Road transport is responsible for a large share of CO2 emissions in the EU. High levels of CO2 emissions represent an important challenge in the transport sector in its shift towards sustainable and carbon neutral mobility. Megatrend: climate change and environmental degradation.	CO2 emissions of road transport in tonnes per capita.	Eurostat: env_air_gge	2020
Fossil fuel subsidies	G_v04	Fossil fuel subsidies may encourage an excessive use of fossil fuels and reduce the incentive to use cleaner forms of energy. They can thus represent an obstacle to the green transition. Megatrend: climate change and environmental degradation.	Fossil fuel subsidies comprise various forms of monetary transfers from public entities to the private sector (direct transfers, tax expenditures) as well as regulatory economic mechanisms and schemes that results in cross-subsidies, expressed as a percentage of GDP.	DG ENER[12]	2020

[12] European Commission Directorate-General for Energy (2022).

Variable	Label	Rationale	Definition	Source	Latest available year
Green dimension: Climate change mitigation and adaptation CAPACITIES					
Insured losses from climate extremes	G_c01	Insurance has been acknowledged as a systemic adaptation tool, which allows to transfer potential future losses due to climate-related extreme events to a party which is more prepared to absorb them. The higher the share of insured losses, the better are the expectations of coping with the potential future consequences of climate extremes. This indicator points to the ability of a country to close the climate protection gap. Megatrend: climate change and environmental degradation.	Share of insured losses from weather or climate-related extreme events over the periods 1980-2019 and 1980-2020, expressed as a percentage of total losses.	European Environment Agency (2023)	2020
CO2 absorption by forests	G_c02	Forests provide important ecosystem services, particularly in relation to CO2 capture. They represent carbon sinks that will contribute to achieving carbon neutrality. Megatrend: climate change and environmental degradation.	Level of CO2 absorption (negative of emission) by forests, rescaled to the total land cover.	Eurostat: env_air_gge + lan_lcv_ovw	2020
Electric and hydrogen passenger fleet	G_c03	Low-emission alternative energy can support the decarbonisation of transport. Monitoring the BEV and H2 vehicle number and growth can provide a forward-looking metric for the state of decarbonisation of passenger road transport across the EU. Megatrend: accelerating technological change and hyperconnectivity.	Share of battery electric (BEV) and hydrogen (H2) vehicles of the total fleet of passenger cars. Numbers are multiplied by 1000.	European Alternative Fuels Observatory	2021
Inland use of train, bus and trolleybus	G_c04	Inland use of train, bus and trolleybus is a proxy of the uptake of more sustainable patterns of passenger transport. The ability to achieve ambitious climate goals requires a shift to more sustainable transport modes. Megatrend: climate change and environmental degradation.	Percentage of transport by buses, coaches, and trains in total inland passenger transport performance, measured in passenger-km.	Eurostat: tran_hv_psmod	2020
Renewable energy in final energy consumption	G_c05	Countries with a higher share of renewable energy are better placed to achieve the objectives of the Green Deal and can exploit the opportunities of this sector better. Megatrend: aggravating resource scarcity.	Share of renewable energy consumption in gross final energy consumption. The gross final energy consumption is defined as gross electricity production from all energy sources plus total imports of electricity minus total exports of electricity.	Eurostat: nrg_ind_ren	2021

Variable	Label	Rationale	Definition	Source	Latest available year
Environmental patents per capita	G_c06	Innovation in the environment sector shows the capacity and skills for breaking new grounds in terms of greening the economy, by opening new patterns of consumption and production and allowing for new ways to address environmental risks. Innovative low-carbon technologies and processes are instrumental for societal transformation needed for the green transition. Megatrend: climate change and environmental degradation.	Number of environment-related patent applications per million inhabitants. The number of patent applications filed under the International Patent System (established by the Patent Cooperation Treaty) by Inventor(s)'s country(ies) of residence and priority data. Environmental patents include environment-related technologies, climate change adaptation technologies and sustainable ocean economy.	OECD: PATS_IPC[13]	2019
Green dimension: Sustainable use of resources VULNERABILITIES					
Water exploitation index +	G_v05	The water exploitation index (WEI+) aims to illustrate the pressure on the renewable freshwater resources as a consequence of water use for human purposes. High values of water exploitation represent a major threat (either by natural endowment or human action) to a healthy environment and natural capital preservation. Megatrend: aggravating resource scarcity.	The water exploitation index (WEI+) is estimated as the annual ratio of water use versus the consumption of renewable freshwater from renewable resources at the country level.	Eurostat: sdg_06_60	2019
Consumption footprint per capita	G_v06	High consumption footprint represents a criticality and an obstacle in achieving the green transition. It provides an insight on the overall weight of the countries' economy on different environmental aspects. High footprint points to higher burden of the economic activity on the environment and climate, both within and beyond the national borders. Megatrend: climate change and environmental degradation.	The consumption footprint quantifies the environmental impacts resulting from the consumption, including the embodied and indirect impacts. It accounts for domestic production in the EU and trade with other world regions. The use of resources and the emissions to the environment of producing, distributing and consuming goods in the EU are translated into 16 environmental impacts (such as climate change, ecotoxicity, water scarcity etc.), and then aggregated into an environmental footprint single score, in per capita terms.	JRC.D3[14]	2021

[13] Data sourced from OECD statistics (OECD, 2023a), variable 'patents in environment-related technologies' (ID 29068).
[14] Data sourced from the European Platform on Life Cycle Assessment (2023).

Variable	Label	Rationale	Definition	Source	Latest available year
Raw material consumption per capita	G_v07	High raw material consumption implies higher environmental degradation resulting from primary production, material processing, manufacturing and waste. Megatrend: aggravating resource scarcity.	Raw material consumption (RMC) is defined as the amount of material in terms of raw material equivalents (RME) needed (or, the amount of extraction, domestic and abroad, required directly and indirectly) to produce the products consumed in a geographical reference area. It is calculated as raw material input (RMI) minus exports in RME (calculated at the aggregate product level, by material) in tonnes per capita.	Eurostat: env_ac_rme	2020
Waste generation rate	G_v08	Excessive waste production is a vulnerability for achieving the sustainable use of resources. Waste also endangers and pollutes the environment. Megatrend: climate change and environmental degradation.	Waste volume divided by domestic material consumption (excluding fossil fuel carriers and biomass). Domestic material consumption is the total amount of material directly used in an economy, which equals direct material input minus exports.	Eurostat: env_wasgen + env_ac_mfa	2020
Energy used in ICT	G_v09	Increased energy demand due to digitalization may be the cause of "disruptive" changes within the energy sector. Although digitalisation can contribute to improve energy efficiency, the projections show in parallel a very rapid growth in electricity consumption, that represents a vulnerability for the green transition. Megatrend: accelerating technological change and hyperconnectivity.	Sum of net domestic energy use by ICT industries: manufacture of computer, electronic and optical products (NACE C26), Telecommunications (NACE J61) and Computer programming, consultancy, and information service activities (NACE J62_J63), divided by energy use of all NACE industries.	Eurostat: env_ac_pefa04	2020
Green dimension: Sustainable use of resources CAPACITIES					
Resource productivity	G_c07	Resource productivity is a measure of the effectiveness with which resource consumption produces added value. It provides insights into whether decoupling between the use of natural resources and economic growth is taking place. It should be looked together with the level of material footprint per capita. Megatrend: aggravating resource scarcity.	Resource productivity is the ratio of GDP and the consumption of material resources (domestic material consumption). It is measured in PPS per kilogram and adjusted using 2010 chain linked volumes of GDP at market prices.	Eurostat: cei_pc030	2021
Energy productivity	G_c08	The indicator points to the productivity of energy consumption and provides a picture of the degree of decoupling of energy use from growth in GDP. Megatrend: aggravating resource scarcity.	Energy productivity is the ratio of GDP and the consumption of gross available energy. It is measured in PPS per kilogram of oil equivalent and adjusted using 2010 chain linked volumes of GDP at market prices.	Eurostat: nrg_ind_ep	2021
Circular material use rate	G_c09	A higher degree of circularity reduces the environmental impacts of extracting primary material and corresponds to a higher ability to reemploy recycled products into the economy. Decoupling economic growth from resource use is key for the green transition. Megatrend: aggravating resource scarcity.	The ratio of the circular use of materials (recycled products and recovered materials) to the overall material use.	Eurostat: env_ac_cur	2021

Variable	Label	Rationale	Definition	Source	Latest available year
E-waste recycling rate	G_c10	This indicator provides insights on the ability to foster a circular economy in relation to the digital transition. Waste in electrical and electronic equipment, such as computers, televisions, fridges and mobile phones, is one the fastest growing waste streams in the EU. E-waste includes precious materials that can represent an opportunity for recycling. Megatrend: accelerating technological change and hyperconnectivity.	The indicator is calculated by multiplying the 'collection rate' as set out in the Waste Electrical and Electronic Equipment (WEEE) Directive with the 'reuse and recycling rate' set out in the WEEE Directive.	Eurostat: env_waseleeos	2020, 2018 (RO)
Gross value added in environmental goods and services sector	G_c11	A higher GVA share in the environmental goods and services sector (EGSS) indicates that the country has performed a larger shift towards eco-industries, which are crucial for the conservation of natural capital and efficiency in the use of resources. Goods and services produced in this sector are instrumental to achieve the green transition. Megatrend: changing nature of work.	Gross value added in the environmental goods and services sector, as a percentage of GDP. The sector is defined as the sum of all activities that generate environmental products, i.e. goods and services produced for environmental protection or resource management. Its suppliers are scattered over many NACE sections, divisions, and groups.	Eurostat: env_ac_egss2	2021 (DK, ES, FI, HR), 2020, N.A. (HU)
Green dimension: Ecosystems, biodiversity and sustainable agriculture VULNERABILITIES					
Farmland bird index	G_v10	Biodiversity loss is an alarm indicator of excessive human activity. It can endanger the green transition as it has a negative impact on climate and disaster resilience, agriculture, and food security. Birds can act as 'indicator species' providing a barometer of the health of the environment. Being close to or at the top of the food chain, they reflect changes in the ecosystem rather rapidly compared to other species. Megatrend: climate change and environmental degradation.	The farmland bird index shows an average population trend in a group of species suited to track developments in the condition of farmland habitats. Its sign is reversed in the dashboard so that a high value indicates high vulnerability. A decrease in the index means that the balance of bird species population trend is negative, representing biodiversity loss and signalling environmental stress.	Eurostat: env_bio2	2020, 2019 (EL, LU, NL), 2018 (FR, SK), 2017 (ES, PL), 2016 (DE, IE), N.A. (BG, HR, MT, RO, EU27)
Harmonised risk indicator 1 for pesticides	G_v11	The use of chemical pesticides contributes to soil, water and air pollution, biodiversity loss and can harm non-target species. The Farm to Fork strategy under the European Green Deal calls for a significant reduction of the use and risk of chemical pesticides. Reduced use of and dependency on chemical pesticides improves the sustainability of the food chain. Megatrend: climate change and environmental degradation.	The Harmonised risk indicator (HRI1) is an index that assesses the sustainable use of pesticides. It is based on statistics on the quantities of active substances placed on the market in plant protection products. Those data are categorised into four groups and multiplied by weightings established in Commission Directive (EU) 2019/782, followed by aggregation of the results of those calculations. The HRI1 is presented as an index, whose baseline is set to 100. This baseline refers to the average result of the calculation for the period 2011-2013.	Eurostat: aei_hri	2020

Variable	Label	Rationale	Definition	Source	Latest available year
Soil sealing index	G_v12	Sprawl of built-up areas leads to an increase of soil sealing (imperviousness). Depending on its degree, soil sealing reduces or even completely prevents natural soil functions and ecosystem services on the area. It is an important driver of biodiversity and habitat losses, hence a potential criticality for the green transition. Megatrend: climate change and environmental degradation.	The indicator estimates the percentage of sealed soil surfaces with impervious materials due to urban development and construction (buildings, constructions, and laying of completely or partially impermeable artificial material, such as asphalt, metal, glass, plastic or concrete) from the total surface. It uses data from the imperviousness High Resolution Layer (from the Copernicus Land Monitoring Service).	Eurostat: sdg_15_41	2018
Soil erosion by water	G_v13	Soil erosion by water is a major environmental threat, which can be exacerbated further in the future by climate change and human activity. As such, it represents a vulnerability that can endanger the conservation status of the ecosystems and biodiversity. Megatrend: climate change and environmental degradation.	The indicator estimates the soil loss by water erosion processes and gives an indication of the area under risk of severe soil loss. It is expressed as a percentage of the total non-artificial erosive area in the country.	Eurostat: sdg_15_50	2016
Farm income variability	G_v14	Farming activities are exposed to shocks and fluctuations, i.e. changes in environmental or socio-economic constraints that might be difficult to anticipate. Farm income variability is deemed an important indicator of (the lack of) agricultural resilience. High farm income variability can for instance prevent investments needed for achieving sustainable agriculture practices. Megatrend: widening inequalities.	Variability of gross farm income (GFI) per annual work unit, as a percentage change in GFI compared with the previous 3-year average. It is based on the ESTAT economic accounts for agriculture.	DG AGRI[15]	2019
Green dimension: Ecosystems, biodiversity and sustainable agriculture CAPACITIES					
Soil carbon content	G_c12	Soil carbon content is essential to improving fertility, increasing the efficiency of nutrient and water use, minimizing vulnerability to extreme climatic events, and decreasing the susceptibility to erosion. Higher level of soil carbon represents a capacity for sustainable agriculture. Megatrend: climate change and environmental degradation.	The indicator is based on the first European harmonized geo-referenced topsoil (0–20 cm) database, which arises from the Land Use/Cover Area frame statistical Survey (LUCAS). It is based on the modelled organic carbon content in relation to slope, land cover, temperature, productivity and GPS position.	JRC-LUCAS[16]	2020
Organic farming	G_c13	Organic farming can represent an important opportunity for a shift towards sustainability, given its potential to mitigate water scarcity and enhance soil quality and biodiversity. Megatrend: climate change and environmental degradation.	Total fully converted organic farming areas and under conversion to organic farming as a percentage of total utilised agricultural area.	Eurostat: org_cropar	2021, 2020 (AT, EL, FR, PL, EU27)

[15] Based on data from the European Commission Directorate-General for Agriculture and Rural Development (2023).
[16] Based on methodology in de Brogniez et al. (2015) and data from European Soil Data Centre (ESDAC) on soil organic content.

Variable	Label	Rationale	Definition	Source	Latest available year
Urban wastewater treatment	G_c14	This indicator points to the ability to provide clean water and sanitation, with an impact on the quality of water and corresponding consequences on the health of water ecosystems and biodiversity. Megatrend: climate change and environmental degradation.	Percentage of population connected to wastewater treatment systems with at least secondary treatment.	Eurostat: sdg_06_20	2020,2019 (EL, IE, SE), 2018 (CY, ES), 2017 (PT), 2016 (DE), 2015 (IT), N.A. (MT)
Natura 2000 protected areas	G_c15	Natura 2000 is a network of core breeding and resting sites for rare and threatened species, and some rare natural habitat types which are protected in their own right. This network contributes to maintaining biodiversity and ecosystem services that are critical to sustaining human life and well-being, mitigating climate change and its effects. Megatrend: climate change and environmental degradation.	Protected country areas (terrestrial), under Natura 2000 and nationally protected areas, expressed as a percentage of mainland national territory.	Eurostat: env_bio4	2021
National expenditures on environmental protection	G_c16	Environmental protection expenditures point to the capacity of the government and the private sector to restore the environment and reduce pollution. The indicator points to preparedness in terms of environmental protection, resource management and green growth. It includes investment in environmental protection, which is more forward-looking. Megatrend: climate change and environmental degradation.	Resources devoted by resident units to protecting the natural environment. It is calculated as a sum of uses of environmental protection (EP) services by resident units, gross fixed capital formation for EP activities, and net transfers to the rest of the world for EP. It is expressed as a share of GDP.	Eurostat: env_ac_epneis	2021 (EU27), 2020 (ES), 2019

Table 7: Detailed list of indicators included in the **Digital dashboard**

Variable	Label	Rationale	Definition	Source	Latest available year
Digital dimension: Digital for personal space VULNERABILITIES					
Enterprises without ICT training programs	D_v01	Enterprises not providing ICT training to their employees diminish both their opportunities and the societal ability in dealing with digital challenges. Megatrend: diversification of education and learning.	Percentage of enterprises not providing training to develop/upgrade ICT skills of their personnel (10 persons employed or more).	DESI[17]	2020
Employees not using telework	D_v02	A high share of employees not able to use teleworking represents a vulnerability in case of shocks such as the COVID pandemic. Megatrend: accelerating technological change and hyperconnectivity.	The employed who do not work - usually or sometimes - from home, as a percentage of total employment. Note that the series has a significant break for 2021 data, due methodological updates.	Eurostat: lfsa_ehomp	2021
Inadequacy of ICT training for teachers	D_v03	Inadequacy of ICT training for teachers and the consequent difficulties in making the best use of digital technologies would create extra obstacles to an efficient delivery of distance learning. Megatrend: diversification of education and learning.	The share of teachers reporting a high level of need for professional development in ICT skills for teaching. It is used as a proxy for teachers' self-perceived ICT inadequacy.	OECD: TALIS_IND[18]	2018, N.A. (CY, DE, EL, IE, LU, PL, EU27)
Digital dimension: Digital for personal space CAPACITIES					
Collaborative economy	D_c01	This indicator points to a new economy based on shared information through internet platforms. Megatrend: changing nature of work.	Online purchases (3 months) from a private person: rented accommodation (Percentage of individuals).	Eurostat: isoc_ec_ce_i	2021
Advanced digital competence of adults	D_c02	Proxy of digital skills of adults, which represent a fundamental resource to facilitate their inclusion in the digital age. Megatrend: diversification of education and learning.	Percentage of people who have above basic overall digital skills (aged 25-64).	Eurostat: isoc_sk_dskl_i21	2021
Advanced digital competence of young people	D_c03	Proxy of digital skills of young people that represent a fundamental resource to facilitate their future inclusion in the labour market. Megatrend: diversification of education and learning.	Percentage of young people who have above basic overall digital skills (aged 16-19).	Eurostat: isoc_sk_dskl_i21	2021,N.A. (IE)
Use of online courses	D_c04	Online courses are, here, used as proxy for new life-long learning tools in the "onlife" era. Megatrend: diversification of education and learning.	Percentage of people who have used the internet for doing an online course (on any subject), all individuals (aged 16-74).	Eurostat: isoc_bde15cua	2021

[17] Sourced from the Digital Economy and Society Index (2023).
[18] Table sourced from the OECD Teaching and Learning International Survey (OECD, 2023b).

Variable	Label	Rationale	Definition	Source	Latest available year
Use of social networks	D_c05	Use of social networks plays a central role in the "onlife" future generation behaviour. Megatrend: increasing influence of new governing systems.	Percentage of people who have used the internet for participating in social networks (creating a user profile, posting messages or other contributions to Facebook, Twitter, etc.).	Eurostat: isoc_bde15cua	2021
Young people doing any online learning activity	D_c06	Online learning is a sign of a Member State's capacity to use new means of education which may be used outside the classical school systems. Megatrend: diversification of education and learning.	Percentage of young people who have used the internet for doing an online course (on any subject), all individuals (aged 16-24).	Eurostat: isoc_ci_ac_i	2021,2019 (IE)
Master graduates in ICT	D_c07	Provides the (intensity of the) potential future workforce trained in advanced technologies to push their development. A successful digital transition requires more and more of these profiles. Megatrend: diversification of education and learning.	The number of university graduates with master's degrees in the field of Information and Communication Technologies per thousand of population aged 20-29.	Eurostat: educ_uoe_grad02	2020
Digital dimension: Digital for industry VULNERABILITIES					
ICT trade deficit in goods	D_v04	A negative trade balance points to the domestic difficulty to sustain the digital transition. In particular, high dependence in digital goods could harm the development of digital technologies. Megatrend: changing nature of work.	Information and communication technology goods imports (and exports) include computers and peripheral equipment, communication equipment, consumer electronic equipment, electronic components, and other information and technology goods (miscellaneous). The indicator is calculated as ICT goods imports minus ICT goods exports, divided by GDP.	World Bank: TX.VAL.ICTG.ZS.UN, TM.VAL.ICTG.ZS.UN, BX.GSR.MRCH.CD, BM.GSR.MRCH.CD, NY.GDP.MKTP.CD	2020, 2019 (BG, MT)
ICT trade deficit in services	D_v05	A negative trade balance in ICT services points to the domestic difficulty to provide a sound technological environment for the digital transition. In particular, high dependence in digital goods could harm the development of digital technologies. Megatrend: changing nature of work.	Computer, communications and other services imports (and exports) include activities such as international telecommunications, postal and courier services; computer data; news-related service transactions between residents and non-residents; construction services; royalties and license fees; miscellaneous business, professional, and technical services; and personal, cultural, and recreational services. The indicator is calculated as ICT services imports minus ICT services exports, divided by GDP.	World Bank: TM.VAL.OTHR.ZS.WT, TX.VAL.OTHR.ZS.WT, TM.VAL.SERV.CD.WT, TX.VAL.SERV.CD.WT, NY.GDP.MKTP.CD	2021
ICT specialist gender gap	D_v06	The gender gap represents a loss of talent and of potential growth. Closing the gender gap in the ICT sector would empower women to play an active role in the forthcoming digital transition. Megatrend: changing nature of work.	Difference between the number of males and females employed in ICT, divided by the total number of employed in ICT. Note that the series has a significant break for 2021 data, due methodological updates.	Eurostat: isoc_sks_itsps	2021

Variable	Label	Rationale	Definition	Source	Latest available year
Lack of cloud services	D_v07	Enterprises lacking access to cloud services are less capable to optimize resources, hence unable to face foreseen and unforeseen changes. Megatrend: changing nature of work.	Percentage of enterprises (10 persons employed or more) not buying sophisticated or intermediate cloud computing service.	Eurostat: isoc_cicce_use	2021
Broadband access gap by company size	D_v08	Difference between large and small enterprises' current broadband access signals a lack of preparedness to utilise digital technologies for SMEs and could prevent smooth access to digital markets. Megatrend: accelerating technological change and hyperconnectivity.	Difference between the percentage of large (250 persons employed or more) and small enterprises (10-49 persons employed) using DSL or other fixed broadband connection.	Eurostat: isoc_bde15b_e	2021
Digital dimension: Digital for industry CAPACITIES					
Investment per employee, high-technology sectors	D_c08	The level of investment in high technology sectors is a signal of a country's maturity and preparedness for the digital transition. Megatrend: changing nature of work.	Investment per person employed (in thousand euro) in the high-technology manufacturing sector (defined as NACE categories C21, C26, C30.3).	Eurostat: sbs_na_sca_r2	2020, 2019 (SE, SI), 2018 (EE, MT), 2017 (NL), 2016 (DK, SK), N.A. (CY, IE, LU)
Enterprises seeking ICT specialists	D_c09	Enterprises looking for ICT specialists are better placed for coping with new challenges associated with the digital transition. Megatrend: diversification of education and learning.	Percentage of enterprises who recruited or tried to recruit personnel for jobs requiring ICT specialist skills.	Eurostat: isoc_ske_itrcrn2	2020
Gross value added in ICT	D_c10	A developed ICT sector is essential for capitalising on digitalisation, keeping up with competitors in globalised markets, and establishing Europe's technological leadership. Megatrend: changing nature of work.	Value added of the ICT sector (both manufacturing and services) as a share of total value added.	Eurostat: isoc_bde15ag	2020, 2019 (IT), 2018 (ES), 2013 (NL), N.A. (CY, IE, LU)
ICT sector business enterprise R&D (BERD)	D_c11	Business enterprises' R&D intensity (BERD) signals the vitality of the ICT sector in the economy. Megatrend: changing nature of work.	ICT sector business enterprise R&D (BERD) expenditures as a share of total BERD.	JRC B6 PREDICT[19]	2019

[19] See Benages E et al. (2022)

Variable	Label	Rationale	Definition	Source	Latest available year
Value of e-commerce sales	D_c12	Proxy of the readiness of companies and consumers to take up the opportunities of the new economy. Megatrend: changing nature of work (accelerating technological change and hyperconnectivity).	Percentage of enterprises' total turnover from e-commerce sales (10 persons employed or more).	Eurostat: isoc_ec_evaln2	2021
Digital dimension: Digital for public space VULNERABILITIES					
Lack of 5G readiness	D_v09	Low 5G readiness will limit households, public services and enterprises in catching up with the latest mobile technologies. Megatrend: accelerating technological change and hyperconnectivity.	Percentage of spectrum not assigned or not ready for use, as a percentage of total harmonised 5G spectrum.	DESI	2021
Lack of online public services for businesses	D_v10	Lack of business-oriented digital public services will limit the opportunities for firms to engage in the digital transition. Megatrend: increasing influence of new governing systems.	The indicator broadly reflects the share of public services needed for starting a business and conducting regular business operations that are not available online for domestic as well as foreign users. Services provided through a portal receive a higher score, services which provide only information (but have to be completed offline) receive a more limited score.	DESI	2021
People not having access to digital public services	D_v11	Low level of citizen-oriented digital public services will harm the digital transition by creating obstacles to people's access to services. Megatrend: increasing influence of new governing systems.	Percentage of individuals who did not use the internet, in the last 12 months, for interaction with public authorities.	DESI	2021
Broadband access gap, urban versus rural	D_v12	The urban-rural gap might hinder a smooth transition and exacerbate existing inequalities. Megatrend: accelerating technological change and hyperconnectivity.	Share of households with broadband access in cities minus share of households with broadband access in rural areas.	Eurostat: isoc_ci_it_h	2021
Digital dimension: Digital for public space CAPACITIES					
E-health	D_c13	Making appointments online with a practitioner could be seen as a first proxy for the capacity of developing new digital health platforms. Megatrend: accelerating technological change and hyperconnectivity.	Share of individuals using the internet for making an appointment with a practitioner via a website.	Eurostat: isoc_ci_ac_i	2020, 2018 (FR)
Judicial system e-tools	D_c14	Leveraging technology in the justice system simplifies and accelerates the processing of court cases, ensures the resilience of justice, as well as facilitates access to justice for citizens and businesses. Megatrend: increasing influence of new governing systems.	This indicator gives information on the availability of digital tools at the disposal of the judiciary and judicial staff, i.e. tools that allow secure teleworking arrangements, case management, secure electronic communication, etc.	EU Justice Scoreboard	2021
Digital dimension: Cybersecurity VULNERABILITIES					

Variable	Label	Rationale	Definition	Source	Latest available year
Cybersecurity incidents experienced by people	D_v13	Incidents experienced by citizens are the first signal of digital environment weaknesses, and they might prevent people from accessing digital services. Megatrend: changing security paradigm.	Average percentage of people who responded that in the last three years they have been victim at least once of cyber crime.	Eurobarometer: EBS499 (QC9), EBS464 (QB12), EBS423 (QB8), EBS404 (QC9), EBS390 (QE10)	2019
ICT security incidents in enterprises	D_v14	Security concerns could prevent businesses from engaging in the digital transition. Megatrend: changing security paradigm.	Percentage of enterprises experienced at least once problems due to an ICT related security incident (10 persons employed or more).	Eurostat: isoc_cisce_ic	2019
Digital dimension: Cybersecurity CAPACITIES					
Cybersecurity awareness of individuals	D_c15	Well informed citizens are the first barrier against cyber threats. Megatrend: changing security paradigm.	Percentage of respondents who declared to feel 'well informed' about the risks of cybercrime (survey based).	Eurobarometer: EBS499 (QC7), EBS464 (QB10), EBS423 (QB1), EBS404 (QC8), EBS390 (QE9)	2019
Global Cybersecurity Index	D_c16	The Global Cybersecurity Index tells about the overall ability of a country to deal with cyber threats and, at large, to make digital complex systems more and more secure. Megatrend: changing security paradigm.	The Global Cybersecurity Index (GCI) is a trusted reference that measures the commitment of countries to cybersecurity at a global level – to raise awareness of the importance and different dimensions of the issue. As cybersecurity has a broad field of applications, cutting across many industries and various sectors, each country's level of development or engagement is assessed along five pillars – (i) legal measures, (ii) technical measures, (iii) organizational measures, (iv) capacity building, and (v) cooperation – and then aggregated into an overall score.	ITU	2020

Table 8: Detailed list of indicators included in the **Geopolitical dashboard**

Variable	Label	Rationale	Definition	Source	Latest available year
Geopolitical dimension: Raw material and energy supply VULNERABILITIES					
Metal footprint per capita	GP_v01	A country's combined direct and indirect raw material consumption in metals is an overall indicator of its economy's need for a class of raw materials with high global relevance. Megatrend: aggravating resource scarcity (expanding influence of east and south).	This variable sums direct, gross physical domestic extraction (DE) of metals from the environment within a nation's territory, and the embodied material flows associated with imports and exports. The material footprint in metals thus provides a view of a nation's material consumption that, unlike domestic material consumption, fully accounts for extraction in other countries used for local consumption, and for domestic extraction ultimately used for consumption in other countries. 3-year average.	UN-IRP Global Material Flows Database, category: metal ores; and Eurostat: demo_pjan.	2019
Supplier concentration in base metals	GP_v02	If a large part of material supply comes from a small number of countries, there is a high likelihood of supply disturbances. Megatrend: aggravating resource scarcity (expanding influence of east and south).	It is a concentration (Herfindahl) index (sum of square of the shares of supplier countries from outside the EU). First it is calculated for iron, aluminium and the five base metals (copper, lead, nickel, tin, zinc). Then those are averaged, using the country level relative values of metal imports as weights.	Material supplier shares and import values are from the Eurostat-Easy Comext[20]	2021,N.A. (EU27)
Import dependence in energy materials	GP_v03	High import dependence in energy materials indicates high vulnerability to external shocks and foreign suppliers. Megatrend: aggravating resource scarcity (expanding influence of east and south).	It is calculated from energy balances as net imports divided by the gross available energy. It includes all imports, from EU and non-EU sources.[21]	Eurostat: nrg_ind_id	2021
Supplier concentration in energy carriers	GP_v04	If a large part of energy carrier supply comes from a small number of countries, there is a high likelihood of supply disturbances. Megatrend: aggravating resource scarcity (expanding influence of east and south).	It is a concentration (Herfindahl) index (sum of square of the shares of supplier countries from outside the EU). First it is calculated for gas, oil, and solid fossil fuels. Then those are averaged, using the Member State level relative gross inland consumption values, in tons of oil equivalent.[22]	Eurostat: nrg_bas_s, nrg_ti_xx, nrg_te_xx and nrg_cb_xx for oil, solid fossil fuels (sff) and gas	2021,N.A. (EU27)
Geopolitical dimension: Raw material and energy supply CAPACITIES					

[20] Iron: group 72. Copper: 74, excluding 7410-7419. Nickel: 75, excluding 7507-08. Aluminium: 76, excluding 7607-7616. Lead: 78, excluding 7806. Zinc: 79, excluding 7907. Tin: 80, excluding 8007.

[21] Distinguishing between intra- and extra-EU imports would be difficult for this variable as the units of measurement for gross available energy and energy trade data are different. The corresponding EU-27 indicator nevertheless shows the external import dependence in energy materials of the EU with respect to non-EU countries because intra-EU flows cancel from total imports minus exports. Moreover, the intra-EU energy trade indicator serves to indicate how much EU countries manage to diversify using the internal market.

[22] For more details, see European Union: European Commission (2017) section 3.1.2.

Variable	Label	Rationale	Definition	Source	Latest available year
Intra-EU trade in recyclable raw materials	GP_c01	Contributing to and taking advantage of the EU-level flow of recyclable materials helps to mitigate supply risks and vulnerabilities. Megatrend: aggravating resource scarcity (expanding influence of east and south).	Intra-EU imports plus exports of all recyclable raw materials over GDP (current prices).	Eurostat: env_trdrrm and nama_10_gdp	2021
Supplier diversification for base metals, rate of change	GP_c02	An increase in supplier diversification indicates a reduction in supply risk using international trade, hence a resilience capacity at work. Megatrend: aggravating resource scarcity (expanding influence of east and south).	The negative of the rate of change (10 years) of the supplier concentration for base metals.	Material supplier shares and import values are from the Eurostat-Easy Comext.	2021, N.A. (EU27)
Metal footprint per capita, rate of decline	GP_c03	A decreasing metal footprint indicates achievements in reducing vulnerability to supply shocks. Megatrend: aggravating resource scarcity (expanding influence of east and south).	Per capita metal footprint, negative of the compound annual growth rate of 3-year averages (10 years).	UN-IRP Global Material Flows Database, category: metal ores; and Eurostat: demo_pjan.	2019
Intra-EU trade in energy	GP_c04	Contributing to and taking advantage of the EU-level trade in energy helps to mitigate supply risks and vulnerabilities. Megatrend: aggravating resource scarcity (expanding influence of east and south).	Exports plus imports over GDP. HS2 code 27 (mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes). Partner code: intra-EU27.	Eurostat - Easy Comext	2021
Supplier diversification for energy carriers, rate of change	GP_c05	An increase in supplier diversification indicates a reduction in supply risk using international trade, hence a resilience capacity at work. Megatrend: aggravating resource scarcity (expanding influence of east and south).	The negative of the rate of change (10 years) of the supplier concentration for energy materials.	Eurostat: nrg_bas_s, nrg_ti_xx, nrg_te_xx and nrg_cb_xx for oil, solid fossil fuels (sff) and gas	2021, N.A. (EU27)
Geopolitical dimension: Value chains and trade VULNERABILITIES					
Concentration of value chain partners	GP_v05	In the context of global value chains, a high concentration of export partners and foreign suppliers for the home country's exports makes the home country more vulnerable to potential trade and political disruptions. Megatrend: expanding influence of east and south.	Average of the concentration (Herfindahl) index of each Member States' extra-EU partners for imported and re-exported content. The importing concentration is calculated as the squared sum of imports by source country as share of the importing country's GDP. The re-exporting concentration is calculated as the squared sum of re-exports by destination country as share of the re-exporting country's GDP. The resulting index has been multiplied by 1000.	FIGARO[23]	2020, N.A. (EU27)

[23] FIGARO stands for 'Full International and Global Accounts for Research in Input-Output Analysis'...

Variable	Label	Rationale	Definition	Source	Latest available year
Extra-EU import partner concentration	GP_v06	Concentration of imports from a narrow range of countries makes a country more vulnerable to potential trade and political disruptions from the partner countries. Megatrend: expanding influence of east and south.	Herfindahl index of each Member State's extra-EU import partners.	Eurostat - Easy Comext, JRC elaboration	2021, N.A. (EU27)
Extra-EU export partner concentration	GP_v07	Concentration of exports to a narrow range of countries makes a country more vulnerable to potential trade and political disruptions in the partner countries. Megatrend: expanding influence of east and south.	Herfindahl index of each Member State's extra-EU export partners.	Eurostat - Easy Comext, JRC elaboration	2021, N.A. (EU27)
Geopolitical dimension: Value chains and trade CAPACITIES					
Backward participation in GVC	GP_c06	Backward participation in Global Value Chains (GVC) refers to importing foreign inputs to produce goods and services to export. A higher share of backward participation in GVCs reflects greater integration, higher connectedness and a higher capacity of economies to harness the benefits of global cooperation. Megatrend: expanding influence of east and south.	Backward participation in Global Value Chains (P, C) represents the foreign value-added from a partner country P embodied in the gross exports of country C, as a percentage of country C's total gross exports. It is calculated for total industry only.	FIGARO	2020
Forward participation in GVC	GP_c07	Participation in Global Value Chains (GVC) provides an estimation of how much an economy is connected to global value chains for its foreign trade. Forward participation in GVC measures to what extent domestically produced inputs are exported to partners who process and re-export them. A higher share of forward participation in GVCs reflects a higher capacity of economies to harness the benefits of global cooperation. Megatrend: expanding influence of east and south.	Forward participation in Global Value Chains (P, C) represents the domestic value-added from country C embodied in the gross exports of foreign partner country P, as a percentage of country C's total gross exports. It is calculated for total industry only.	FIGARO	2020
Trade openness – intra-EU	GP_c08	Trade openness (intra-EU) is an indicator of the degree of market integration within the EU. It is a powerful channel to react to global shocks and contributes to greater economic stability. It also reflects the capacity to harness the benefits of the internal market. Megatrend: expanding influence of east and south.	Trade openness is measured as the sum of a country's exports and imports as a percentage of that country's GDP, considering EU partners only.	Eurostat: bop_c6_a and nama_10_gdp, JRC elaboration	2021

Variable	Label	Rationale	Definition	Source	Latest available year
Trade openness – extra-EU	GP_c09	Trade openness (extra-EU) is an indicator of the degree of global integration. It is a powerful channel to react to global shocks and contributes to greater economic stability. It also reflects the capacity to harness the benefits of global cooperation. Megatrend: expanding influence of east and south.	Trade openness is measured as the sum of a country's exports and imports as a percentage of that country's GDP, considering non-EU partners only.	Eurostat: bop_c6_a and nama_10_gdp, JRC elaboration	2021
Inward FDI partner concentration	GP_v08	Concentration of incoming FDI from few international partners exposes the domestic economy to shocks and actions of those few partners. Megatrend: expanding influence of east and south.	Herfindahl index of the shares of inward Foreign Direct Investment - FDI stocks of extra-EU countries.	OECD table: FDI_CTRY_IND_SUMM (JRC elaboration)[24]	2021, 2020 (DE, HU, LU), N.A. (BG, CY, HR, MT, RO, EU27)
Outward FDI partner concentration	GP_v09	Concentration of outgoing FDI into few international partners increases the vulnerability to shocks from specific destination countries. Megatrend: expanding influence of east and south.	Herfindahl index of the shares of EU countries' Foreign Direct Investment - FDI stocks in extra-EU countries.	OECD table: FDI_CTRY_IND_SUMM(JRC elaboration)	2021, N.A. (BG, CY, HR, MT, RO, EU27)
Geopolitical dimension: Financial globalisation VULNERABILITIES					
Net lending/borrowing	GP_v10	High net borrowing rates indicate that a country can be vulnerable to external shocks from trade and financial markets[25]. Megatrend: expanding influence of east and south.	It is the net resources that the total economy makes available to the rest of the world (surplus or net lending) or receives from the rest of the world (deficit or net borrowing needs). The indicator is multiplied by -1 to reflect the sign the higher the more vulnerable.	Eurostat: tipsbp70	2021
Net International Investment Position	GP_v11	Countries with a high (negative) net international investment position (NIIP) are more vulnerable to international capital flows and financial distress. At the same time, a positive net international investment position also constitutes an important buffer to absorb distress. Megatrend: expanding influence of east and south.	NIIP provides an aggregate view of the net financial position (assets minus liabilities) of a country vis-à-vis the rest of the world. The difference between an economy's external financial assets and liabilities is the economy's net IIP, which may be positive or negative. The indicator is calculated as percentage of GDP, multiplied by minus one (so that the higher the more vulnerable).	Eurostat: tipsii10	2021

[24] Data sourced from OECD Statistics (OECD, 2023a).

[25] This variable is among the auxiliary indicators of the Macroeconomic Imbalance Procedure (MIP), while a very similar indicator (the current account balance) is in the primary MIP list. To filter out the effect of EU funds, the net lending/borrowing variant is employed. It is important to add that the current account balance variable has both a lower and an upper limit in the MIP scoreboard (-4% and +6%). The upper limit, however, mostly reflects inefficiencies from subdued investment as well as spillover effects on partners through an array of financial, trade and other interlinkages. In contrast, the lower limit points to financial risks and external funding vulnerabilities. From a resilience perspective, the (negative of the) variable can thus be viewed as 'the higher the more vulnerable'.

Variable	Label	Rationale	Definition	Source	Latest available year
Geopolitical dimension: Financial globalisation CAPACITIES					
Value added share of foreign enterprises	GP_c10	A high share of foreign-controlled enterprises in value-added indicates the attractiveness of the domestic economy, and the contribution of foreign enterprises to domestic development[26]. Megatrend: expanding influence of east and south.	Share of value added of foreign enterprises (non-EU28) from the total business economy.	Eurostat: fats_g1a_08 and sbs_na_sca_r2	2019,2018 (NL, EU27),2017 (EL), 2014 (PT)
Financial integration	GP_c11	Benefits of financial integration within and beyond the EU include higher investment and growth, and more efficient capital integration and risk-sharing within the EU. It is thus a key opportunity. Megatrend: expanding influence of east and south.	Average of the intra and extra EU financial integration of each Member State. Financial integration is the sum of external assets and external liabilities, divided by GDP. The term external refers to other EU countries for intra-EU, and non-EU countries for extra-EU integration.	JRC ECFIN Finflows database[27] + Eurostat: nama_10_gdp.	2019
Geopolitical: Security and demography VULNERABILITIES					
Disinformation originating from abroad	GP_v12	Disinformation is considered a major challenge for democracies. It is understood as misleading content towards the generation of either profits, or pursuing political goals. This indicator refers to false information coming from foreign governments, which is a geopolitical vulnerability. Megatrend: changing security paradigm.	Expert responses to the question 'How routinely do foreign governments and their agents use social media to disseminate misleading viewpoints or false information to influence domestic politics in this country?' Its sign is reversed, so a high value indicates high vulnerability.	V-dem dataset[28], variable v2smfordom_osp	2021
Total fertility rate (difference from replacement-level)	GP_v13	Among the causes of population ageing, a total fertility rate (TFR) below the replacement level plays a key role. Countries with a TFR under the replacement level will be exposed to both an increasing health care demand and social security costs which project them towards a non-sustainable path. At the same time, countries with a declining population may see their global weight decline over time. Megatrend: increasing demographic imbalances.	This indicator is calculated by subtracting the country's total fertility rate from 2.1 , which represents the replacement rate. This way a high value indicates high vulnerability (of population decline).	Eurostat: demo_frate	2021

[26] A too high share of foreign-controlled enterprises may point to issues with the competitiveness of local corporations. With the exception of Ireland, however, these shares do not exceed 25%.
[27] As per Nardo et al. (2017), data identifier:https://data.jrc.ec.europa.eu/dataset/807d5d4f-2d73-4f17-81db-7ba2171bab83.
[28] Sourced from V-Dem dataset (see Varieties of Democracy, 2023; Lindberg et al., 2014).

Variable	Label	Rationale	Definition	Source	Latest available year
Employment gap (EU versus non-EU nationals)	GP_v14	The higher the gap in labour market participation between EU and non-EU people, the lower the integration of non-EU migrants. This can represent a challenge for internal stability. A more integrated society is also more resilient. Megatrend: increasing significance of migration.	Difference of the employment rate of EU citizens and that of non-EU migrants. The employment rate is defined as the share of the total working-age population (20-64) who are employed. Note that the series has a significant break for 2021 data, due methodological updates.	Eurostat: lfsa_ergan, JRC elaboration	2021, 2020 (SK)
Military expenditures (difference from 2% of GDP)	GP_v15	This gap is a baseline measure of EU and member state weaknesses in the military field. Megatrend: changing security paradigm.	Military expenditures per GDP, subtracted from 2% of GDP.	World Bank, WDI: MS.MIL.XPND.GD.ZS	2021
Geopolitical dimension: Security and demography CAPACITIES					
Armed forces personnel	GP_c12	The number of armed forces personnel indicates an important geopolitical capacity to prevent and react to threats. Megatrend: changing security paradigm.	Armed forces personnel are active duty military personnel, including paramilitary forces if the training, organization, equipment, and control suggest they may be used to support or replace regular military forces. As percentage of work force.	World Bank, WDI: MS.MIL.TOTL.TF.ZS	2019
Net migration rate	GP_c13	Net migration rate shows the overall contribution of (regular) migration to the population and human capital in the country. A positive net migration rate also shows the attractiveness of a country to non-EU citizens. Megatrend: increasing significance of migration (increasing demographic imbalances).	Net migration rate is calculated as the difference between immigration from minus emigration to non EU-27 countries, relative to the population of the host country (the latter measured in thousands).	Eurostat: migr_imm3ctb, migr_emi3nxt, demo_pjan[29]	2021
Share of non-EU citizens in total employment	GP_c14	This indicator shows the contribution of migration to increase the labour force. It also measures the ability of a country to attract and integrate non-EU citizens. As such, it signals a dynamic labour market that mirrors an inclusive society. Megatrend: increasing significance of migration (increasing demographic imbalances).	Share of employed non-EU citizens from total employment, in the age group 20-64. Note that the series has a significant break for 2021 data, due methodological updates.	Eurostat: lfsa_egan	2021, 2020 (SK)

[29] When the EU27 (2020) aggregate is not reported in the data source, it is calculated as follows. The immigration measure (migr_imm3ctb) after 2013 is computed by adding UK as country of birth to the non-EU28 entry from Eurostat; while for the time before 2013, it is calculated by subtracting HR as country of birth and adding the UK to the non-EU27 (2007-2013). The emigration measure (migr_emi3nxt) after 2013 is computed by adding the UK as the country of next residence to the non-EU28; while for the time before 2013, it is calculated by adding the UK and subtracting HR from the non-EU27 (2007-2013).

Variable	Label	Rationale	Definition	Source	Latest available year
People being resettled under AMIF	GP_c15	Well managed migration systems also encompass safe and lawful channels for the admission of people in need of protection in line with EU values. Megatrend: increasing significance of migration.	Number of people that have been resettled through the Asylum, Migration and Integration Fund (AMIF), over the last 6 years, normalised by million inhabitants of the recipient country.	DG HOME as declared by the Member State under AMIF: Migration-resettlement.[30] Population is from Eurostat, demo_pjan	2021, n.a. (DK[31])

[30] See European Commission Directorate-General for Migration and Home Affairs (2023).
[31] DK does not participate in AMIF. Data in Accounts 2021 include expenditures from October 16, 2019 until 2021. The data used is the cumulated number for 6 years: 2015-2020 and 2016-2021.

5 Changes of the resilience dashboards indicators with respect to version Spring 2022

This section summarizes the changes of the 2023 version of the resilience dashboards with respect to the version that was published online in spring 2022. Direct links to the current selection of indicators and variables are available online.

Table 9: Overview of recent changes within the **Social and economic dashboard**

Variable code	Variable name	Latest year 2022 version	Latest year 2023 version	Changes with respect to 2022 version (motivation)
SE_v01	At risk of poverty or social exclusion rate (AROPE)	2020	2021	Merged new LFS based series from 2014 onwards with historical ilc_peps01 for 2007-2014 (change in LFS methodology)
SE_v02	Income quintile share ratio S80/S20	2020	2021	
SE_v03	Employment in energy-intensive sectors	2020, 2019 (DE, ES, FR, IT, LT, LV, PT, RO, SE, EU27), N.A. (LU, MT)	2021, 2020 (DE, ES, FR, IT, LT, LV, PT, RO, SE, EU27), 2019 (LV, EU27), N.A. (LU, MT)	
SE_v04	Employment in manufacturing with high automation risk	2020	2021	Arrows have been removed, given a systematic break in series (change in LFS methodology)
SE_v05	Regional dispersion in household income	2020 (CZ, DK, SI), 2019, N.A. (CY, EE, LU, LV, MT, EU27)	2021 (CZ, DE, SI), 2020, N.A. (CY, EE, IE, LU, LV, MT, EU27)	
SE_c01	Impact of social transfers (other than pensions) on poverty reduction	2020	2021	
SE_c02	Household saving rate	2020, 2019 (FR, IE), 2017 (BG), N.A. (MT, RO)	2021, 2017 (BG)N.A. (MT, RO)	Changeof source from AMECO to Eurostat table: nasa_10_nf_tr (improvement of source used)
SE_c03	Government expenditures on education, health, and social protection	2020	2021	
SE_c04	Active citizenship	2016	2016	
SE_v06	Antimicrobial resistance	2015	2021, N.A. (CY)	Change of indicator content to antimicrobial consumption for the community (primary care) sector. Obtained from ECDC (alignment with the indicator in the CR)
SE_v07	Self-reported unmet need for medical care	2020, 2019 (IT)	2021	
SE_v08	Years of life lost due to PM2.5	2019	2020	Change of source from European Environment Agency to Eurostat table: sdg_11_51 (automatic download from Eurostat available)
SE_v09	Variation in performance explained by students' socio-economic status	2018	2018	
SE_v10	Macroeconomic skills mismatch rate	2020, 2019 (DE)	2021	
SE_v11	Gender employment gap	2020	2021	
SE_v12	Young people neither in employment nor in education and training	2020	2021	Arrows have been removed, given a systematic break in series (LFS)(change in LFS methodology)

Variable code	Variable name	Latest year 2022 version	Latest year 2023 version	Changes with respect to 2022 version (motivation)
SE_v13	Long-term unemployment rate	2020	2021	
SE_c05	Standardised preventable and treatable mortality (low rate)	2019, 2017 (FR, EU27)	2020	
SE_c06	Healthy life years in absolute value at birth	2019	2020	
SE_c07	Children (< 3 years) in formal childcare	2020, 2019 (IT)	2021	
SE_c08	Average scores in the PISA test	2018, 2015 (ES, EU27)	2018, 2015 (ES, EU27)	
SE_c09	Adult participation in learning during the last 12 months	2016	2016	
SE_c10	Employment rate	2020	2021	
SE_c11	Active labour market policies per person wanting to work	2019	2020	
SE_v14	Government debt	2020	2021	
SE_v15	Projected old-age dependency ratio	2019	2021	
SE_v16	Degree of specialization of the economy	2020, 2019 (BE, CY, DE, DK, ES, FR, IT, LT, LV, PL, PT, SE, EU27)	2021, 2020 (BE, CY, DE, ES, FR, IT, LT, LV, PL, PT, SE, EU27)	
SE_v17	Non-financial corporation debt to GDP ratio	2020	2021	
SE_c12	Income stabilisation coefficient	2019	2021	
SE_c13	Banking sector total capital ratio	2020	2021	
SE_c14	Insurance sector solvency capital ratio	2020	2021	
SE_c15	Share of innovative enterprises	2018	2020	changed source to tables Eurostat: inn_cis12_spec + inn_cis11_spec (availability of more recent data)
SE_c16	Intangible investment	2017, 2016 (EE, ES, IE, LV, PT, RO, SE), 2015 (PL, EU27)N.A. (BE, CY, HR)	2019, 2018 (EE, ES, IE, LT, LU, LV, PL, PT, SE, EU27), 2017 (RO), 2015 (EL), N.A. (CY, HR)	Removed cultivated assets (refinement of indicator).
SE_c17	Government investment to GDP ratio	2020, 2019 (RO), 2017 (BG)	2021, 2020 (RO), 2017 (BG)	

Table 10: Overview of recent changes within the **Green dashboard**

Variable code	Variable name	Latest year 2022 version	Latest year 2023 version	Changes with respect to 2022 version (Motivation)
G_v01	Fatalities from climate extremes	2019	2020	Small adjustment to calculation to take into account the number of years considered (include multiple data points per country)
G_v02	GHG emissions per capita	2019	2020	Change of source to Eurostat table env_air_gge (old table no longer available)
G_v03	CO2 emissions in road transport	2019	2020	
G_v04	Fossil fuel subsidies	2019	2020	change of source (alignment with the indicator in the CR)
G_c01	Insured losses from climate extremes	2019	2020	Small adjustment to calculation (to take into account the number of years considered)
G_c02	CO2 absorption by forests	2019, N.A. (MT)	2020	
G_c03	Electric and hydrogen passenger fleet	2020	2021	
G_c04	Inland use of train, bus and trolleybus	2019	2020	
G_c05	Renewable energy in final energy consumption	2019	2021	change of source toEurostat table nrg_ind_ren (old table no longer available)
G_c06	Environmental patents per capita	2018	2019	
G_v05	Water exploitation index +	2017, 2015 (EE)	2019	
G_v06	Consumption footprint per capita	2018	2021	Change in methodology to obtain consumption footprint (improvement of methodology)
G_v07	Raw material consumption per capita	2020	2020	Changed from domestic material consumption to raw material consumption (alignment with the indicator in the CR)
G_v08	Waste generation rate	2018	2020	
G_v09	Energy used in ICT	2020 (LV), 2019	2020	
G_c07	Resource productivity	2020	2021	Change of source to Eurostat table cei_pc030 and additional adjustment of GDP using 2010 chain linked volumes of GDP at market prices (improve comparbility of data)
G_c08	Energy productivity	2020	2021	Adjustment of GDP using 2010 chain linked volumes of GDP at market prices ()improve comparbility of data)
G_c09	Circular material use rate	2020	2021	
G_c10	E-waste recycling rate	2018, 2017 (CY, MT, PT), 2016 (RO), 2015 (IT)	2020, 2018 (RO)	New calculations based on Eurostat table env_waseleeos (old table no longer available)
G_c11	Gross value added in environmental goods and services sector	2020 (DK, ES, HR, NL), 2019, N.A. (CY, EL, HU, SK)	2021 (DK, ES, FI, HR), 2020, N.A. (HU)	

Variable code	Variable name	Latest year 2022 version	Latest year 2023 version	Changes with respect to 2022 version (Motivation)
G_v10	Farmland bird index	2020 (FI), 2019, 2018 (FR, LU, NL, SK), 2017 (CY, ES, IT, PL), 2016 (DE, EL, IE), N.A. (BG, EU27, HR, MT, PT, RO)	2020, 2019 (EL, LU, NL), 2018 (FR, SK), 2017 (ES, PL), 2016 (DE, IE), N.A. (BG, HR, MT, RO, EU27)	
G_v11	Harmonised risk indicator 1 for pesticides	2019	2020	
G_v12	Soil sealing index	2018	2018	
G_v13	Soil erosion by water	2016	2016	
G_v14	Farm income variability	2019	2019	
G_c12	Soil carbon content	2020	2020	
G_c13	Organic farming	2020, 2019 (AT)	2021, 2020 (AT, EL, FR, PL, EU27)	
G_c14	Urban wastewater treatment	2019, 2018 (EL, ES, FR), 2017 (PT, SE), 2016 (DE), 2015 (IT), N.A. (CY, MT)	2020,2019 (EL, IE, SE), 2018 (CY, ES), 2017 (PT), 2016 (DE), 2015 (IT), N.A. (MT)	
G_c15	Natura 2000 protected areas	2020	2021	change of source to Eurostat table env_bio4 (alignment with the indicator in the CR)
G_c16	National expenditures on environmental protection	2020 (EU27), 2019 (ES), 2018	2021 (EU27), 2020 (ES), 2019	

Table 11: Overview of recent changes within the **Green dashboard**

Variable code	Variable name	Latest year 2022 version	Latest year 2023 version	Changes with respect to 2022 version (Motivation)
D_v01	Enterprises without ICT training programs	2020	2020	
D_v02	Employees not using telework	2020, 2019 (SE)	2021	Arrows have been removed, given a systematic break in series (due to change in LFS methodology)
D_v03	Inadequacy of ICT training for teachers	2018, N.A. (CY, DE, EL, IE, LU, PL, EU27)	2018, N.A. (CY, DE, EL, IE, LU, PL, EU27)	
D_c01	Collaborative economy	2019	2021	Change of source to Eurostat table isoc_ec_ce_i (for data availability)
D_c02	Advanced digital competence of adults	2019	2021	New indicator used (Eurostat: isoc_sk_dskl_i21) (alignment with the indicator in the CR)
D_c03	Advanced digital competence of young people	2019	2021,N.A. (IE)	New indicator used (Eurostat: isoc_sk_dskl_i21) (alignment with the indicator in the CR)
D_c04	Use of online courses	2020, 2019 (FR)	2021	
D_c05	Use of social networks	2020, 2019 (FR)	2021	
D_c06	Young people doing any online learning activity	2020, 2019 (FR, IE)	2021,2019 (IE)	
D_c07	Master graduates in ICT	2019	2020	New indicator used (old indicator, no longer updated)
D_v04	ICT trade deficit in goods	2020, 2019 (BG, MT)	2020, 2019 (BG, MT)	
D_v05	ICT trade deficit in services	2020	2021	

Variable code	Variable name	Latest year 2022 version	Latest year 2023 version	Changes with respect to 2022 version (Motivation)
D_v06	ICT specialist gender gap	2020	2021	Arrows have been removed, given a systematic break in series (due to change in LFS methodology)
D_v07	Lack of cloud services	2020, 2018 (EL)	2021	Change of selection in Eurostat table (alignment with DESI)
D_v08	Broadband access gap by company size	2017	2021	change of selection in Eurostat table (data availability)
D_c08	Investment per employee, high-technology sectors	2019, 2018 (EE, FR), 2017 (MT, NL), 2016 (DK, SK),	2020, 2019 (SE, SI), 2018 (EE, MT), 2017 (NL), 2016 (DK, SK), N.A. (CY, IE, LU)	
D_c09	Enterprises seeking ICT specialists	2020	2020	
D_c10	Gross value added in ICT	2019, 2018 (ES), 2013 (NL), N.A. (CY, IE, LU, PT)	2020, 2019 (IT), 2018 (ES), 2013 (NL), N.A. (CY, IE, LU)	
D_c11	ICT sector business enterprise R&D (BERD)	2018	2019	
D_c12	Value of e-commerce sales	2020, 2019 (FI)	2021	
D_v09	Lack of 5G readiness	2020	2021	
D_v10	Lack of online public services for businesses	2020	2021	
D_v11	People not having access to digital public services	2020, 2019 (FR)	2021	
D_v12	Broadband access gap, urban versus rural	2020, 2019 (FR)	2021	
D_c13	E-health	2020, 2018 (FR)	2020, 2018 (FR)	
D_c14	Judicial system e-tools	2020	2021	
D_v13	Cybersecurity incidents experienced by people	2019	2019	
D_v14	ICT security incidents in enterprises	2019	2019	
D_c15	Cybersecurity awareness of individuals	2019	2019	
D_c16	Global Cybersecurity Index	2020	2020	

Table 12: Overview of recent changes within the **Geopolitical dashboard**

Variable code	Variable name	Latest year 2022 version	Latest year 2023 version	Changes with respect to 2022 version
GP_v01	Metal footprint per capita	2017	2019	
GP_v02	Supplier concentration in base metals	2020, N.A. (EU27)	2021,N.A. (EU27)	
GP_v03	Import dependence in energy materials	2020	2021	
GP_v04	Supplier concentration in energy carriers	2020, N.A. (EU27)	2021,N.A. (EU27)	
GP_c01	Intra-EU trade in recyclable raw materials	2020	2021	Change of source to Eurostat table env_trdrrm with small change of definition (old table no longer available)
GP_c02	Supplier diversification for base metals, rate of change	2020, N.A. (EU27)	2021, N.A. (EU27)	
GP_c03	Metal footprint per capita, rate of decline	2017	2019	

Variable code	Variable name	Latest year 2022 version	Latest year 2023 version	Changes with respect to 2022 version
GP_c04	Intra-EU trade in energy	2020	2021	
GP_c05	Supplier diversification for energy carriers, rate of change	2020, N.A. (EU27)	2021, N.A. (EU27)	
GP_v05	Concentration of value chain partners	2018, N.A. (EU27)	2020, N.A. (EU27)	Change of source to JRC FIGARO (improvement of data)
GP_v06	Extra-EU import partner concentration	2020, N.A. (EU27)	2021, N.A. (EU27)	
GP_v07	Extra-EU export partner concentration	2020, N.A. (EU27)	2021, N.A. (EU27)	
GP_c06	Backward participation in GVC	2018	2020	Change of source to JRC FIGARO (improvement of data)
GP_c07	Forward participation in GVC	2018	2020	Change of source to JRC FIGARO (improvement of data)
GP_c08	Trade openness – intra-EU	2020, N.A. (MT)	2021	
GP_c09	Trade openness – extra-EU	2020, N.A. (MT)	2021	
GP_v08	Inward FDI partner concentration	2020, 2019 (DE, ES, HU), N.A. (BG, CY, HR, MT, RO, EU27)	2021, 2020 (DE, HU, LU), N.A. (BG, CY, HR, MT, RO, EU27)	
GP_v09	Outward FDI partner concentration	2020, N.A. (BG, CY, HR, MT, RO, EU27)	2021, N.A. (BG, CY, HR, MT, RO, EU27)	
GP_v10	Net lending/borrowing	2020	2021	
GP_v11	Net International Investment Position	2020	2021	
GP_c10	Value added share of foreign enterprises	2018, 2017 (EL), 2014 (PT)	2019,2018 (NL, EU27),2017 (EL), 2014 (PT)	
GP_c11	Financial integration	2019	2019	
GP_v12	Disinformation originating from abroad	2020	2021	
GP_v13	Total fertility rate (difference from replacement-level)	2019	2021	
GP_v14	Employment gap (EU versus non-EU nationals)	2020, 2019 (BG) , 2018 (RO)	2021, 2020 (SK)	
GP_v15	Military expenditures (difference from 2% of GDP)	2020	2021	
GP_c12	Armed forces personnel	2019	2019	Change of source table in WB with small change of definition (old table no longer available)
GP_c13	Net migration rate	2019	2021	
GP_c14	Share of non-EU citizens in total employment	2020,2019 (BG), 2018 (RO)	2021, 2020 (SK)	
GP_c15	People being resettled under AMIF	2020, n.a. (DK)	2021, n.a. (DK)	

6 Conclusions

This report presents the 2023 edition of the European Commission's resilience dashboards and marks their second update since their inception in 2021. It provides a concise but detailed picture of the data sources, variables and methodologies used to construct the dashboards and the related synthetic indicators, and presents the most recent dashboards as part of the 2023 European Semester.

The updated version refers to data up to 2021 and follows the yearly data update that was made in the series at source. Other updates include refinements and adjustments to selected indicators, or the replacement of discontinued indicators, ensuring that the dashboards are a living tool.

As in the 2022 round, refinements and adjustments of indicators also led to a more effective alignment of the dashboards with the information set used in the European Semester Country Reports. This has also been accompanied by their increased policy use. The 2023 Annual Sustainable Growth Survey (ASGS)[32] referred to the dashboards to support the resilience analysis in the country reports, paving the way for their systematic use in the 2023 Spring Package Country Reports.

As a result, for the first time, the 2023 European Semester Country Reports include a Resilience Annex that features the synthetic resilience indices and discusses results corresponding to the 2023 data update.

As Member States continue to navigate the transitions, the dashboards will be updated in the future to maintain a holistic assessment of Member States' vulnerabilities and capacities. This is essential as many resilience-relevant indicators are still under development and new data are being collected. Therefore, the list of indicators remains dynamic.

[32] As per doc COM(2022) 780 (see European Commission, 2022).

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List of abbreviations and definitions

AMIF	Asylum, Migration and Integration Fund
AMR	Antimicrobial resistance
ASGS	Annual Sustainable Growth Survey
BERD	business enterprise R&D
BEV	battery electric vehicles
CR	Country Report
DG AGRI	Directorate-General for Agriculture and Rural Development
DG ECFIN	Directorate-General for Economic and Financial Affairs
DG EMPL	Directorate-General for Employment, Social Affairs and Inclusion
DG ENER	Directorate-General for Energy
DG HOME	Directorate-General for Migration and Home Affairs
EEA	European Environment Agency
EC	European Commission
ECB	European Central Bank
ECDC	European Centre for Disease Prevention and Control
EGSS	Environmental Goods and Services Sector
EP	Environmental Protection
EU	European Union
DESI	Digital Economy and Society Index
FDI	Foreign Direct Investment
FIGARO	Full International and Global Accounts for Research in Input-Output Analysis
GDP	Gross Domestic Product
GCI	Global Cybersecurity Index
GFCF	Gross Fixed Capital Formation
GFI	Gross farm income
GHG	Greenhouse Gas
GVA	Gross Value Added
GVC	Global Value Chains
HRI1	Harmonised Risk Indicator
ICT	Information and Communication Technologies
ITU	International Telecommunication Union
JRC	Joint Research Centre
LFS	Labour Force Survey
LUCAS	Land Use/Cover Area frame statistical Survey
LULUCF	Land Use, Land-Use Change and Forestry
MIP	Macroeconomic Imbalance Procedure

NACE	Nomenclature of Economic Activities (Nomenclature statistique des Activités économiques dans la Communauté Européenne)
NFC	Non-Financial Corporations
OECD	Organisation for Economic Co-operation and Development
PISA	Programme for International Student Assessment
PPS	Purchasing Power Standards
RDB	Resilience Dashboard
RMC	Raw Material Consumption
RME	Raw Material Equivalents
RMI	Raw Material Inputs
SDG	Sustainable Development Goal
SME	Small and Medium Enterprises
UN-IRP	United Nations International Resource Panel
WEEE	Waste Electrical and Electronic Equipment

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