ANNEXES – RESILIENCE DASHBOARDS FOR THE SOCIAL AND ECONOMIC, GREEN, DIGITAL AND GEOPOLITICAL DIMENSIONS

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ANNEX IA: METHODOLOGY - READING THE DASHBOARDS

The resilience dashboards, both at Member State and global level, present an assessment of country vulnerabilities and capacities in relative terms. They use a scale of five colours[1], which indicates each country's relative situation in the latest available year, compared to the collection of values of that indicator for all Member States and all years in the reference period 2007-2017. In the digital dashboard (and for one specific indicator in the green), the reference period is 2015-2019[2].

Figure A1: Assessing the position of a country in the reference dataset.

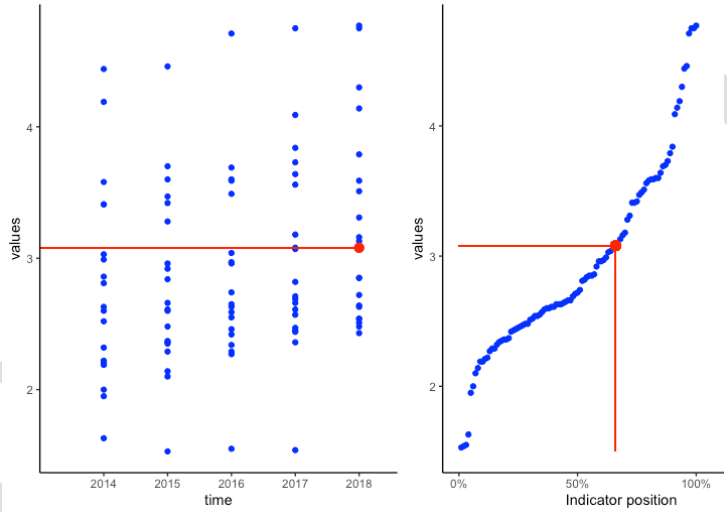


Figure A1 sheds light on the mechanics of this comparison. Its left panel shows the hypothetic distribution of values of an indicator across years, all countries. Each dot represents a country. The red dot is the value of the indicator for a specific country in the latest year. The right panel presents 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 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[3].

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

[1] Differently from the prototype dashboards in the 2020 Strategic Foresight Report, here a more granular colour scheme is adopted. It allows for a better description of the countries' relative situation. Another methodological difference is that the relative situation is assessed using the percentile position in the reference distribution, not the z-score. This method is less sensitive to outliers and the asymmetry of the indicators' distribution.

[2] The choice of this 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. One should note that data availability across countries may vary from year to year. In the current exercise, all values have been taken into account. It means that countries with longer available data series will get a somewhat bigger importance in the distribution. Moreover, when less than four years of data is available for an indicator in the 2007-2017 reference period, it is checked if the alternative reference period from 2015-2019 contains more data. If so, this alternative reference period is used, and this is indicated with an asterisk in the dashboard.

[3] 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.

the bottom 12.5%; **light orange** between the bottom 12.5% and 37.5% of the reference data; **yellow** is used to indicate values in the middle, falling between the 37.5th and 62.5th percentile of the reference sample (**Figure A2**).

Figure A2: Colouring scheme for the dashboards. Numbers are percentiles of the reference data collection (all Member States and all years in the reference period 2007-2017).

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%)

In addition, the dashboards present the corresponding **EU-level position** for each indicator. 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 (2015)[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 three-year average from five years earlier is larger than half of the size of the central range (size of the yellow bucket in term of indicator‘s values) of the reference data collection used for the colour scheme[5]. 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.

ANNEX IB: THE SYNTHETIC INDICES

Consistently with the relative assessment of countries’ situation in the dashboards, the synthetic indices are constructed as follows[6]. First, for each indicator, we assess the position of a given country’s value in the ranking of the reference dataset (all EU countries and all years in 2007-2017). This position is expressed as a percentage value in the range [0,100%], which corresponds to the percentile position of the country’s most recent indicator value in the overall distribution (Figure A1). Then, for each country, the overall vulnerabilities (capacities) index is obtained by the median value over all the vulnerability (capacity) indicator positions[7]. A high vulnerabilities

[4] The change is relative to the average value of the indicator in the period 2013-15. 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 smooths potential outliers or short-term fluctuations in the time series.

[5] As an example, the employment rate has a central range going from 62.2% to 66.3% so any change (between the 2013-2015 average and the latest year) larger than (66.3%-62.2%)/2=2.05% will be sizeable.

[6] The methodology for the synthetic indices has been discussed with the JRC Competence Centre on Composite Indicators and Scoreboards, which is currently auditing the synthetic indices.

[7] The balance among the broad areas within each dimension ensures that there is no need to assign importance weights to the individual indicators and to consider a weighted median approach.

index indicates high vulnerabilities, while a high capacities index indicates high capacities, compared to other countries. Similarly, synthetic indices by areas area computed by taking the median value over all the vulnerability (capacity) indicator positions that are included in the considered area.

These indices allow both cross-country comparisons within a given year, and assessments of changes over time for a given country[8] 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.

This approach delivers important benefits compared to other alternatives considered[9]. First, having a multi-year reference period (instead of a single-year one) means that it is meaningful to compare the index values over time: a higher value indicates a better situation[10]. Second, for the same reason, it is possible to construct indices both for a "proper calendar year" (e.g. 2018 data, provided that data allow) or for the "latest available year" (mix of data from various years). Third, the fixed reference period (instead of a 'rolling period', e.g. the past 10 years) implies that the current index will only change in the future if backward revisions of the data occur within the reference period. After a few years, one may decide to change the reference period (e.g. extend or shift), as well as to update the historical indices. Finally, the method is reasonably robust to extreme values and asymmetry in the indicator distributions, yet it is sensitive to changes in the underlying indicator values[11].

8 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.

9 This approach was chosen from a couple of alternatives: using the average normalized value of the indicators (z-score or robust z-score); using the average, median, or the top 25th percentile of all the individual indicator positions, or following a non-compensatory method based on pairwise comparisons relative to the same reference period, like the Copeland method.

10 I.e., a higher value of the synthetic index implies a higher median value of the indicator positions in the same (fixed) reference distribution (typically 2007-2017). In fact, this property also holds for individual indicators: a percentile value (and colour) that is higher (darker) in a given year than in another indicates a higher indicator value.

11 A non-compensatory method based on pairwise comparisons relative to the same reference period (like the Copeland method) would be highly sensitive to missing data, and at the same time, might be insensitive to changes in the indicators over time. I.e., it is possible that a handful of a country's indicators change, but the effect is not visible in the index. The z-score method would have been too sensitive to extreme values and asymmetry, and would have required tight conditions on the correlations among variables. The method of using the median (or the top 25th percentile) is robust to the distribution of the indicators and their correlation structure, but might be less sensitive to year-to-year changes in indicator values. Using the mean is usually more sensitive to changes, but it is less robust to the statistical properties and correlation structure of the indicators. Since the mean and the median approach have turned out to be similarly sensitive to changes, while the 25th percentile approach was too sensitive to extreme values, we have selected the median approach.

ANNEX II: GAP ANALYSIS

The construction of the dashboards has shed light on several gaps in the availability and quality of indicators and data (insufficient time or cross-country coverage, inconsistencies in reporting, etc.). Future revisions of the dashboards could consider the use of new indicators in the areas highlighted below, as they will become available.

Social and economic dimension

Despite its broad range of topics and the overall good data availability, some important aspects of resilience in the social and economic domain could not be addressed. To monitor resilience with a forward-looking perspective, topics such as equality of opportunities and social capital are fundamental. In addition, and learning from the current COVID-19 pandemic, pending health and environmental threats could be addressed more prominently.

Future work to improve the dashboard should focus in particular on the following:

- **Equality of opportunities and inequalities.** Equality of opportunity refers to the opportunity to improve socio-economic status through education, and as such (its lack) is closely related to the manifestation of various inequalities in a society. The current dashboard proxies equality of opportunity with the gap in educational achievement between different socio-economic groups and features some forms of inequalities (gender employment gap, income quintile ratio). A further disaggregation by gender, age, disability, ethnic origin or urban versus rural level could shed light on the extent of equality of opportunity. These inequalities additionally highlight arising vulnerabilities (for example the gender pension gap or intergenerational discrepancies).
- **Adults not in training and employment**. The financial and economic crisis of 2008 and the economic and digital transitions have changed the skillset that is needed in the labour market. Many jobs are at risk to become obsolete, while others will be created. It is important to have a sense of how many people are able to adapt their competencies to a changing labour market. Currently, this phenomenon is monitored indirectly, by looking at adult participation in learning, long-term unemployment, employment in energy-intensive sectors, jobs with high automation risk as well as the share of young people neither in employment nor in education and training.
- **Social ties, social connections**. Both are fundamental building blocks of "social capital", an important aspect of societal resilience. Currently, social ties are proxied by active citizenship, i.e. people's engagement in voluntary activities. It would be important to include elements related to bridging and bonding at the community or country level. One of these could be the level of trust in other people. As of now, the time and country coverage of these type of data is not satisfactory.
- **Health**: although this domain is very high on the political agenda, for certain key aspects information is outdated. This is for instance the case for mental health and subjective social distress, the 5-year cancer survival rate, as well as access to green areas. There is a strong need to improve data availability and time coverage for monitoring purposes.

- **Structural unemployment**, i.e., the mismatch between available jobs and skills of the unemployed, is an important issue both in general, and during the transitions, due to the important structural transformations. This concept is currently proxied by the long-term unemployment rate, the employment rate in energy-intensive sectors, jobs at risk of automation and the macroeconomic skills mismatch indicator. More specific and targeted measures will be crucial to monitor and manage the enfolding sectoral reallocations, their social implications, and the adequacy of the competences and skills provided by the educational system.
- Another gap refers to the current and future evidence of **wealth accumulation and concentration**. The household saving rate is a rather incomplete measure of financial and real buffers that households can accumulate, and a measure of wealth would deliver a more complete picture. The distribution of wealth across households in the Member States is also important for intergenerational mobility and fairness[12].
- **High carbon intensity** of certain sectors increases trade-offs between generating **employment** and environmental pressures. Although in the current dashboard there is a narrow measure (the share of employment in energy-intensive manufacturing sectors), it would be beneficial to have a broader measure of the size/employment of the brown sectors.
- Likewise, it would be important to cover **employment opportunities and challenges** created by the **twin transition**, e.g. improving the indicator on the impact of automation on labour markets (e.g., robotisation, chatbots), better illustrating the challenges in certain sectors posed by the green transition, and including an indicator on green jobs. A further facilitator would be the ability of citizens to build "green skills" and to adapt to the green transition[26].
- A well-functioning **Single Market** is key for resilient growth and an area where the EU has a high degree of policy control. Currently, only the geopolitical dimension contains some indicators on intra-EU trade, which could be complemented by an indicator on the free movement of people, for example the mobility of those who work in regulated professions.
- Additionally, there is no apparent indicator measuring the **quality of and investment** into current and future infrastructures.
- Finally, an indicator on the **effectiveness and efficiency of governance and government policies** would be useful, but no such indicators exist, or they are too broad.

Green dimension

Broad thematic sub-areas that we believe are relevant, but are not covered in the dashboard are the following.

- **Food safety.** The current dashboard presents one indicator on pesticide risk, which relates both to the environment and to human health. However, the dashboard does not cover broader indicators of the ability to ensure food safety.

[12] There is evidence that the concentration of wealth is increasing in some Member States. Hence, further analyses of the distribution of wealth would be needed. Currently, available data such as the ECB's Household Finance and Consumption Survey do not cover all Member States and are not timely enough.

- **Green buildings and renovation.** Although some indicators on the energy efficiency and sustainability of the built environment exist, their country and year coverage does not allow for their inclusion in this dashboard. As the renovation wave is a crucial part of the Green Deal strategy "for greening our buildings, creating jobs, improving lives", it would be relevant to cover some aspects[13].
- **Transport footprint.** Ideally, the dashboard should contain indicators that point to the decarbonisation of several transport sectors (heavy-duty vehicles, aviation or maritime/waterways transport)[14]. Furthermore, for the sustainability of the passenger transport, there is insufficient data on the use of active transport modes (such as bicycles), where the cross-country and time coverage does not allow for the inclusion in the dashboard.
- **Urban/rural interdependencies.** It would be beneficial to have an indicator that can grasp the urban-rural divide in terms of the overall ability to face the green transition. In general, rural areas provide goods, amenities and ecosystem services that benefit the broader society; however, they are characterized by fragility in social, economic and environmental terms. Rural ecosystem pressures, urban sprawl, transport challenges and additional risks of natural disasters are just some examples of rural specific vulnerabilities.
- **Frugality.** The transition requires a shift in values in order to transform our economy and make it more agile, socially inclusive, and ecologically beneficial. This entails 'doing more with less', i.e., the ability to satisfy human needs staying inside planetary boundaries, develop high-quality products, and create more business and social value while minimising the use of diminishing resources such as energy, capital, and time[15]. More indicators and data may become available in the future.

The following areas have only been partially addressed, because the currently available data appeared not sufficiently complete or mature. New indicators and data are expected to become available in future:

- **Innovative practices in farming.** Innovative practices in farming are important to overcome challenges in agriculture, such as high dependency on phosphorus, intensive use of chemical fertilizers and negative impacts on biodiversity. An indicator on the agricultural area covered by organic farming has been included in the dashboards, but it is important to stress that there are other types of practices that can be highly beneficial for the green transition. One such practice is **precision farming,** a management approach that focuses on (near real-time) observations, measurement, and responses to variability in crops, fields and animals. It uses digital techniques to monitor and optimise agricultural production processes. It is a potentially relevant and forward-looking aspect since it aims to increase the quantity and quality of agricultural output while using fewer inputs (water, energy, fertilisers, pesticides…), through more advanced production technologies. The data will be available starting from 2023 and, possibly, integrated into the dashboard.

[13] SWD(2020) 550 final, https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1603122220757&uri=CELEX:52020DC0662

[14] Regarding aviation, the differences in methodologies covering transport activity and energy/emissions make the comparison across countries harder. Eurostat developed a methodology for territorializing the aviation activity, but its purpose is to compare the shares of each transport mode into the total transport situation, rather than the emissions at country level.

[15] https://sloanreview.mit.edu/article/the-rising-frugal-economy/ and https://www.nesta.org.uk/event/rise-frugal-economy/

- **Biodiversity loss.** On the one hand, indicators on the loss of biodiversity (Common and forest bird index, grassland butterfly index) present limitations in terms of country coverage. On the other hand, indicators that point to the drivers of healthy ecosystems and biodiversity (i.e. conservation status of natural habitats) are not timely enough. Future improvements in the monitoring system in terms of both pollinators as well as bird indexes are expected.
- **Sustainable forest management.** The role of forests is key both for maintaining biodiversity and for mitigating climate change effects, absorbing and acting as carbon sinks. The current dashboard does not cover aspects of the exploitation level of forests or their overall health, as current data is not available for all the countries,
- **Quality of water (phosphates and biological oxygen demand).** Such data, although it exists, is not available consistently across all the Member States.
- **Environmental taxation.** The current dashboard does not present any indicator about environmental taxation. The interpretation of data on energy tax revenues, for example, heavily depends on the energy intensity of the underlying economy. As a result, comparison by ranking has limited significance. Additionally, the existing energy taxation datasets suffer from some drawbacks, which limits the accuracy of the revenue estimates, and further results in limitations to cross-country data comparability. This is mostly due to differences in the national definition of energy taxes, including the distinction between fees and taxes, and the prevalence of the national accounting principles.
- **Green finance and investment.** Green bonds, finance for investments that are compliant with the EU taxonomy, as well as public and private expenditures on environment-related technologies are fields where some data exist but are not yet mature. There will be new data and indicators when the first taxonomy-based disclosures will become available for the companies subject to the Non-Financial Reporting Directive (under review).
- **Active engagement of the national and local administration towards the climate and environment goals.** Although we have considered including an indicator on the population under the Covenant of Mayors[16], which covers the municipalities that signed the initiative for the climate action, it was deemed not extremely suitable as an indicator of the level of commitment relevant to the green transition and therefore excluded. New data on local engagement like active signatures may become available.
- **Citizen awareness and responsible consumption.** As stated in the European Climate Pact[17], it is extremely important to involve people, communities and organisation to build a greener society. Everyday choices matter, and it would be very important to monitor the consumer choices and citizen awareness about the climate action climate and environment-conscious choices.
- **Role of agricultural soil** for achieving climate neutrality. This is a relevant aspect especially in the light of the future need to revert current trends of carbon emissions to carbon absorption by croplands.

[16] The EU Covenant of Mayors for Climate & Energy brings together thousands of local governments voluntarily committed to implementing EU climate and energy objectives.

[17] https://ec.europa.eu/clima/policies/eu-climate-action/pact_en

Digital dimension

Data collection and data quality in the digital dimension are particularly challenging, due to the continuous changes happening in the digital world (e.g., new mobile protocols, development of AI-based services, etc…). What is still missing in the present version of the digital dashboard can be classified into the following three broad categories:

1. The concept behind the data is clear and well defined, but the corresponding indicators are not yet representative and/or reliable. Typical examples are:
   - more specific **e-health** (or m-health) indicators;
   - the use of **open data** in public services;
   - **digitisation of the educational system**: human capital (teachers' and pupils' digital skills), digital infrastructures (availability of computers, Virtual Learning Environment);
   - **investment in the high-technology sectors** does not include the service sector;
   - public investment in AI.
2. The underlying phenomena are already present in the society, but official statistics do not yet provide indicators to fully represent them
   - EU **dependency on digital technologies** (e.g., Operating Systems, social platforms, cloud services);
   - digital currencies and in general, the **digitalisation of finance**;
   - **digital access to infrastructures and services**;
   - **smart energy systems** (smart meters, smart grids, smart buildings);
   - data on **energy use by cloud storage** and other big data services.
3. The concept itself is not yet well defined and/or there are no "natural" variables that may proxy it (brand new phenomena, subject to rapid changes). The main items are the following:
   - **digital literacy and awareness** (manage the overload of information, avoid excessive dependence on social media, especially for the young);
   - **digital democracy** (including fake news);
   - **impact of social media on financial markets** (the recent case of GameStop);
   - **personal data protection** (e.g. identity thefts)

More work would be needed to develop new indicators for some of these key aspects, overcoming the actual lack of official statistics as, for example, in the case of cybersecurity levels, digital preparedness of students and teachers, etc.

It would also be important to investigate the possibility to define and then use new indicators able to directly tackle potential trade-offs and synergies between those aspects whose impacts are likely to span across different dimensions. These include for instance energy demand and energy saving associated with digitalisation and their effects on the green transition or the impact of social media on social cohesion.

Geopolitical dimension

The part of the geopolitical resilience dashboard that focuses on external dependencies is mostly based on available data, in the areas of raw materials and energy supply, value chains, and economic and financial stability. Though it is fairly populated, there are some important gaps and ongoing work, including:

- **Military**, where it would be important to assess the effectiveness of spending (hence a "military capacity"), or the status of a common EU defence capacity, but where spending and the number of personnel serve as proxies.
- **Global aspects of cybersecurity** vulnerabilities, which represent a newly and quickly evolving threat. Though the Global Cybersecurity Index is employed in the digital dimension, it is more general and focuses less on global and geopolitical aspects.
- **Hybrid threats**, where currently we only have included an indicator of disinformation and some capacities that can be relevant against disinformation.
- **Environmental security**, where issues could include global threats to air quality, access to water, or the marine environment.
- It would be important to cover broad aspects of **future demographic changes with potential geopolitical implications**, including migration, ageing, brain drain, and other population dynamics, for which projections would be needed.
- **Dependence on external suppliers may be highly concentrated** into specific narrow industries or specific raw materials. General partner concentration measures would have only a limited capability to capture this. Work is ongoing to identify such sectors and materials, and to develop measures that can highlight their nature and severity.
- The adopted **indicators of value chains are limited to sectorial data** (global input-output tables). More disaggregated, or even firm-level data would be important to depict these relationships, with their implied benefits and dependencies.
- Detailed data on bilateral **FDI stocks and flows**, especially at sectoral level, are scarce. **Foreign ownership in certain, especially strategic sectors and assets** is also an important area with further data needs.
- In line with the need to increase pandemic preparedness and the EU's resilience to potential shortcomings in critical medicines, an indicator of **manufacturing capacity within the EU for critical medicines** should be considered. Similarly, further strategic items could also be added. Currently, publicly available statistics do not cover this aspect. Data related to critical medical capacities is foreseen to become available during this year.

ANNEX III: COMPARISON WITH OTHER FRAMEWORKS, DASHBOARDS AND SCOREBOARDS

This annex discusses the linkages between the resilience dashboards and selected existing frameworks, dashboards and scoreboards (see also **Tables A1-A4** at the end of this Annex). These can either take a multidimensional perspective with a broad scope (e.g. the SDG indicators or the Transition Performance Index, TPI) or cover specific thematic areas (e.g. the Circular Economy Scoreboard or the Digital Economy and Society Index, DESI) [18]. The Commission is also preparing new monitoring tools (e.g. the Recovery and Resilience Scoreboard[19], Digital Compass, Green Deal monitoring framework, Strategic Compass) or reviewing others currently in use (e.g. Energy Union 2030, New Circular Economy Action Plan). These processes are all coordinated in order to ensure coherence, exploit synergies and avoid duplication.

Indicators included in the resilience dashboards sometimes overlap with indicators in other monitoring tools. However, there are some important considerations on the way they were selected and presented, which make the resilience dashboards unique. First, the selection of the indicators is the result of a collective intelligence exercise, whose core debate was around the ability of the indicators to point to resilience aspects, as opposed to progress towards certain policy goals. Hence, the indicators were "distilled" and evaluated by the experts as representing vulnerabilities and capacities. Second, achieving a holistic perspective is also a driver for the selection of the indicators. Third, indicators in the resilience dashboards are not presented in their raw form. As explained in Annex IA, the colouring scheme illustrates the position of a country, based on the most recent data, within the overall distribution in a reference period (mostly 2007-2017). The use of arrows also offers a dynamic perspective.

Table A1 establishes a precise mapping between the social and economic dashboard and the SDGs, TPI, Social Scoreboard and the MIP indicators (the latter two only for the Member State level dashboard). **Table A2** links the green dashboard to the SDGs and TPI (also for the global dashboard), the OECD Green Growth indicator set, the EAP7 and the RES (only for the Member State dashboard). **Table A3** presents the comparison between the digital dashboard and the SDGs and TPI (also for the global dashboard), DESI, PREDICT and ITU (only for the Member State dashboard). Finally, **Table A4** compares the geopolitical dashboard to the SDGs and the TPI.

Multidimensional indicator frameworks

Sustainable Development Goals Indicators

Resilience is instrumental to achieve sustainability. A resilient society can respond effectively to shocks and structural changes while staying on or reaching a sustainable development path. Monitoring resilience and sustainable development are thus also related, and there is a natural link

[18] One of the recent dashboards is the European Statistical Recovery Dashboard, which contains monthly and quarterly indicators to allow for the monitoring of economic and social recovery from the COVID-19 pandemic. We do not explicitly compare the dashboards with this tool, because it is narrower in timeframe and scope and it refers to single very specific shock.

[19] The Commission is currently working on its preparation, as announced in the Recovery and Resilience Facility Regulation. The purpose of this tool is rather different compared to the resilience dashboards, as it aims to provide synthetic information on progress with the implementation of the Facility. See Regulation (EU) 2021/241 of the European Parliament and of the Council establishing the Recovery and Resilience Facility (OJ L57/17, 18.02.2021).

between the resilience dashboards and the SDG indicators. Both take a multidimensional perspective covering social, environmental and economic aspects of our society. The latter focus on progress towards achieving long term objectives; the former point to the abilities that enable or hinder countries to reach these goals in turbulent times, and incorporate forward-looking aspects to anticipate obstacles and opportunities.

The 17 SDGs are broken down by the United Nations into 169 targets, and progress towards these targets are tracked through a set of 231 indicators, based on data availability at global level[20]. In the EU context, Eurostat regularly monitors the progress towards the SDGs. For this purpose, it coordinates the development of the EU SDG indicator set, keeps it up to date, and produces regular monitoring reports on the progress towards the SDGs. The EU indicators set is annually reviewed and the current version contains 102 indicators[21].

A first mapping of the dashboard indicators to SDGs shows that the resilience dashboards span across all the goals. The entire set of indicators refers to 65 targets (out of 169). 83% of the indicators are linked to at least one specific target, and 6% generally to a goal. 26 indicators of the dashboards exactly coincide with indicators in the EU SDG set.

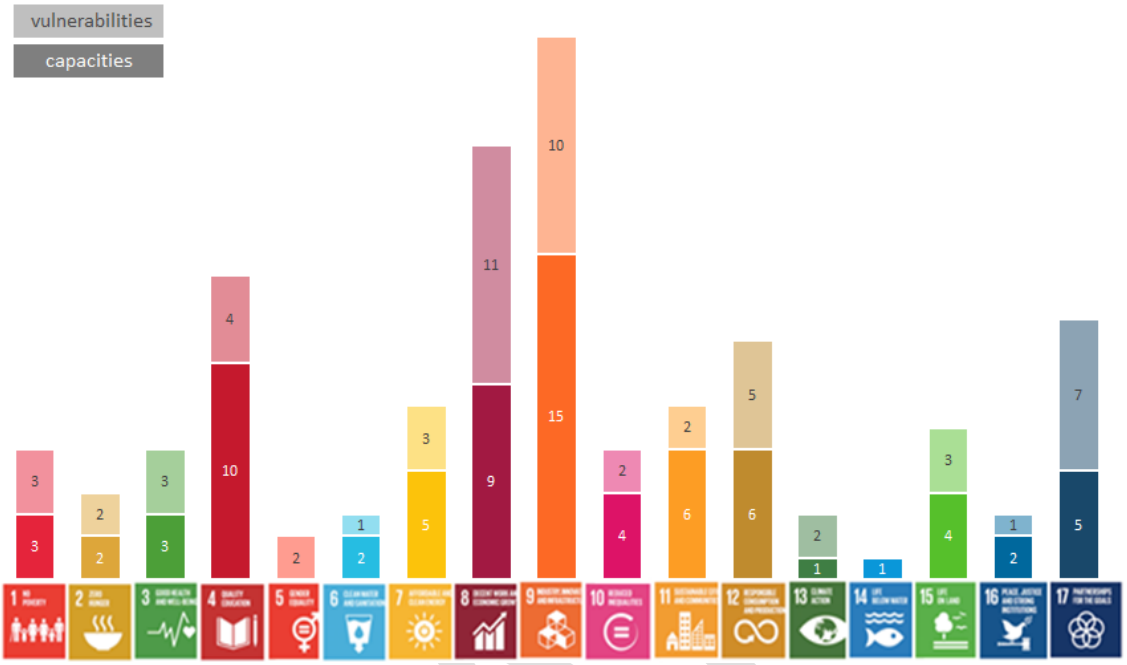
Figure A3 maps the current list of indicators in the resilience dashboards to the SDGs, considering all four dimensions. It shows the main prevalence of two goals: SDG 9 on infrastructure and innovation, and SDG 8 on sustainable economic growth and employment. Other significant goals linked to the dashboards are SDG 4 on quality education, SDG 17 on partnership and macroeconomic stability, and SDG 12 on sustainable consumption and production. **Figure A4** presents a mapping by the four dimensions. Lastly, **Figure A5** shows the main SDG targets that are linked to the resilience dashboards[22].

[20] https://unstats.un.org/sdgs/indicators/indicators-list/

[21] https://ec.europa.eu/eurostat/web/sdi/indicators

[22] The most frequently mapped SDG target is 9.1, to "develop quality, reliable, sustainable and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all". Since the definition of infrastructure also includes telecommunications, including Internet connectivity and broadband access, many of the indicators from the digital dashboard are mapped to this target.

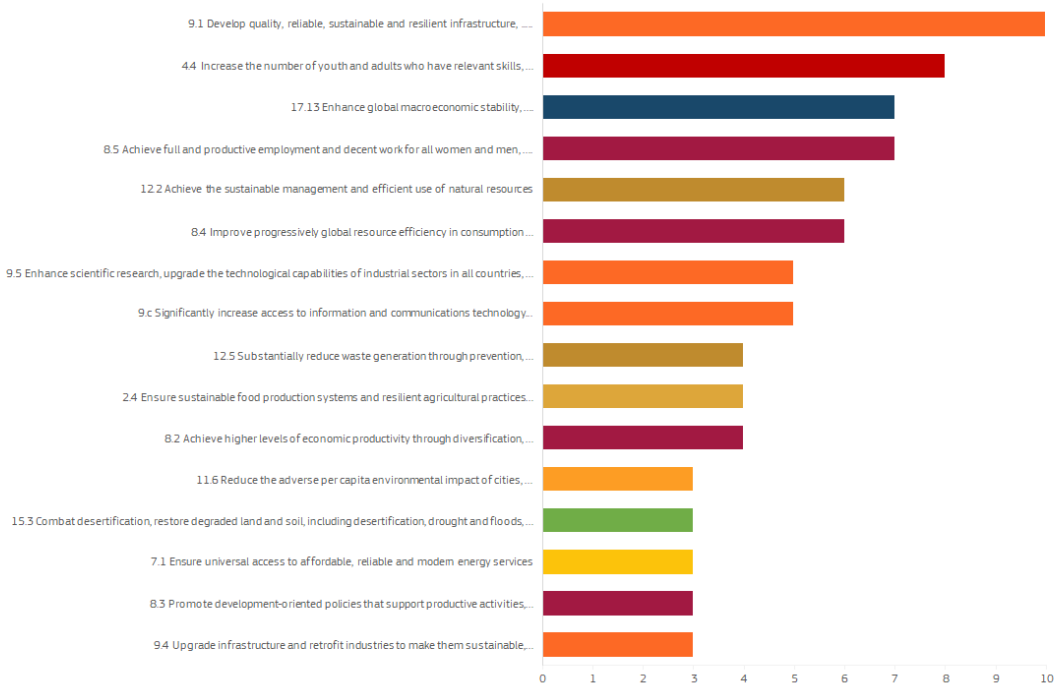
Figure A3: Mapping of the resilience dashboard indicators on the SDGs, number of indicators by goal, all four dimensions considered.



UN SDGs short description. 1: No Poverty, 2: Zero Hunger, 3: Good Health and Well-being, 4: Quality Education, 5: Gender Equality, 6: Clean Water and Sanitation, 7: Affordable and Clean Energy, 8: Decent Work and Economic Growth, 9: Industry, Innovation and Infrastructure, 10: Reduced Inequality, 11: Sustainable Cities and Communities, 12: Responsible Consumption and Production, 13: Climate Action, 14: Life Below Water, 15: Life on Land, 16: Peace and Justice Strong Institutions, 17: Partnerships to achieve the goals.

Figure A4: Mapping of the resilience dashboard indicators on the SDGs, by dimension.

Figure A5: Main SDG targets detected in the resilience dashboard indicators, all four dimensions considered.



Transition Performance Index

The Transition Performance Index[23] (TPI) is a scoreboard that monitors and ranks countries from all over the world based on four transitions to fair and prosperous sustainability. It focuses on the transformations needed in the economy, the social sphere, the environment and in governance to progress towards the EU objective of competitive sustainability. Its explicit focus on the transitions makes it rather similar to the resilience dashboards approach. However, there are important differences: (i) the TPI approach does not focus on the behaviour of the single components of the index, (ii) the TPI explicitly ranks the countries according to their progress towards the transition, (iii) the number of indicators is smaller, 25 in total, (iv) the scope is much larger in terms of countries covered (72), (v) the TPI does not cover the digital dimension, (vi) the TPI prefers output over input indicators.

There are some common indicators between the TPI scoreboard and the resilience dashboards. Some of the examples in the Member State level analysis are healthy life expectancy, gender employment gap, GHG emissions per capita, energy and resource productivity, government investment and expenditure on R&D. It also focuses on other similar aspects, but using different indicators (for instance on biodiversity, use of pesticides, inequality, or innovation). The environmental component of the TPI does not contain forward-looking elements that may drive

23 https://ec.europa.eu/info/research-and-innovation/strategy/support-policy-making/support-national-research-and-innovation-policy-making/transitions-performance-index-tpi_en

the transition (such as forest carbon capture capacity, waste management, sustainable energy, mobility or agriculture, environment-related innovation and investment).

The resilience dashboards at global level connect to both global frameworks of the TPI and the SDGs. Many of the indicators presented in the global dashboards of the social and economic and the green dimensions match both frameworks. This is due to the similar focus on social, economic and environmental aspects present in the three dashboards. Yet, the global digital and geopolitical resilience dashboards, due to their focus on specific topics, match the TPI and the SDGs only on few indicators such as digital competences and import dependency in energy materials.

Thematic tools

The **Social Scoreboard**[24] (SSB) has been designed as a reference framework to monitor 'societal progress' in a tangible, holistic and objective way. It monitors, notably in the context of the European Semester, Member States' performance in relation to the European Pillar of Social Rights and contributes to assessing convergence or divergence patterns across the Member States.

There is an important alignment of the social and economic resilience dashboard with the revised SSB in the last European Pillar of Social Rights Action plan. Both the SSB and the dashboard focus on certain groups at the margin of the society (such as the people not in education, employment or training and people at risk of poverty and social exclusion), vulnerabilities of the health system (unmet needs for medical care) and distortions in the labour market (gender disparities in employment).

Yet, while the SSB focuses on monitoring equal opportunities, working conditions and aspects related to social protection and inclusion, the social and economic resilience dashboard expands also on other topics such as economic and financial stability and sustainability. Unlike the SSB, the social and economic resilience dashboard addresses specific vulnerabilities in jobs at risks (employment in energy-intensive sectors and manufacturing with high automation risk). Furthermore, the social and economic resilience dashboard considers elements that characterize social capital (such as the participation in the voluntary activities), as it is at the core of the ability of a society to react positively to shocks and reinforce the social connections through which sometimes the community substitutes the institutions in protecting the marginalized people.[25]

The **Macroeconomic Imbalance Procedure** (MIP) is a surveillance mechanism that aims to identify potential macroeconomic risks early on, prevent the emergence of harmful macroeconomic imbalances and correct the imbalances that are already in place. It is therefore a system for monitoring economic policies and detecting potential harm to the proper functioning of the economy of a Member State, of the Economic and Monetary Union, and the European Union as a whole. The social and economic resilience dashboard is broadly aligned with the MIP scoreboard in relation to indicators related to the internal (im)balances, such as government debt

[24] https://ec.europa.eu/eurostat/web/european-pillar-of-social-rights/indicators/social-scoreboard-indicators

[25] Indicators in the social and economic dashboards also partly overlap with those identified by the Social Protection Committee Indicator Group (https://ec.europa.eu/social/main.jsp?catId=830&langId=en) and the Employment Committee Indicator (https://ec.europa.eu/social/main.jsp?catId=1528&langId=en). Since both are also closely related to the Social Scoreboard, the comparison with them is very similar to the comparison with the Social Scoreboard indicators.

and the stability of banking and financial markets stability. There is a partial overlap with labour market indicators, such as long-term unemployment rate, unemployment rate and young people neither in employment nor in education and training (NEET). Certain MIP indicators are present in the geopolitical resilience dashboard, like the net international investment position, or have similar counterparts (indicators on exports, imports and FDI).

The **monitoring framework for the circular economy**[26] shows how the various elements of the circular economy are developing over time, to help identify success factors in the Member States and to assess whether sufficient action has been taken. It includes ten indicators (some of which are broken down into sub-indicators) that are organized in four broad areas: production and consumption, waste management, secondary raw materials and competitiveness and innovation. The overlap with the green resilience dashboard lies in the use of similar indicators for waste (generation rate of waste, e-waste, circular material use rate). In general, the green dashboard provides a more general and wide overview of the abilities and obstacles for the green transition as a whole, in which the ability to pursue a circular economy is one aspect of sustainable use of resources.

The **Resource efficiency scoreboard**[27] combines 32 indicators that aim to inform about the progress the EU Member States have made towards resource-efficient Europe. The lead indicator is resource productivity (based on which the values in the dashboard are presented). The second layer provides indicators on materials, land, water and carbon, where there is an overlap with the sustainable use of resources area of the green dashboard (DMC per capita, WEI+, GHG per capita, energy productivity, share of renewable energy in final energy consumption). Though more specific, the geopolitical dashboard also includes related elements, like the material footprint in metals. There are additional common areas of interest, such as biodiversity, circular economy or carbon-neutral mobility. The green dashboard is complementary to the resource efficiency dashboard, since it completes the picture with other aspects of green transition. These aspects are broader agricultural resilience indicators (soil carbon and farm income variability), vulnerability to climate change (fatalities from climate extremes) and the ability to adapt to it (insured losses to climate extremes), financing mechanisms that are favourable (national expenditure on environmental protection) or adverse (fossil fuel subsidies) to achieve climate neutrality and restore the environment. Also, the presentation of the indicators in the resource efficiency scoreboard is much different. It does not reflect the improvement/deterioration with respect to any reference period, but just plain data.

[26] SWD(2018) 17 final, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52018DC0029&from=EN. Indicators in the circular economy framework are currently being reviewed, according to the New Circular Economy Action Plan published in March 2020 (COM(2020) 98 final).

[27] https://ec.europa.eu/environment/resource_efficiency/targets_indicators/scoreboard/index_en.htm, and https://ec.europa.eu/environment/resource_efficiency/targets_indicators/scoreboard/pdf/EU%20Resource%20Efficiency%20Scoreboard%202015.pdf

Environmental indicators for the monitoring of the **7th Environment Action Programme**[28,29] (EAP) have been designed to track progress by 2020 towards the 7th EAP thematic priority objectives: i) preservation of the natural capital, ii) resource efficiency and low carbon economy, iii) environmental pressures and risks to health and well-being. The indicators measure progress towards a 2020 threshold (e.g. milestone, target, goal) associated with the achievement of a detailed objective (or parts of it). Given the common relevant thematic areas for the environment, there is an overlap between this monitoring framework and the green resilience dashboard: GHG emissions and emissions in transport, resource productivity, waste and waste management, share for renewable energy, size of the environmental sector in the economy, expenditure on environmental protection. However, the green resilience dashboard adds on other aspects of the green transition: agricultural resilience (soil carbon and farm income variability), forward-looking mobility indicators (share of BEV and H2 vehicles and change in transport mode), vulnerability to climate change (fatalities from climate extremes) and the ability to adapt to it (insured losses to climate extremes), financing mechanisms that are adverse (fossil fuel subsidies) to climate neutrality and innovation that is beneficial for the overall environment (environmental technology patents per capita). Also, the presentation of the indicators is much different.

Green growth indicators[30]**.** The OECD's approach to monitoring progress towards green growth is designed to show the interactions between the economy, the natural asset base and policy actions. The measurement framework identifies 26 headline and a vast set of support indicators to capture the main features of green growth and monitor progress in four main areas: i) the environmental and resource productivity of the economy; ii) the natural asset base; iii) the environmental dimension of quality of life; and iv) economic opportunities and policy responses. Indicators that describe the socio-economic context and the characteristics of growth complete the picture. This set of indicators touches upon similar aspects as the green resilience dashboard (such as energy productivity and renewables, resource productivity and material footprint, waste generation, land, forest and water resources, environmental risks, environmental-related innovation). The OECD set provides figures for environmental taxation and transfers, official development assistance (environment-related government aid to developing countries), and poses a lot of emphasis on the carbon intensity of several economic sectors, which are areas that may be considered for the green resilience dashboard in future updates (see also gap analysis). Compared to this set, the green resilience dashboard is more streamlined, with a stronger emphasis on resilience-related features of countries.

The Digital Economy and Society Index[31] (DESI) monitors Europe's overall digital performance and tracks the progress of EU countries in digital competitiveness. By providing data on the state

[28] Decision No 1386/2013/EU of the European Parliament and of the Council of 20 November 2013 on a General Union Environment Action Programme to 2020 'Living well, within the limits of our planet'

[29] The 8th Environmental Action Programme will be adopted later in 2021. Alignment and coherence with the green resilience dashboard was ensured through coordinated discussions.

[30] OECD (2017), *Green Growth Indicators 2017*, OECD Green Growth Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264268586-en.

[31] https://digital-strategy.ec.europa.eu/en/policies/desi

of digitisation of each Member State, it helps them identify areas requiring priority investment and action. It provides a composite index that summarises relevant indicators on Europe's digital performance and tracks the evolution of EU Member States, across five main dimensions: Connectivity, Human Capital, Use of Internet, Integration of Digital Technology, Digital Public Services.

With the same perspective, there are ancillary databases focusing on specific, yet vital, aspects of the digital transition. The Telecom Chapters of the DESI provide a snapshot of the electronic communications markets in each Member State.

As one of the actions put in place to assess women's inclusion in digital jobs, careers and entrepreneurship, the Women in Digital (WiD) Scoreboard assesses Member States' performance in the areas of Internet use, Internet user skills as well as specialist skills and employment based on 12 indicators.

International DESI 2020. The International Digital Economy and Society Index (I-DESI) mirrors and extends the DESI by utilising 24 datasets to enable trend analysis and comparison of the digital performance of 45 countries. The analysis includes the EU27 Member States and 18 non-EU countries that have a global distribution.

Prospective Insights in ICT R&D (PREDICT)[32]. PREDICT provides a sound database to analyse the supply of Information and Communications Technologies (ICT) and the investments in Research and Development (R&D) in ICT in Europe, with comparison to major competitors worldwide. In particular, it offers data to: (a) analyse the development of the ICT industries over a long period of time in Europe, its 27 Member States and 13 non-EU major economies among which the US and BRIC countries; (b) study the size, distribution and evolution of public and private allocations in ICT R&D, in the EU and other major and emerging economies.

International Telecommunication Union (ITU)[33]. The International Telecommunication Union (ITU) is the United Nations specialized agency for information and communication technologies – ICTs. The Digital dashboard includes the Global Cybersecurity Index (GCI) which assess the state-of-the-art across: (a) Legal Measures; (b) Technical Measures; (c) Organizational Measures; (d) Capacity Building and (e) Cooperation – and then aggregated into an overall score.

Though quite comprehensive, these different tools associated with the development of digitalisation still take a "sectorial" perspective. DESI, at large, mostly refers to the users' side of the digital world. The ITU Global Cybersecurity Index provides an overall assessment of the security capacity, while PREDICT focuses on the digital innovation in terms of R&D. The digital resilience dashboard offers an holistic perspective and complements these tools by providing indicators on the level (and importance) of the digital economy, digital skills of various segments of the society (students, adults, teachers), novel public digital services (health, justice), and finally a couple of indicators on the digital divide (gender gap, rural versus urban, and small versus large enterprises).

[32] https://web.jrc.ec.europa.eu/dashboard/PREDICT/index.html?rdr=1619163281899
[33] https://www.itu.int/en/ITU-D/Cybersecurity/Pages/global-cybersecurity-index.aspx

Detailed mapping of the Member States and global resilience dashboards with selected frameworks

Table A1: Indicators in the social and economic resilience dashboard aligned with some other existing tools.

Area	Label	Indicator name- Member State level	SDGs	TPI	SSB	MIP	Indicator name- Global level	SDGs	TPI
Inequalities and social impact of the transitions	SE_v01	At risk of poverty or social exclusion rate (AROPE)	x		x				
	SE_v02	Income quintile share ratio S80/S20	x	~	x		Income quintile share ratio S80/S20	x	~
	SE_v03	Employment in energy intensive sectors	o						
	SE_v04	Employment in manufacturing with high automation risk	o						
	SE_v05	Regional dispersion in household income	o						
	SE_c01	Impact of social transfers (other than pensions) on poverty reduction	o		x				
	SE_c02	Household net saving rate	~						
	SE_c03	Government social expenditures on education, health, social protection and long-term care, as % of GDP	x		x				
							Government expenditure on education, as % of GDP	x	x
							Domestic general government health expenditure, as % of GDP		x
	SE_c04	Active citizenship							
Health, education and work	SE_v06	Antimicrobial resistance	o						
	SE_v07	Self-reported unmet need for medical care	x		x				
	SE_v08	Years of life lost due to PM 2.5	o						
	SE_v09	Variation in performance explained by students' socio-economic status	o	~					
							Gross graduation ratio from first degree programmes in tertiary education	~	
	SE_v10	Macroeconomic skills mismatch rate	o	~					
	SE_v11	Gender employment gap	x	~	x		Gender employment gap	x	~
	SE_v12	Young people neither in employment nor in education and training	x		x				
	SE_v13	Long-term unemployment rate	x		x	x			
	SE_c05	Standardised preventable and treatable mortality (low rate)	x		x				
							Obesity rate of young children	x	
	SE_c06	Healthy life years at birth	x				Life expectancy at birth	x	~
	SE_c07	Children aged less than 3 years in formal childcare	o		x				
	SE_c08	Average scores in the PISA test, reading, mathematics and science	o						
	SE_c09	Adult participation in learning during the last 12 months	x		x				
	SE_c10	Employment rate	x	x	x	x	Employment rate	x	x

Area	Label	Indicator name- Member State level	SDGs	TPI	SSB	MIP	Indicator name- Global level	SDGs	TPI
	SE_c11	Active labour market policies per person wanting to work	o						
Economic and financial stability and sustainability	SE_v14	Government debt	x	x		x	Government gross debt	x	x
	SE_v15	Projected old-age dependency ratio					Projected old-age dependency ratio		
	SE_v16	Degree of specialisation of the economy	o						
	SE_v17	Non-financial corporation funding structure	o						
	SE_c12	Automatic stabilisation of the tax-benefit system	o						
	SE_c13	Banking sector total capital ratio	o						
	SE_c14	Insurance sector solvency capital ratio	o						
	SE_c15	Share of innovative enterprises	o						
	SE_c16	Intangible investment	o						
							Gross domestic expenditure on R&D (GERD)	x	x
	SE_c17	Government investment to GDP ratio	o	~			Government investment to GDP ratio	o	

Note: The symbol x indicates the same indicator, ~ means a very similar indicator, with a somewhat different specification or normalization, while o indicates a conceptual match. SDG – Sustainable Development Goals, SSB – Social Scoreboard, TPI – Transition Performance Index, MIP – Macroeconomic Imbalance Procedure.

Table A2: Indicators in the green resilience dashboard aligned with some other existing tools.

Area	Label	Indicator name- Member State level	SDGs	TPI	OECD	EAP7	RES	Indicator name- Global level	SDGs	TPI
Climate change mitigation and adaptation	G_v01	Fatalities from climate extremes	~							
	G_v02	GHG emissions per capita	o	x		~	x	GHG emissions per GDP	x	x
	G_v03	CO2 emissions in road transport	o			~	~	CO2 emissions from transport per capita	x	
	G_v04	Fossil fuel subsidies	~		~			Fossil fuel subsidies	~	
	G_c01	Insured losses from climate extremes	~							
	G_c02	CO2 absorption by forests	~							
	G_c03	Electric and hydrogen passenger fleet	~							
	G_c04	Inland use of train, bus and trolleybus	x*				~			
	G_c05	Renewable energy in final energy consumption	x		~	x	x	Renewable energy in final energy consumption	x	
	G_c06	Environmental technology patents per capita	~		x			Environmental technology patents per capita	~	
Sustainable use of resources	G_v05	Water exploitation index +	x		~		x	Water stress	x	
	G_v06	Domestic footprint	~							
	G_v07	Domestic material consumption per capita	~				x	Domestic material consumption per capita	~	
	G_v08	Waste generation rate	~				~			
	G_v09	Energy use in ICT	~							
	G_c07	Resource productivity	x	x	x	x	x	Resource productivity	x	x
	G_c08	Energy productivity	x	x	x	~	x	Energy productivity	x	x
	G_c09	Circular material use rate	x					Share of recovered municipal waste	~	
	G_c10	E-waste recycling rate	~				x			
	G_c11	GVA in Environmental goods and services sector	x				x			
Ecosystems, biodiversity and sustainable agriculture	G_v10	Farmland bird index	~				x			
	G_v11	Harmonized risk indicator 1 for pesticides	x	~	~	~		Pesticide use	~	
	G_v12	Soil sealing index	x							
	G_v13	Soil erosion by water	x				x			
	G_v14	Farm income variability	~							
	G_c12	Soil carbon content	~							
	G_c13	Organic farming	x				x			
	G_c14	Urban wastewater treatment	x		~					
	G_c15	Natura 2000 protected areas	x*	~	~					
								Protected key terrestrial areas	o	
								Protected key freshwater areas	o	
	G_c16	National expenditure on environmental protection	o				x			

Note: The symbol x indicates the same indicator, ~ means a very similar indicator, with a somewhat different specification or normalization, while o indicates a conceptual match, , * indicates the indicator refers to two EU SDGs.. SDG – Sustainable Development Goals, OECD – Green Growth indicators, EAP7– 7th Environment Action Programmme, RES – Resource Efficiency framework, TPI – Transition Performance Index,

Table A3: Indicators in the digital resilience dashboard aligned with some other existing tools.

Area	Label	Indicator name- Member State level	SDGs	TPI	DESI	PREDICT	ITU	Indicator name- Global level	SDGs	TPI
Digital for personal space	D_v01	Enterprises without ICT training programs	o							
	D_v02	Employees not using telework								
	D_v03	Inadequacy of ICT training for teachers	o							
	D_c01	Collaborative economy	o							
	D_c02	Digital competence of adults	o	o				Digital competence of adults	o	o
	D_c03	Digital competence of young people	o	o						
	D_c04	Use of online courses	o		x					
	D_c05	Use of social networks	o		x			Use of social networks	o	
	D_c06	Students doing any online learning activity	o							
	D_c07	University degree in advanced digital technologies	o	o		x		ICT graduates	o	o
Digital for industry	D_v04	ICT trade deficit in goods						I CT trade deficit in goods		
	D_v05	ICT trade deficit in services						ICT trade deficit in services		
	D_v06	ICT specialist gender gap	o							
	D_v07	Lack of cloud services	o							
	D_v08	Broadband access gap by company size	o					Shortcoming of fixed broadband	o	
	D_c08	Investment per employee, high-technology sectors	o							
	D_c09	Enterprises seeking ICT specialists	o							
	D_c10	GVA in ICT	o	o				GVA in ICT	o	
	D_c11	ICT sector R&D intensity	o			x				
	D_c12	Value of e-commerce sales								
Digital for public space	D_v09	Lack of 5G readiness			x			Low mobile cellular subscriptions		
	D_v10	Lack of online public services for businesses	o		x					
	D_v11	People not having access to digital public services	o		x			People not having access to digital public services	o	
	D_v12	Broadband access gap, urban versus rural	o					Broadband gap, regional	o	
	D_c13	E-health	o							
	D_c14	Judicial system e-tools	o							
Cybersecurity	D_v13	Cybersecurity incidents experienced by people	o							
	D_v14	ICT security incidents in enterprises	o					Secure Internet servers	o	
	D_c15	Cybersecurity awareness of individuals	o							
	D_c16	Global Cybersecurity Index	o				x	Global Cybersecurity Index	o	

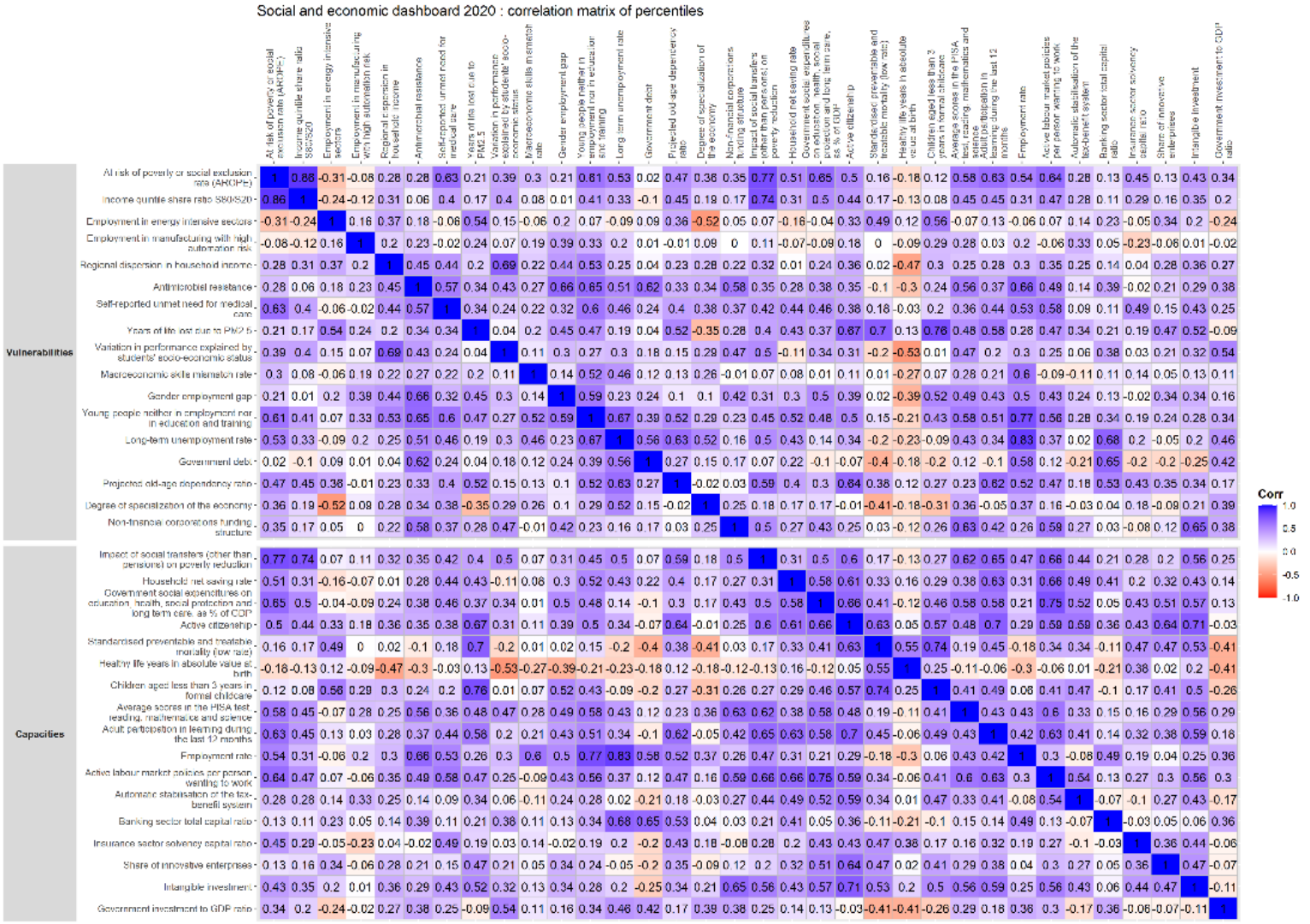
Note: The symbol x indicates the same indicator, ~ means a very similar indicator, with a somewhat different specification or normalization, while o indicates a conceptual match. SDG – Sustainable Development Goals, DESI - Digital Economy and Society Index, PREDICT- Prospective Insights in ICT R&D, ITU- International Telecommunication Union , TPI – Transition Performance Index

Table A4: Indicators in the geopolitical resilience dashboard aligned with some other existing tools.

Area	Label	Indicator name- Member State level	SDGs	TPI	Indicator name- Global level	SDGs	TPI
Raw material and energy supply	GP_v01	Metal footprint per capita	o				
	GP_v02	Supplier concentration in base metals			Import dependence in base metals		
	GP_v03	Import dependence in energy materials	x		Import dependence in energy materials	x	~
	GP_v04	Supplier concentration in energy carriers					
	GP_c01	Intra-EU trade in recyclable raw materials	o				
	GP_c02	Supplier diversification for base metals, rate of change					
	GP_c03	Metal footprint per capita, rate of decline	o				
	GP_c04	Intra-EU trade in energy	o				
	GP_c05	Supplier diversification for energy carriers, rate of change					
Value chains and trade	GP_v05	Concentration of value chain partners	o				
	GP_v06	Extra-EU import partner concentration			Partner concentration in trade (average of import and export partner concentration)		
	GP_v07	Extra-EU export partner concentration					
	GP_c06	Backward participation in GVC	o		Participation in GVC (average of backward and forward)	o	
	GP_c07	Forward participation in GVC	o				
	GP_c08	Trade openness – intra-EU	o		Trade openness	o	
	GP_c09	Trade openness – extra-EU	o				
Financial globalisation	GP_v08	Inward FDI partner concentration					
	GP_v09	Outward FDI partner concentration					
	GP_v10	Net external debt in % GDP	o	o			
	GP_v11	Net International Investment Position	o		Net International Investment Position	o	
	GP_c10	Value added share of foreign enterprises	o				
	GP_c11	Financial integration	o		Financial integration	o	
Security and demography	GP_v12	Disinformation originating from abroad	o		Disinformation originating from abroad	o	
	GP_v13	Total fertility rate (difference from replacement-level)			Total fertility rate (difference from replacement-level)		
	GP_v14	Employment gap (EU versus non-EU nationals)	o				
	GP_v15	Military expenditures (difference from NATO target)					
	GP_c12	Military personnel			Military personnel		
	GP_c13	Net migration rate					
	GP_c14	Share of non-EU citizens from total employment	o				
	GP_c15	People being resettled under AMIF	o				

Note: The symbol x indicates the same indicator, ~ means a very similar indicator, with a somewhat different specification or normalization, while o indicates a conceptual match. SDG – Sustainable Development Goals, TPI – Transition Performance Index.

ANNEX IV: CORRELATION TABLES.



The correlations refer to the percentile positions (as detailed in Annex I) of the indicator values in the latest available year. A high percentile value in capacities indicates high capacities, while a high percentile value for vulnerabilities indicates low vulnerabilities.

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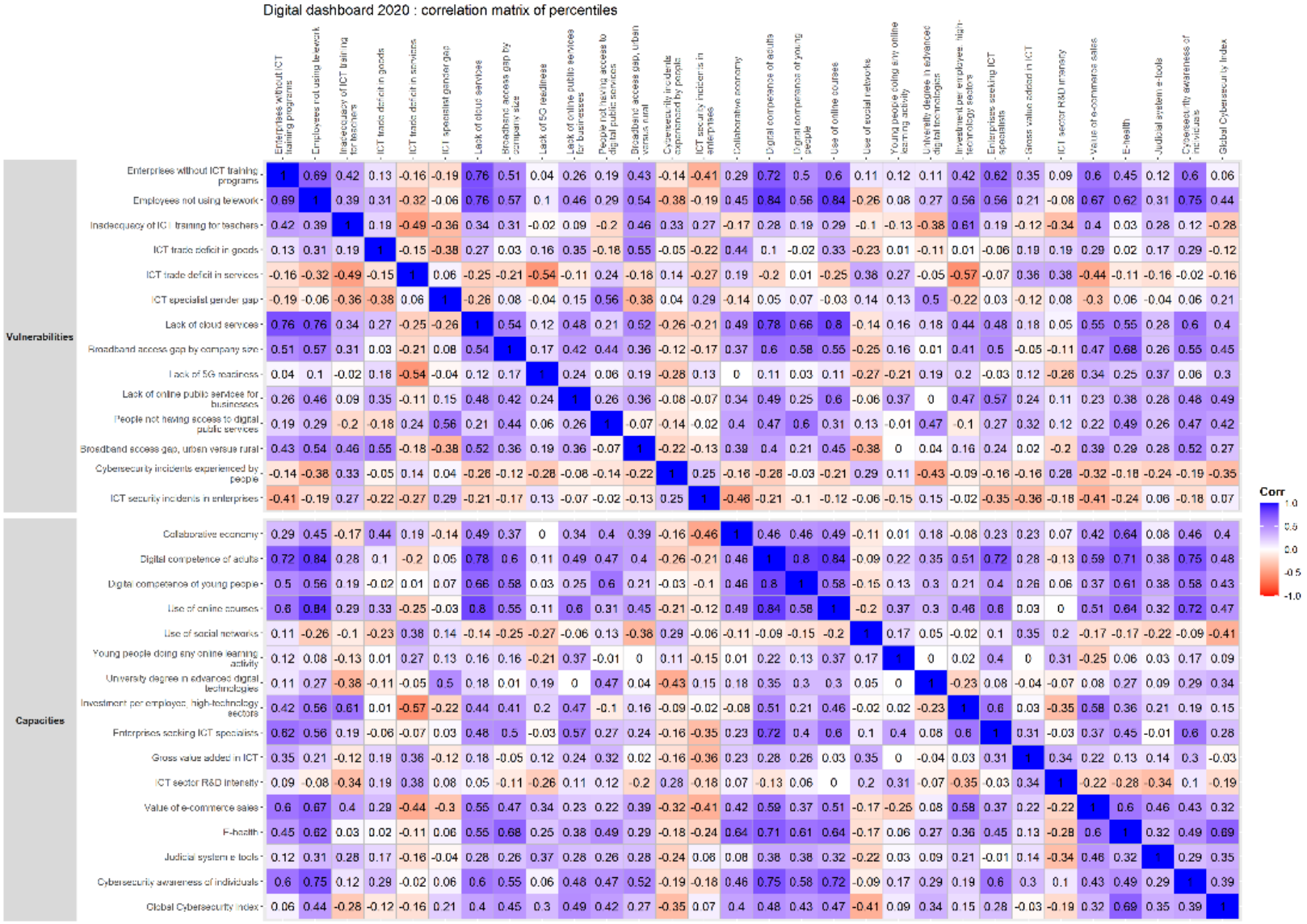

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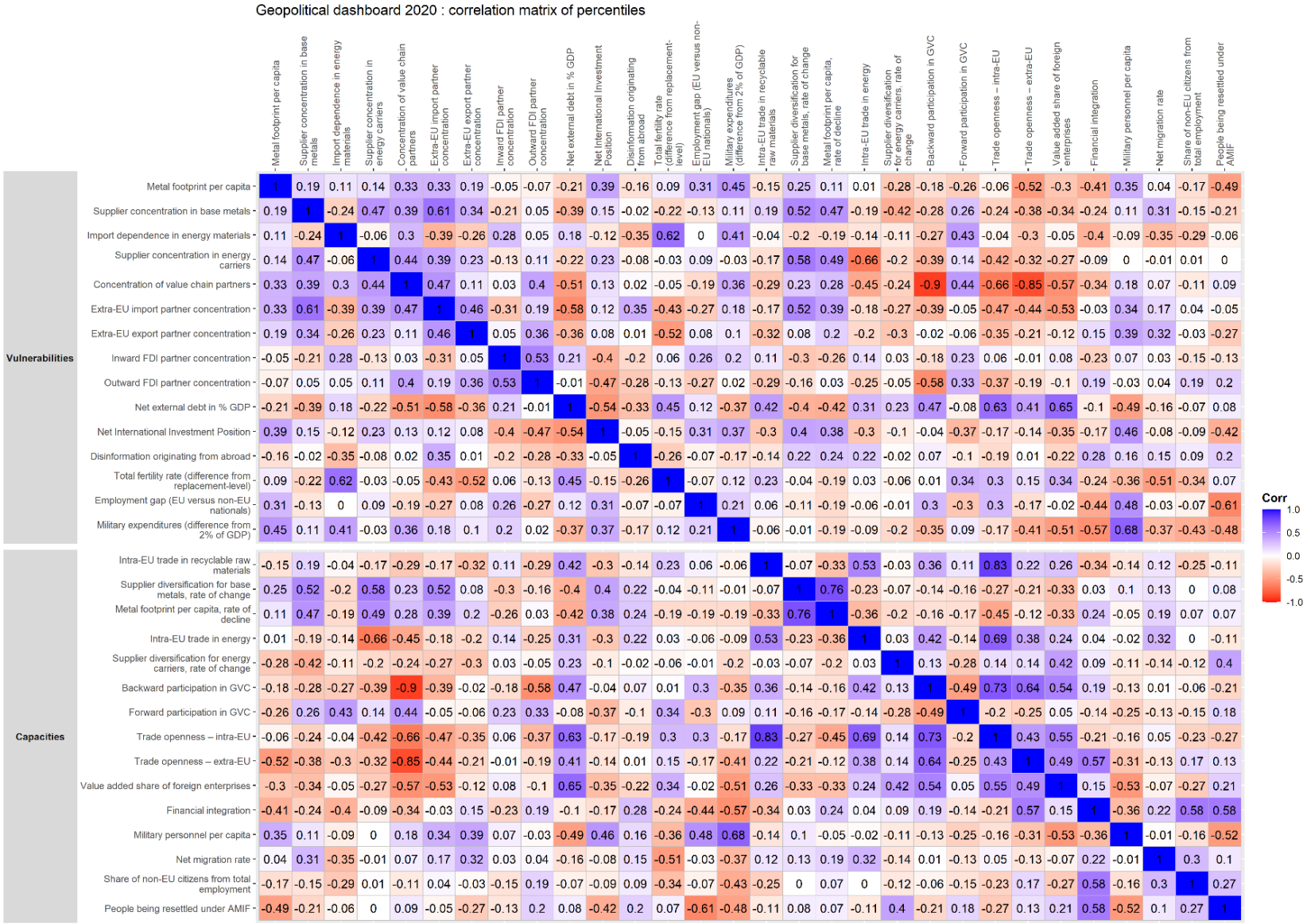

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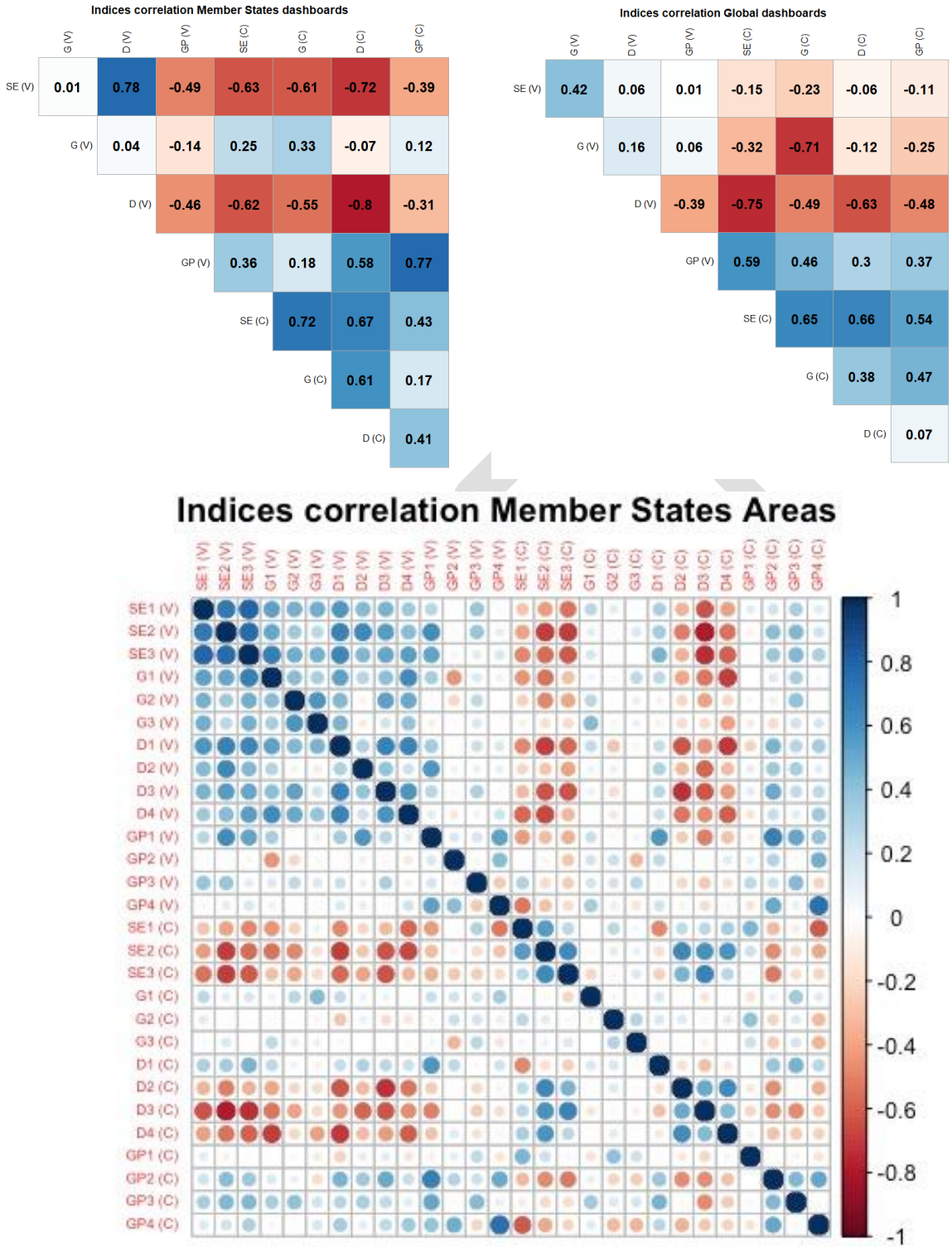

Pairwise correlation of the synthetic resilience indices by dimension for the Member State level dashboards (top left) and for the global dashboards (top right). The bottom panel shows the pairwise correlation of the synthetic indices by area and dimension, for the Member State level dashboards. SE, G, D and GP denote the four dimensions: social and economic, green, digital, and geopolitical, V and C stands for vulnerabilities and capacities, respectively. In the bottom panel, the areas in the four dimensions are numbered, e.g. SE1(V) denotes the synthetic vulnerabilities index for the first area of the social and economic dimension. See Figure 3 in the main report for the areas.

ANNEX V: DETAILS ON THE INDICATORS IN THE MEMBER STATE LEVEL ANALYSIS

Table A1: List of indicators included in the draft **social and economic dashboard** at MEMBER STATE level, with detailed definition and motivation for inclusion in the dashboard. In the *Rationale* of each indicator, we identify and point to the most relevant megatrend, for which measurement of the given indicator can provide an added value and insight. In some cases, additional megatrends are flagged, in brackets.

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. Megatrend: diversifying inequalities.	Share of the population who are at risk of poverty after social transfers, severely materially deprived or living in households with very low work intensity.	Eurostat: t2020_50	2020 (AT, BG, DK, EE, FI, HU, NL, RO), 2019
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: diversifying 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	2020 (AT, BG, DK, EE, FI, HU, NL, RO), 2019
Employment in energy-intensive sectors	SE_v043	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: 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).[34]	Eurostat: lfsa_egan22d	2020, 2019 (EL), 2018 (CY, IE, MT)N.A. (LV)

[34] This particular choice is in line with chapter 5 of the 2019 Economic and Social Developments in Europe Review: 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
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	2020
Regional dispersion in household income	SE_v05	This indicator monitors the dispersion of household income between regions of a country. While the EU as a whole will undergo the transitions, it is paramount to involve all regions in this process and leave no one behind. Megatrend: diversifying inequalities.	Dispersion measure, which takes into account the difference between the maximum and minimum regional value of household income in the same country.	Eurostat: nama_10r_2hhinc	2019 (DK, SI), 2018, N.A. (CY, EE, 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: diversifying inequalities.	Relative reduction in the share of people at risk of poverty rate due to social transfers (excluding pensions).	Eurostat: tespm050	2020 (AT, BG, DK, EE, FI, HU, NL, RO), 2019
Household net 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 period. Megatrend: diversifying inequalities.	Financial net worth of the balance sheets of households and non-profit institutions serving households (% of GDP).	Eurostat: tec00131	2020 (DE, DK, FI, IT, PT, SE, SK, EU27) 2019, 2018 (LU)N.A. (BG, MT, RO)
Government social expenditures on education, health, social protection and long-term care as % of GDP	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: diversifying inequalities.	Government social expenditures on education, health, social protection and long-term care as % of GDP.	Eurostat: gov_10a_exp	2019

Variable	Label	Rationale	Definition	Source	Latest available year
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: diversifying 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.	EQLS, Eurofound	2016
Social and economic dimension: Health, education and work VULNERABILITIES					
Antimicrobial resistance	SE_v06	Anti-microbial resistance (AMR) is the ability of microbes to develop resistance to existing medicines like antibiotics. It is the "silent pandemic" that is recognised as a global health security threat that can potentially be more devastating than COVID-19. 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.	Data retrieved from model-based estimation published in https://www.thelancet.com/action/showPdf?pii=S1473-3099%2818%2930605-4.	ECDC	2015
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: diversifying inequalities.	The share of the population aged 16 and over, reporting self-assessed unmet needs for medical care due to one of the following reasons: 'Financial reasons'.	Eurostat: hlth_silc_08	2020 (AT, BG, DK, EE, FI, HU, NL, RO), 2019
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.	Years of life lost per 100,000 inhabitants.	European Environmental Agency	2018
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 scarce equality of opportunity within the country. An inclusive and resilient country is where the education system mitigates obstacles due to socio-economic status. Megatrend: diversifying inequalities.	Gap in education achievement measured by the PISA index between the top and bottom quartile, by socio-economic status of students	OECD: PISA	2018

Variable	Label	Rationale	Definition	Source	Latest available year
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. The indicator provides a proxy of the need to update the education system to the job market 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.	Labour Force Survey[35]	2020, 2019 (DE)
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 to suboptimal use of resources which in times of crises determines an obstacle to a prompt and effective country's bounce forward. Megatrend: diversifying inequalities.	Difference between the employment rate of men and women of working age 20-64.	Eurostat: sdg_05_30	2020
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 adjustment of the labour market, especially at a time of the green and digital transition. Megatrend: diversifying inequalities.	Young people neither in employment nor in education and training (% of the population aged 15 to 29).	Eurostat: sdg_08_20	2020
Long-term unemployment rate	SE_v13	Long-term unemployment depletes human capital and makes the return to employment more difficult. Human capital is lost and the worker is not productive anymore, often permanently. Social consequences arise. Megatrend: diversifying inequalities (changing nature of work).	The long-term unemployment rate is the number of persons unemployed for 12 months or longer as a percentage of the labour force (i.e. economically active population).	Eurostat: une_ltu_a	2020

[35] DG ECFIN and DG EMPL calculations. The methodology is adopted from 'Analytical web note 7/2015, Measuring skills mismatch', available at https://ec.europa.eu/social/BlobServlet?docId=14974&langId=en

Variable	Label	Rationale	Definition	Source	Latest available year
Social and economic dimension: Health, education and work CAPACITIES					
Standardised preventable and treatable mortality (low rate)	SE_c05	This indicator shows the ability of the national health system to provide the necessary health treatment via prevention as well as timely healthcare intervention 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 standardised death rates, 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	2018, 2016 (FR, EU27)
Healthy life years in absolute value at birth	SE_c06	It is an indication of overall good health, environmental and social conditions which result in longer healthy life expectancy. Megatrend: diversifying inequalities, (shifting health challenges).	Healthy life years is defined as the number of years that a person is expected to continue 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	2019
Children aged less than 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: diversifying inequalities.	This indicator shows the percentage of children (under 3 years old) cared for by formal arrangements other than by the family. The indicator is based on the EU-SILC.	Eurostat: tepsr_sp210	2020 (AT, BG, DK, EE, FI, HU, NL, RO), 2019
Average scores in the PISA test, reading, mathematics and science	SE_c08	Better reading, mathematics and science skills are key to measure the quality of education. This indicator 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 indicators are then aggregated at the country level.	OECD: PISA	2018, 2015 (ES, EU27)

Variable	Label	Rationale	Definition	Source	Latest available year
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.	Total participation rate in education and training (excluding guided-on-the-job training) of adults who stated they received formal and non-formal training in the last 12 months preceding the survey. The source of this indicator will be EU Labour force survey from 2022.	Adult Education Survey[36]	2016
Employment rate	SE_c10	Being employed makes individuals economically independent and more empowered. People at work also maintain their skills and qualifications. Megatrend: diversifying inequalities (changing nature of work).	Share of population aged 20 to 64 which is employed.	Eurostat: lfsi_emp_a	2020
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. ALMP covers interventions that provide temporary support for groups that are disadvantaged in the labour market and aims at activating the unemployed, helping people move from involuntary inactivity into employment, or maintaining the jobs of persons threatened by unemployment. It enables labour market resilience by sustaining and stimulating work creation. Megatrend: diversifying inequalities.	Expenditures on active labour market policies per person wanting to work. Government expenditures on active labour market policies 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.	DG EMPL	2018
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.	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). The general government sector comprises the subsectors of central government, state government, local government, and social security funds.	Eurostat: sdg_17_40	2020

[36] Eurostat ad hoc extraction. 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. From 2022, 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
Projected old-age dependency ratio	SE_v15	The higher is this ratio, the lower is the expected sustainability in the intergenerational change regarding the demographic aspects 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 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. 2019 data reports estimates of 2050.	Eurostat: TPS00200	2019
Degree of specialization of the economy	SE_v16	Since the theory of Optimum Currency Areas, and even recently after the last crisis, it has been 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. Ideally, as low as possible, as highly diversified economies are more resilient. .	Eurostat: nama_10_a64	2020 (IT, MT, SK), 2019, 2018 (BE, CY, DE, ES, FR, HR, LT, LV, PL, PT),2017(SE, EU27)
Non-financial corporation funding structure	SE_v17	The indicator provides the average leverage of non-financial corporations (NFCs) in each Member State (the share of debt on total liabilities). It is an indicator of the ability to access additional borrowing for liquidity or investment needs. When leverage is low, NFCs have a high capacity to raise additional funds (via loans or capital markets) and to obtain better funding conditions in general.	Ratio of equity to total outstanding liabilities of non-financial corporations.	Eurostat: nasa_10_f_bs	2020 (BE, EL, ES, FI, HU, PL, PT, RO, SE, SI, SK), 2019

Variable	Label	Rationale	Definition	Source	Latest available year
Social and economic dimension: Economic and financial stability and sustainability CAPACITIES					
Automatic stabilisation of the tax-benefit system	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.	It is the share of a shock in market income (before taxes and transfers) which is transmitted into disposable income (after taxes and transfers) in a country.	JRC calcula-tion[37]	2019
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	European Central Bank	2020, 2018 (LT, LV, EU27), 2017 (EE, FI)
Insurance sector solvency capital ratio	SE_c14	The solvency ratio provides an indicator of how much resources (capital and subordinated liabilities) 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.	Own funds/Solvency Capital Requirements Indicator	European Insurance and Occupa-tional Pensions Authority	2019
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 in case of distress. Megatrend: accelerating technological change and hyperconnectivity.	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.	Eurostat: inn_cis11 _inact	2018

[37] Using the Euromod simulation model. Based on 'Impact of fiscal policy on income distribution', in 'Report on Public Finances in EMU 2017', European Economy Institutional Paper 069, 2018, pp. 71-131: https://ec.europa.eu/info/sites/default/files/economy-finance/ip069_en.pdf

Variable	Label	Rationale	Definition	Source	Latest available year
Intangible investment	SE_c16	Intangible assets are at the heart of what makes firms competitive. They are vital for productivity, economic growth, innovation and transformations. Megatrend accelerating technological change and hyper connectivity.	The stock of intangible capital at currents prices over GDP. Intangibles include computer software and database, cultivated assets, research and development, and other innovative properties assets.	EU KLEMS, [38]	2017, 2016 (EE, ES, IE, LV, PT, RO, SE), 2015 (PL,EU27), N.A.(BE, 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: SDG_08_11	2020 (DE, DK, FI, IT, PT, SE, SK, EU27), 2019, 2018 (LT, MT), 2017 (BG)

[38] https://euklems.eu/download/. Growth and productivity accounts. This indicator has been computed as 'Capital in computer software and database, cultivated assets, research and development and other innovative properties assets', over GDP.

Table A2: List of indicators included in the **green dashboard** at Member State level, with detailed definition and motivation for inclusion in the dashboard. In the *Rationale* of each indicator, we identify and point to the most relevant megatrend, for which measurement of the given indicator can provide an added value and insight. In some cases, additional megatrends are flagged, in brackets.

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 period 1980-2019, per 1 million population.	European Environment Agency: CSI042/ CLIM039	2019
GHG emissions per capita	G_v02	Greenhouse gas emission is a major driver of climate change. Countries with higher GHG emissions may need to devote more efforts to achieve climate neutrality. As part of the European Green Deal, the Commission proposed to raise the 2030 target, to at least 55% decrease in GHG emissions with respect to 1990. Megatrend: climate change and environmental degradation.	Total national emissions of greenhouse gases in million 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: t2020_rd300	2019
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 for its shift towards sustainable mobility. Megatrend: climate change and environmental degradation.	Per capita CO2 emissions of road transport.	Eurostat: env_air_gge	2019
Fossil fuel subsidies	G_v04	Fossil fuel subsidies may encourage an excessive use of fossil fuels and reduce the incentive to use other forms of cleaner energy. They can thus represent an obstacle to boosting the green transition. Megatrend: climate change and environmental degradation.	Total post-tax consumer subsidies expressed as a % of GDP, that allow the consumer prices for energy to be below supply costs plus the efficient levels of taxation.	International Monetary Fund[39]	2017

[39] https://www.imf.org/en/Topics/climate-change/energy-subsidies

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 of weather or climate-related extreme events over the period 1980-2017, expressed as a percentage of total losses.	European Environment Agency: CSI042/ CLIM039	2019
CO2 absorption by forests	G_c02	Forest 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 the forests, rescaled to the total land cover.	Eurostat: env_air_gge and lan_lcv_ovw	2019, N.A. (MT)
Electric and hydrogen passenger fleet	G_c03	Low-emission alternative energy can support the decarbonisation of transport. Monitoring the BEV and H2 vehicle market share can provide a forward-looking metric for the state of decarbonisation of road transport across the EU. Megatrend: accelerating technological change and hyperconnectivity.	Percentage of battery electric (BEV) and hydrogen (H2) vehicles of the total fleet of passenger cars.	European Alternative Fuels Observatory[40]	2020
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	2018

[40] https://www.eafo.eu/vehicles-and-fleet/overview

Variable	Label	Rationale	Definition	Source	Latest available year
Renewable energy in final energy consumption	G_c05	High renewable share implies less use of fossil-based energy sources, hence contributing to the goal of climate neutrality. 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 according to the Renewable Energy Directive. The gross final energy consumption is the energy used by end-consumers (final energy consumption) plus grid losses and self-consumption of power plants.	Eurostat: t2020_rd330	2019
Environ-mental technology patents per capita	G_c06	Innovation in environment-related technologies 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 technologies patents applications per capita. The types of technologies are: climate change mitigation technologies related to buildings, energy generation, transmission or distribution; capture storage sequestration or disposal of GHG, environmental management, climate change mitigation technologies related to transport, water-related adaptation technologies, climate change mitigation technologies in the production or processing of goods, wastewater treatment or waste management.	OECD: PAT_IND[41], over population.	2018
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 is estimated as the ratio of water use versus the consumption of renewable freshwater from renewable resources for a given spatial unit, e.g. river basin or country level, in a defined time period i.e. seasonal (quarter) or annual. Water scarcity is driven by (i) water demand, which is largely affected by population trends and (ii) socio-economic developments, and climate conditions, which control the availability of renewable freshwater resources and the seasonality of water supply.	Eurostat: sdg_06_60	2017, 2015 (EE)

[41] https://stats.oecd.org/index.aspx?queryid=29068#

Variable	Label	Rationale	Definition	Source	Latest available year
Domestic footprint	G_v06	High domestic 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. Megatrend: climate change and environmental degradation.	The Domestic Footprint quantifies the overall environmental impacts of production and consumption activities taking place within the boundary of each Member State (e.g. direct impacts). The use of resources and the emissions are translated into 16 environmental impacts (such as climate change, Eco toxicity, water scarcity etc.), and then aggregated into the environmental footprint single score. In future, we expect to have consumption footprint, which includes the domestic production in the EU and the trade with other world regions.	JRC[42]	2018
Domestic material consumption per capita	G_v07	The indicator provides an assessment of the absolute level of the use of resources. High domestic material consumption implies higher environmental degradation resulting from primary production, material processing, manufacturing and waste. Megatrend: aggravating resource scarcity.	Total amount of material directly used in an economy and equals direct material input (DMI) minus exports. DMI measures the direct input of materials for the use in the economy and equals domestic extraction (DE) plus imports. For the 'per capita' calculation of the indicator the average population is used (the arithmetic mean of the population on 1st January of two consecutive years). The indicator is a smoothed 3-year average. In future it might be substituted by a total material footprint indicator of Eurostat, which contains both direct and indirect use of materials.	Eurostat: t2020_rl110	2019
Waste generation rate	G_v08	Too much waste produced is a vulnerability for achieving sustainable use of resources. Waste also endangers and pollutes the environment. Megatrend: climate change and environmental degradation.	Waste volume divided by domestic material consumption.	Eurostat: env_wasgen, env_ac_mfa	2018

[42] https://eplca.jrc.ec.europa.eu/uploads/Science_for_policy_report_final_on_line.pdf

Variable	Label	Rationale	Definition	Source	Latest available year
Energy use in ICT	G_v09	Increased energy demand due to digitalization may be the cause of "disruptive" changes within the energy sector. Although digitization 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, NACE C25 Manufacture of computer, electronic and optical products and NACE C26 Manufacture of electrical equipment divided by all NACE industries.	Eurostat: env_ac_pefa04	2019 (LV), 2018
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.	Total amount of materials directly used by an economy, measured as domestic material consumption in relation to GDP.	Eurostat: t2020_rl100	2019
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.	The indicator results from the division of the GDP by the gross available energy for a given calendar year.	Eurostat: t2020_rd310	2019
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.	Share of material resources used which came from recycled products and recovered materials, thus saving extractions of primary raw materials. The circularity rate is part of the EU monitoring framework on the circular economy and it measures the contribution of recycled material to the overall material used.	Eurostat: cei_srm030	2019

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. The 'reuse and recycling rate' is calculated by dividing the weight of the WEEE that enters the recycling/preparing for re-use facility by the weight of all separately collected WEEE (both in mass unit) in accordance with Article 11(2) of the WEEE Directive 2012/19/EU, considering that the total amount of collected WEEE is sent to treatment/recycling facilities.	Eurostat: t2020_rt130	2018, 2017 (CY, MT, PT), 2016 (RO), 2015 (IT)
Gross Value Added in Environmental goods and services sector	G_c11	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 EGSS at factor cost, as a percentage of GDP. The sectors are defined as the total for those that generate environmental products, i.e. goods and services produced for environmental protection or resource management.	Eurostat: env_ac_egss2 and nama_10_a64	2019 (ES, HR, NL), 2018, N.A. (CY, EL, HU, SK)
Green dimension: Ecosystems, biodiversity and sustainable agriculture VULNERABILITIES					
Farmland bird index	G_v10	A decrease in the index means that the balance of bird species population trend is negative, representing biodiversity loss and signalling environmental stress. 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. Megatrend: climate change and environmental degradation.	Farmland birds index is an average population trend in a group of species suited to track trends in the condition of farmland habitats. 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. Its sign is reversed in the dashboard so that a high value indicates high vulnerability.	Eurostat: env_bio2	2020 (FI), 2019, 2018 (FR, LU, NL, SK), 2017 (CY, ES, IT, PL), 2016 (DE, EL, IE), N.A. (BG, HR, MT, PT, RO, EU27)

Variable	Label	Rationale	Definition	Source	Latest available year
Harmonized 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.	Harmonised Risk Indicator 1 (HRI1) is based on data on pesticide sales reported to the Commission by Member States. HRI 1 is calculated by multiplying the quantities of active substances placed on the market in plant protection products by a weighting factor. It tracks the progress of the Member State with respect to their own reference period (2011-2013 mean).	Eurostat: aei_hri	2018
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 in 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). 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.	It 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 often exposed to perturbations, 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: diversifying 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[43]	2018

[43] https://agridata.ec.europa.eu/extensions/DashboardIndicators/DataExplorer.html?select=EU27_FLAG,1

Variable	Label	Rationale	Definition	Source	Latest available year
Green dimension: Ecosystems, biodiversity and sustainable agriculture CAPACITIES					
Soil carbon content	G_c12	Soil carbon content is essential to improving fertility, increasing use efficiency of nutrients and water, minimizing vulnerability to extreme climatic events, decreasing 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 [44]	2020
Organic farming	G_c13	Organic farming can represent an important shift in farming activity and can act as an important capacity element 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	2019
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 waste water treatment systems with at least secondary treatment. Thereby, wastewater from urban sources or elsewhere is treated by a process generally involving biological treatment with a secondary settlement or other processes, resulting in a removal of organic material that reduces the biochemical oxygen demand by at least 70 % and the chemical oxygen demand by at least 75 %.	Eurostat: sdg_06_20	2018, 2017 (BE, EE, IE, LU, PT, SE), 2016 (DE, EL, ES), 2015 (IT), 2012 (EU27), N.A. (CY)
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 area (terrestrial and marine) under Natura 2000, expressed as a percentage of mainland national territory. Note that there may be additional protected areas at the national level, but these are not covered.	Eurostat: env_bio1	2019

[44] https://esdac.jrc.ec.europa.eu/content/topsoil-soil-organic-carbon-lucas-eu25

Variable	Label	Rationale	Definition	Source	Latest available year
National expenditure 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	2020 (EU27), 2019 (ES), 2018

Table A3: List of indicators included in the draft **digital dashboard** at Member State level, with detailed definition and motivation for inclusion of the indicator in the dashboard. In the *Rationale* of each indicator, we identify and point to the most relevant megatrend, for which measurement of the given indicator can provide an added value and insight. In some cases, additional megatrends are flagged, in brackets.

Variable	Label	Rationale	Full 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).	Eurostat:isoc_ske_ittn3	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.	Employed who do not work - usually or sometimes - from home as a percentage of total employment.	Eurostat:lfsa_ehomp	2020
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 is used as a proxy for teachers' self-perceived ICT inadequacy.	OECD: TALIS	2018, N.A. (CY, DE, EL, IE, LU, PL, EU27)
Digital dimension: Digital for personal space CAPACITIES					
Collaborative economy	D_c01	Points to a new economy based on shared information through internet platforms. Megatrend: changing nature of work.	Percentage of individuals using any website or app to arrange accommodation or transport services.	Eurostat:isoc_ci_ce_i	2019
Digital competence of adults	D_c02	Proxy of digital skills of adults that represent a fundamental resource to facilitate their inclusion in the digital age. Megatrend: diversification of education and learning.	Percentage of individuals who have higher than basic overall digital skills (Y25-64).	Eurostat:isoc_sk_dskl_i	2019
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 individuals who have above basic overall digital skills (Y16-19).	Eurostat:isoc_sk_dskl_i	2019
Use of online courses	D_c04	Online courses are, here, used as proxy for new life-long learning tools in the on-life 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).	DESI Index: desi_3b6_courseon	Sub-index of DESI 2020 referring to 2019

Variable	Label	Rationale	Full definition	Source	Latest available year
Use of social networks	D_c05	Use of social network plays a central role in the on-life future generation behaviour. Megatrend: increasing influence of new governing systems.	Percentage of individuals who have used internet, in the last 3 months, for participating in social networks (creating user profile, posting messages or other contributions to Facebook, Twitter, etc.).	DESI Index: desi_3b5_socnet	Sub-index of DESI 2020 referring to 2019
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	2020, 2019 (FR, IE, IT)
University degree in advanced digital technologies	D_c07	Provides the (intensity of the) potential future workforce trained in advanced technologies to push their development. Megatrend: diversification of education and learning.	Available places in masters and bachelor studies in Advance Digital Technologies (artificial intelligence, high-performance computing, cybersecurity, data science) as % of total places.	PREDICT CORE	2019
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/exports include computers and peripheral equipment, communication equipment, consumer electronic equipment, electronic components, and other information and technology goods (miscellaneous). ICT goods imports as % of total goods imports *total goods import - ICT goods exports as % of total goods exports*total goods export, 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	2019

Variable	Label	Rationale	Full definition	Source	Latest available year
ICT trade deficit in services	D_v05	A negative trade balance in ICT services points to the domestic difficulty to provides 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/export 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. ICT services imports as % of commercial service imports*Commercial service imports - ICT services exports as % of commercial service exports*Commercial service exports, divided by GDP.	World Bank: TM.VAL.SERV.CD.WT, TM.VAL.OTHR.ZS.WT, TX.VAL.SERV.CD.WT, TX.VAL.OTHR.ZS.WT, NY.GDP.MKTP.CD	2019
ICT specialist gender gap	D_v06	Gender gap perpetuates the loss of talent and loss of potential growth. 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.	Eurostat:isoc_sks_itsps	2020
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 not buying cloud computing services used over the internet (10 persons employed or more).	Eurostat:isoc_cicce_use	2020
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) with broadband access.	Eurostat:isoc_bde15b_e	2017
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 Member State's maturity and preparedness for the transition. Megatrend: changing nature of work.	Investment per person employed - thousands euro in High-technology manufacturing sector (defined as NACE categories C21, C26, C30.3).	Eurostat:sbs_na_sca_r2	2018, 2017 (FI, MT, NL, EU27), 2016 (DK, SK), 2014 (SE), N.A. (CY, IE, LU)

Variable	Label	Rationale	Full definition	Source	Latest available year
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 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.	The value of production is measured using the Value Added concept and expressed as the weight of the ICT sector in Total Value Added.	Eurostat:isoc_bde15ag	2018, 2013 (NL), N.A. (CY, IE, LU, PT)
ICT sector R&D intensity	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) expenditure as a share of total BERD.	PREDICT CORE	2017
Value of e-commerce sales	D_c12	Proxy of countries' readiness in digital consumers habits in terms of size of ICT. Megatrend: changing nature of work.	Percentage of enterprises' total turnover from e-commerce sales (10 persons employed or more).	Eurostat:isoc_ec_evaln2	2020, 2019 (FI)
Digital dimension: Digital for public space VULNERABILITIES					
Lack of 5G readiness	D_v09	Low 5G readiness levels will limit households, public services and enterprises in catching up with the latest mobile technologies. Megatrend: accelerating technological change and hyperconnectivity.	Amount of spectrum not assigned or not ready for 5G use by the end of 2020 within the so-called 5G pioneer bands.	DESI Index: desi_1c3_5g	Sub-index of DESI 2020 referring to 2019
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 for conducting regular business operations that are not available online for domestics as well as for foreign users. Services which provide only information (but have to be completed offline) receive a high score, services provided through a portal receive a lower score.	Digital Economy and Society Index: desi_5a4_psb	Sub-index of DESI 2020 referring to 2019
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.	People who have not sent filled forms to public authorities, over the internet, previous 12 months.	Digital Economy and Society Index: desi_5a1_egovu	Sub-index of DESI 2020 referring to 2019

Variable	Label	Rationale	Full definition	Source	Latest available year
Broadband access gap, urban versus rural	D_v12	The urban-rural gap might obstacle 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	2020, 2019 (FR, IT)
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 of new digital health platform. 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, IT)
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 uses data from the Justice Scoreboard and 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.	Justice Score-board 2021	2020
Digital dimension: Cybersecurity VULNERABILITIES					
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.	In the last three years, how often have you personally experienced or been a victim of each of the following situations? Average share of those who have been victim 'At least once' of: 1. Cyberattacks which prevent you from accessing online services like banking or public services; 2. Identity theft (somebody stealing your personal data and impersonating you); 3. Your social network or email account being hacked; 4. Being a victim of bank card or online banking fraud; 5. Being asked for payment in return for getting back control of your device.	Eurobarometer: EBS499 (QC9), EBS464 (QB12), EBS423 (QB8), EBS404 (QC9), EBS390 (QE10)	2019

Variable	Label	Rationale	Full definition	Source	Latest available year
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					
Cyber-security awareness of individuals	D_c15	Well informed citizens are the first barrier against cyber threats. Megatrend: changing security paradigm.	How well informed do you feel about the risks of cybercrime? Total 'Well informed'.	Eurobarometer: EBS499 (QC7), EBS464 (QB10), EBS423 (QB1), EBS404 (QC8), EBS390 (QE9)	2019
Global Cyber-security Index	D_c16	Cybersecurity index tells about the overall ability of a Member State 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 application, 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.	International Telecommunication Union (ITU)	2018

Table A4: List of indicators included in the draft **geopolitical dashboard** at Member State level, with detailed definition and motivation for inclusion in the dashboard. In the *Rationale* of each indicator, we identify and point to the most relevant megatrend, for which measurement of the given indicator can provide an added value and insight. In some cases, additional megatrends are flagged, in brackets.

Variable	Label	Rationale	Full 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 (2018), category: metal ores; and Eurostat: demo_pjan.	2017
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 trade series DS-016894, HS2 and HS4 level[45].	2019, N.A. (EU27)

[45] 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.

Variable	Label	Rationale	Full definition	Source	Latest available year
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[46].	Eurostat: nrg_ind_id	2019
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.	Eurostat: nrg_bas_s, nrg_ti_xx, nrg_te_xx and nrg_cb_xx for oil, solid fossil fuels (sff) and gas	2019, N.A. (EU27)
Geopolitical dimension: Raw material and energy supply CAPACITIES					
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 recycled raw materials over GDP (current price).	Eurostat: env_wastrd and nama_10_gdp	2020
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 trade series DS-016894, HS2 and HS4 level. See suppler concentration for product categories.	2019, N.A. (EU27)

[46] 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.

Variable	Label	Rationale	Full definition	Source	Latest available year
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 (2018) and Eurostat: demo_pjan	2017
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 trade series DS-016894, HS2 level, and nama_10_gdp.	2019
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	2019, 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 Herfindahl index of each Member State's extra-EU import and export partners for imported and re-exported content. Exports are weighted by GDP of the exporting country. Re-exported exports are weighted by GDP of the re-exporting country.	OECD: TIVA_2018_C2 and SNA_TABLE1; TIVA_2018_C5 and SNA_TABLE1	2015, N.A. (EU27)
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 - Comext	2020
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 - Comext	2020

Variable	Label	Rationale	Full definition	Source	Latest available year
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 (P, C) in Global Value Chains 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.	OECD: TIVA_2018_C1	2015
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 GVCs (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.	OECD: TIVA_2018_C1	2015
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 share of that country's GDP (in %), considering EU partners only.	Eurostat: bop_c6_a and nama_10_gdp	2020, 2019 (LU), N.A. (MT)
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 share of that country's GDP (in %), considering non-EU partners only.	Eurostat: bop_c6_a and nama_10_gdp	2020, 2019 (LU), N.A. (MT

Variable	Label	Rationale	Full definition	Source	Latest available year
Geopolitical dimension: Financial globalisation VULNERABILITIES					
Inward FDI partner concentration	GP_v08	Concentration of incoming FDI to 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: FDI_CTRY_IND_SUMM	2019, 2018 (DE, HU), 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: FDI_CTRY_IND_SUMM	2019, N.A. (BG, CY, HR, MT, RO, EU27)
Net external debt in % GDP	GP_v10	Countries with high international indebtedness may face difficulties to smooth shocks by additional borrowing. They are also more sensitive to short-term swings in international capital market conditions. Megatrend: expanding influence of east and south.	External debt is the country's total current net debt that is owed to non-residents.	Eurostat: tipsii20	2020
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 variable is defined in a way that higher values indicate a higher vulnerability.	Eurostat: tipsii10.	2020
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[47]. Megatrend: expanding influence of east and south.	Share of value-added of foreign enterprises from the total business economy.	Eurostat: fats_g1a_08 and sbs_na_sca_r2	2018, 2017 (EL), 2014 (PT)

[47] 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%.

Variable	Label	Rationale	Full definition	Source	Latest available year
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.	The variable is the 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[48] and 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 database, variable v2smfordom_osp	2019
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 as the difference from 2.1, which represents the replacement rate, and the actual country fertility rate.	Eurostat: demo_frate	2019

[48] https://data.jrc.ec.europa.eu/dataset/807d5d4f-2d73-4f17-81db-7ba2171bab83

Variable	Label	Rationale	Full definition	Source	Latest available year
Employment gap (EU versus non-EU nationals)	GP_v14	The higher the gap in labour market participation between native and non-native (with a non-EU origin) 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 natives with respect to non-EU migrants (the employment rate natives minus the employment rate of non-EU migrants). The employment rate is defined as the share of the total working-age population who are employed.	Eurostat: lfsa_ergan	2020, 2019 (BG), 2018 (RO)
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, World Development Indicators: MS.MIL.XPND.GD.ZS	2019
Geopolitical dimension: Security and demography CAPACITIES					
Military personnel per capita	GP_c13	The number of military 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. Personnel numbers are normalised by population.	World Bank, World Development Indicators: MS.MIL.TOTL.P1, normalised by SP.POP.TOTL	2018
Net migration rate	GP_c14	Net migration rate shows the overall contribution of 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.	Eurostat: migr_imm3ctb, migr_emi3nxt, demo_pjan[49]	2019

[49] Since the EU27 (2020) aggregate is not (yet) 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	Full definition	Source	Latest available year
Share of non-EU citizens from total employment	GP_c15	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).	It is calculated as the share of employed non-EU citizens over total employment, in the age bracket 15-64.	Eurostat: lfsa_egan	2020, 2019 (BG), 2018 (RO)
People being resettled under AMIF	GP_c16	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.	This indicator measures the number of people that have been resettled through the fund as a share of the recipient country's population.	DG HOME as declared by the Member State under Asylum, Migration and Integration Fund (AMIF): Migration-resettlement. Population is from Eurostat, demo_pjan	2020, N.A. (DK[50])

[50] DK does not participate in AMIF. Data in Accounts 2020 include expenditures from October 16, 2019 until October 15, 2020. The data used is the cumulated number of people in 2015-2020.

ANNEX VI: DETAILS ON THE INDICATORS IN THE GLOBAL DASHBOARD

Table A5: List of indicators included in the **global dashboard**, divided by dimensions with detailed definition, source and the latest available year.

Variable	Label	Definition	Source	Latest available year
Social and economic dimension VULNERABILITIES				
Income quintile share ratio S80/S20	SE_G_v01	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).	World Bank	2019 (BR, ID, TR), 2018 (CH, MX, NO, RU, US), 2017 (CA, UK), 2016 (EU27, CN, KR), 2014 (AU), 2013 (JP), N.A. (IN)
Gender employment gap	SE_G_v02	Difference between the employment rate of men and women of working age 15 +.	World Bank	2019
Obesity rate of young children	SE_G_v03	Prevalence of obesity among children and adolescents within the age 5-9 years old, BMI > +2 standard deviations above the median	World Health Organization	2016
Projected old-age dependency ratio	SE_G_v04	Old-age dependency ratio is the ratio of population 65+ per population 15-64.	United Nations	2020, 2015 (EU27)
Government gross debt	SE_G_v05	Central government debt, total (% of GDP)	IMF - World Economic Outlook	2020
Social and economic dimension CAPACITIES				
Government expenditure on education, as % of GDP	SE_G_c01	General government expenditure on education (current, capital, and transfers) is expressed as a percentage of GDP. It includes expenditure funded by transfers from international sources to government.	World Bank	2017, 2016 (KR), 2015 (ID), 2014 (US), 2013 (IN), N.A. (CA, CN, TR)
Domestic general government health expenditure, as % of GDP	SE_G_c02	Public expenditure on health from domestic sources as a share of the economy as measured by GDP	World Bank	2018
Gross graduation ratio from first degree programmes (ISCED 6 and 7) in tertiary education	SE_G_c03	Number of female and male graduates from first degree programmes (at ISCED 6 and 7) expressed as a percentage of the population of the theoretical graduation age of the most common first degree programme.	World bank	2019 (CN, IN), 2018, 2017 (KR, MX, NO), 2014 (UK), 2012 (BR, US), N.A. (JP)
Life expectancy at birth	SE_G_c04	Life expectancy at birth is defined as how long, on average, a newborn can expect to live, if current death rates do not change.	OECD	2019 (EU27), 2018, 2017 (JP)
Employment rate	SE_G_c05	Employment to population ratio is the proportion of a country's population that is employed (age 15+)	World Bank	2020
Gross domestic expenditure on R&D (GERD)	SE_G_c06	Gross (total) domestic expenditure on scientific research and experimental development (R&D) expressed as a percentage of Gross Domestic Product (GDP).	UNESCO	2019 (CA), 2018, 2017 (AU, CH, TR)
Government investment to GDP ratio	SE_G_c07	It is defined as gross fixed capital formation (GFCF) of the government sector as a percentage of GDP.	OECD	2020 (EU27, CA, NO, UK), 2019, 2018 (BR, JP, RU), 2016 (CN), N.A. (IN)

Variable	Label	Definition	Source	Latest available year
Green dimension VULNERABILITIES				
GHG emissions per GDP	G_G_v01	Total GHG emissions are calculated as the sum of emissions of direct GHGs. The indicator does not include emissions and removals related to land use, land-use change and forestry. It is expressed as a ratio with respect to the GDP (Tonnes of carbon dioxide equivalents (mTCO2e) per billion current US dollars)	CAIT Climate data explorer	2018
CO2 emissions from transport per capita	G_G_v02	Total CO2 emission from fossil fuel combustion in the following activities: domestic aviation (commercial, private, agricultural, military, etc.), road, rail pipeline transport, domestic navigation and other non-specified transport. It is normalised by total population.	CAIT Climate data explorer	2018
Fossil fuel subsidies	G_G_v03	Total post-tax consumer subsidies expressed as a % of GDP, that allow the consumer prices for energy to be below supply costs plus the efficient levels of taxation.	International Monetary Fund[51]	2017
Water stress	G_G_v04	This indicator tracks how much freshwater is being withdrawn by all economic activities, compared to the total renewable freshwater resources available. It also takes into account environmental flow requirements.	UN SDG	2018, 2017 (EU27)
Domestic material consumption per capita	G_G_v05	DMC reports the amount of materials that are used in a national economy on the production side. It presents the amount of material that needs to be handled within an economy, which is either added to material stocks of buildings and transport infrastructure or used to fuel the economy as material throughput. Per-capita DMC describes the average level of material use in an economy as an environmental pressure indicator.	UN SDG	2017
Pesticide use	G_G_v06	Pesticides Use database includes data on the use of major pesticide groups (Insecticides, Herbicides, Fungicides, Plant growth regulators and Rodenticides) and of relevant chemical families. Data report the quantities (in tonnes of active ingredients) of pesticides used in or sold to the agricultural sector for crops and seeds. It is normalised by the country total cropland area.	FAOSTAT	2018
Green dimension CAPACITIES				
Renewable energy in final energy consumption	G_G_c01	Total renewable energy (inclusive of solar, wind, geothermal, hydropower, bioenergy and marine sources) as a share of final (not primary) energy consumption. Energy mix includes electricity, transportation and cooking/heating fuels.	UN SDG	2018

[51] https://www.imf.org/en/Topics/climate-change/energy-subsidies

Variable	Label	Definition	Source	Latest available year
Environmental technology patents per capita	G_G_c02	Number of environment-related technologies patent applications per capita. The types of technologies are: climate change mitigation technologies related to buildings, energy generation, transmission or distribution; capture storage sequestration or disposal of GHG, environmental management, climate change mitigation technologies related to transport, water-related adaptation technologies, climate change mitigation technologies in the production or processing of goods, wastewater treatment or waste management.	OECD: PAT_IND, over population.	2018
Resource productivity	G_G_c03	This indicator is an inverse of domestic material consumption per unit of GDP, aggregated over several available types of raw materials.	UN SDG	2017
Energy productivity	G_G_c04	Energy productivity is the inverse of the SDG 'Energy intensity'. It is defined as the energy supplied to the economy per unit value of economic output. Total energy supply, as defined by the International Recommendations for Energy Statistics, as made up of production plus net imports minus international marine and aviation bunkers plus-stock changes	UN SDG	2018
Share of recovered municipal waste	G_G_c05	Percentage of waste that is recuperated via recycling, composting or incineration with energy recuperation.	OECD	2019 (CH, EU27, NO, TR), 2018, 2017 (AU), 2012 (CN, MX), N.A. (BR, ID, IN, RU)
Protected key freshwater areas	G_G_c06	Proportion of important sites for freshwater biodiversity that are covered by protected areas shows temporal trends in the mean percentage of each important site for freshwater biodiversity (i.e., those that contribute significantly to the global persistence of biodiversity) that is covered by designated protected areas.	UN SDG	2019, 2018 (EU27)
Protected key terrestrial areas	G_G_c07	Proportion of important sites for terrestrial biodiversity that are covered by protected areas shows temporal trends in the mean percentage of each important site for terrestrial biodiversity (i.e., those that contribute significantly to the global persistence of biodiversity) that is covered by designated protected areas.	UN SDG	2019, 2018 (EU27)
Digital dimension VULNERABILITIES				
People not having access to digital public services	D_G_v01	Percentage of individuals who have not used the Internet for visiting or interacting with public authority web sites, previous 12 months (Y16-74). Inverse of normalised score of percentage of individuals using the Internet for visiting or interacting with public authority web sites in the last 12 months.	I-DESI 2020 (5a1)	2018,N.A. (ID, IN)
Low mobile cellular subscriptions	D_G_v02	Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service that provide access to the PSTN using cellular technology. (Inverted value per 100 people).	World Bank: WB IT.CEL.SETS.P2	2019

Variable	Label	Definition	Source	Latest available year
Broadband gap, regional	D_G_v03	Share of households with broadband access in the best connected regions minus share of households with broadband access in the lowest connected regions. Alternative to rural-urban broadband gap.	OECD: REGION_SOCIAL	2019,2018 (JP, KR, RU, US), 2017 (AU, CA), 2013 (BR, TR), N.A. (CN, ID, IN, MX)
Shortcoming of fixed broadband	D_G_v04	Fixed broadband subscriptions refer to fixed subscriptions to high-speed access to the public Internet (a TCP/IP connection), at downstream speeds equal to, or greater than, 256 kbit/s per 100 Persons. Shortcoming of fixed broadband is taken as 100 minus fixed broadband subscriptions. Alternative to Lack of cloud services from Member State dashboard.	World Bank: IT.NET.BBND.P2	2019
ICT trade deficit in goods	D_G_v05	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) (ICT goods imports (% of total goods imports)*total goods imports-ICT goods exports (% of total goods exports)*total goods exports)/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	2019
ICT trade deficit in services	D_G_v06	Computer, communications and other services imports/export include such activities as international telecommunications, and postal and courier services; computer data; news-related service transactions between residents and nonresidents; construction services; royalties and license fees; miscellaneous business, professional, and technical services; and personal, cultural, and recreational services. (ICT services imports (% of commercial service imports))*(Commercial service imports (current US$)) - ICT services exports (% of commercial service exports))*(Commercial service exports (current US$))/GDP.	World Bank: TM.VAL.SERV.CD.WT, TM.VAL.OTHR.ZS.WT, TX.VAL.SERV.CD.WT, TX.VAL.OTHR.ZS.WT, NY.GDP.MKTP.CD	2019
Digital dimension CAPACITIES				
Digital competence of adults	D_G_c01	Percentage of individuals who have above basic overall digital skills (Y16-74). Normalised score (min-max)	I-DESI 2020 (2a2)	2018, N.A. (ID, IN)
ICT graduates	D_G_c02	The number of tertiary graduates in ICT as a proportion of all graduates. Normalised score (min-max).	I-DESI 2020 (2b2)	2018, N.A. (ID, IN)
Use of social networks	D_G_c03	Percentage of all individuals using the internet for accessing social networking sites in the last three months (Y16-74). Normalised score (min-max).	I-DESI 2020 (3b2)	2018, N.A. (ID, IN)

Variable	Label	Definition	Source	Latest available year
Gross value added in ICT	D_G_c04	Calculated as the Value added of the ICT sector as a share of GDP. The ICT operational definition takes into account the standard distinction between manufacturing and services, but does not include the following sectors: Manufacture of magnetic and optical media (268) and ICT trade industries (465) ICT services industries are grouped in two sub-sectors: Telecommunication (61) and Computer and related activities (582, 62, 631, 951).	PREDICT CORE	2017, N.A. (ID, MX, TR)
Global Cybersecurity Index	D_G_c05	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 application, 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.	International Telecommunication Union (ITU)	2018,N.A. (ID)
Secure Internet servers	D_G_c06	The number of distinct, publicly-trusted TLS/SSL certificates found in the Netcraft Secure Server Survey per 1 million people. New capacity indicator to better cover the cybersecurity area.	World Bank: IT.NET.SECR.P6	2020
Geopolitical dimension VULNERABILITIES				
Import dependence in metals	GP_G_v01	Net imports (import-export) in metal ores divided by domestic material consumption. For the EU it includes only imports from non-EU sources.	UN-IRP. Global Material Flows Database (2018), category: metal ores	2017, N.A. (EU27)
Import dependence in energy materials	GP_G_v02	It is calculated from energy balances as net imports divided by gross available energy. For the EU it includes only imports from non-EU sources.	OECD World Energy	2019, 2018 (EU27 CN, ID, IN, RU)
Partner concentration in trade	GP_G_v03	Herfindahl index of the average of import and export partners. The EU as a whole is considered as a single trade partner. Only extra-EU trade partners are included for the EU.	UN Comtrade	2020, 2019 (AU, BR, ID, KR, NO, RU, TR)
Net International Investment Position	GP_G_v04	The net international investment position (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 variable is defined in a way that higher values indicate a higher vulnerability.	International Monetary Fund	2019
Disinformation originating from abroad	GP_G_v05	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 in the dashboard so that a high value indicates high vulnerability.	V-dem database, variable v2smfordom_osp	2019, N.A. (RU)

Variable	Label	Definition	Source	Latest available year
Total fertility rate (difference from replacement-level)	GP_G_v06	This indicator is calculated as the difference between 2.1, which represents the replacement rate, and the actual country fertility rate.	World Bank, World Development Indicators: SP.POP.TOTL	2019
Geopolitical dimension CAPACITIES				
Participation in GVC	GP_G_c01	Backward participation (P, C) in Global Value Chains 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. Forward participation in GVCs (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. Both backward and forward participation in GVC are calculated for total industry only. The final indicator is the average of backward and forward participation in GVC. Due to the data source, intra-EU value chains are also taken into account.	OECD: TIVA_2018_C1	2015
Trade openness	GP_G_c02	Trade openness is measured as the sum of a country's exports and imports of commodities, as a share of that country's GDP (in %). It considers the EU as a single entity.	UN Comtrade	2019
Financial integration	GP_G_c03	The variable is the sum of external assets and external liabilities, divided by GDP, for each country. The term external refers to all other countries, with the EU as a single entity. Cross-border asset holdings within the EU are thus excluded.	JRC-ECFIN Finflows database and Eurostat: nama_10_gdp.[52]	2019
Military personnel per capita	GP_G_c04	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. Personnel numbers are normalised by population.	World Bank, World Development Indicators: MS.MIL.TOTL.P1, normalised by SP.POP.TOTL	2018

[52] https://data.jrc.ec.europa.eu/dataset/807d5d4f-2d73-4f17-81db-7ba2171bab83

ANNEX VII: DETAILS ON THE INDICATORS IN THE GLOBAL AREAS OF THE GEOPOLITICAL DIMENSION

Table A6: List of indicators included in the **global areas of the geopolitical dimension**, divided by the three areas; with detailed definition, source and the latest available year. Stars (*) indicate that the EU value refers to the median value across Member States.

Variable	Label	Definition	Source	Year	EU value	EU Member State coverage
Area 5A: Dissemination of values and standards – values						
Human rights*	GP_5A_01	Number of international human rights instruments ratified by each country.	OHCHR- United Nations Human Rights office of the high commissioner	2011, 2021	Median of Member States	Full coverage
Gender inequality index*	GP_5A_02	A composite measure reflecting inequality in achievements between women and men in three dimensions: reproductive health, empowerment and the labour market. High values indicate high inequality; hence the colour coding is such that high values become dark orange, while lower values are yellow or blue.	UNDP	2005, 2019	Median of Member States	Full coverage
World press freedom index*	GP_5A_03	The Index ranks 180 countries and regions according to the level of freedom available to journalists. It is a snapshot of the media freedom situation based on an evaluation of pluralism, independence of the media, quality of legislative framework and safety of journalists in each country and region. High values indicate low freedom; hence the colour coding is such that high values become dark orange, while lower values are yellow or blue.	RFS- reporters without borders	2013, 2021	Median of Member States	Full coverage
Control of corruption*	GP_5A_04	Subindex of The Worldwide Governance Indicators (WGI): Control of Corruption. It reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.	World Bank	2005, 2019	Median of Member States	Full coverage
Voice and accountability*	GP_5A_05	Subindex of The Worldwide Governance Indicators (WGI): Voice and accountability. It reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.	World Bank	2005, 2019	Median of Member States	Full coverage
Civil society participation index*	GP_5A_06	Q16.4 (Civil society participation) of the Bertelsmann Transformation Index.	Bertelsmann Transformation Index	2006, 2020	Median of Member States	Based on: BG, CZ, EE, HR, HU, LT, LV, PL, RO, SI, SK
Importance of democracy*	GP_5A_07	Share of population that consider living in a democracy "very important" and "absolutely important".	World Value Survey	2020	Median of Member States	Based on: CY, DE, EL, RO

Variable	Label	Definition	Source	Year	EU value	EU Member State coverage
Area 5B: Dissemination of values and standards -- standards						
Labour standards: Social protection benefits*	GP_5B_01	Share of population covered by at least one social protection benefit (across both men and women).	ILO	2020	Median of Member States	missing: MT
Labour standards: Low pay rate*	GP_5B_02	Share of employees whose hourly earnings at all jobs were less than two-thirds of median hourly earnings. High values indicate a high share of employees with low earnings; hence the colour coding is such that high values become dark orange, while lower values are yellow or blue.	ILO	2018	Median of Member States	Based on: AT, CZ, DE, DK, EL, FI, HU, PL, PT, SK
Environmental standards: GHG emissions	GP_5B_03	GHG emissions (including LUCF) in MtCO2e. The colour coding is reverted, to indicate the highest emission values with dark orange, while lower values are yellow or blue.	CAIT Climate Data Explorer	2010, 2018	EU total	From source
Environmental standards: Water stress*	GP_5B_04	Level of water stress: freshwater withdrawal as a proportion of available freshwater resources (%) High levels of water stress are indicated with dark orange, while lower values are yellow or blue.	FAO	2005, 2018	Median of Member States	Full coverage
Environmental standards: Energy transition index*	GP_5B_05	Global index that tracks the performance of energy systems at the country level. It also incorporates macroeconomic, institutional, social, and geopolitical considerations that provide enabling conditions for an effective energy transition.	World Economic Forum	2012, 2021	Median of Member States	Full coverage
Product safety standards: product withdrawals	GP_5B_06	Number of mandatory and voluntary consumer product recalls for any product which were issued by a governmental body and were made publicly available.	OECD	2012, 2020	EU total calculated	Missing: LU, CY
Global Food Security Index*	GP_5B_07	Index of the overall food security environment, scores range between 0 and 100. The Global Food Security Index (GFSI) considers the issues of food affordability, availability, quality and safety, and natural resources and resilience across a set of 113 countries. The index is a dynamic quantitative and qualitative benchmarking model constructed from 59 unique indicators that measure the drivers of food security across both developing and developed countries.	The Global Food Security Index (overall score) - the Economist Intelligence Unit	2012, 2020	Median of Member States	Missing: CY, EE, HR, LT, LU, LV, MT, SI
Share of national imports from world imports	GP_5B_08	Share of imports from world imports (%)	Eurostat (EXT_LT_INTROLE)	2011, 2018	EU total	from source
Share of inward FDI from global FDI	GP_5B_09	Share of inward FDI from total global inward FDI flows (%)	OECD	2010, 2020	EU value	from source

Variable	Label	Definition	Source	Year	EU value	EU Member State coverage
FDI restrictiveness index*	GP_5B_10	The OECD's FDI restrictiveness index measures statutory restrictions on foreign direct investment in 22 economic sectors across 69 countries. High values of the index reflecting high restrictions have been colour coded with dark orange, while lower values are yellow or blue.	OECD	2020	Median of Member States	Missing: BG, CY, MT

Variable	Label	Definition	Source	Year	EU value	EU Member States coverage
Area 6A: International cooperation						
Development aid	GP_6A_01	Flows of development aid by donor country in millions of USD.	OECD	2011, 2019	calculated as EU total + European institutions	Missing: HR for 2011
Share of patents with foreign partners	GP_6A_02	Share of patents with foreign partners from all patents in the country.	OECD	2011, 2017	EU value	from source
FDI stock to Africa	GP_6A_03	Stocks in FDI in African countries by top 10 investors: EU (FR, NL, IT), US, UK, CN, SG, MUS, CH, SA. (in Billions of USD)	UNCTAD, 2021 Investment Report	2015, 2019	EU total calculated	Based on: FR, IT, NL
Trade with Africa	GP_6A_04	Imports of individual economies in thousands United States dollars from Africa.	UNCTAD	2011, 2019	EU total calculated	Full coverage
Lending to Africa: debt outstanding	GP_6A_05	Share of creditors' lending in total external debt stocks in African countries.	World Bank, total stock DT.DOD.DECT.CD	2010, 2019	EU total calculated	Missing: BG, EE, HR, IT, LV, RO, SI, SK
Area 6B: Soft power						
Diplomatic posts*	GP_6B_01	Combined number of staff at embassies, consulates, permanent missions and other representations. EU Member State data is missing for BG, CY, LT (only 2016), LV (only 2016), MT, RO. Numbers include also intra-EU diplomatic presence.	Lowy Diplomacy Index	2016, 2019	Median of Member States	Missing for 2016: BG, CY, HR, LT, LV, MT, RO; for 2019: BG, CY, HR, MT, RO
Trust in global institutions: UN*	GP_6B_02	Share of population with a very favourable or a somewhat favourable opinion of the UN. Based on BG, DE, ES, FR, IT, PL, SE, CZ, EL, HU, LT, NL, SK also for 2019.	Glocalities	2007, 2019	Median of Member States	Based on for 2007: BG, DE, ES, FR, IT, PL, SE; for 2019: BG, CZ, DE,

						EL, ES, FR, HU, IT, LT, NL, PL, SE, SK
Passport Index*	GP_6B_03	Ranking of passports by their mobility score (i.e. the number of possible visa-free cross-border movements). Rank one refers to the country with the best mobility score and hence the colour coding is such that the best ranked countries (low values) are dark blue while lower ranked countries (high values) are yellow or orange.	Global passport index	2015, 2021	Median of Member States	Full coverage
Nobel prize winners	GP_6B_04	Number of Nobel prize winners in physics, chemistry and medicine from 1901 until 2020.	Nobel Foundation	1901-2020	EU total calculated	
Olympic medals	GP_6B_05	Number of Olympic medals won in the Summer Olympic games 2016.	International Olympic Committee	2016	EU total calculated	
FIFA ranking	GP_6B_06	FIFA ranking (men) from May 2021. Rank one refers to the country with the best FIFA position and hence the colour coding is such that the best ranked countries (low values) are dark blue, while higher values (lower rank) are yellow or dark orange[53].	FIFA Coca Cola World Ranking	2021	Rank of 3rd best Member State	
International arrivals	GP_6B_07	Number of international arrivals.	World Bank (ST.INT.ARVL)	2019	EU value	From source
Museum visits	GP_6B_08	Number of museum visitors by country within the top 70 museums.	WIKIPEDIA	2019	EU total calculated	
World heritage sites	GP_6B_09	Number of world heritage sites per country.	UNESCO	2019	EU total calculated	
Net trade in cultural goods	GP_6B_10	International net trade (exports - imports) in cultural goods as a share of global GDP.	UNESCO and World Bank for GDP	2010, 2019	EU value calculated	Full coverage

[53] The UK value refer to the best UK country's rank.

Variable	Label	Definition	Source	Year	EU value	EU Member States coverage
Area 7A: Economic importance						
Stock market capitalization	GP_7A_01	Market capitalisation of listed companies in USD. For UK, data was proxied using capitalisation-weighted index, comprising around 1000 of more than 2,000 companies traded on the London Stock Exchange, aiming to represent at least 98% of the full capital value of all UK companies that qualify as eligible for inclusion.	World Bank WDI; and Datastream for UK	2010, 2018	EU value	From source
GDP in current USD (share from global)	GP_7A_02	Share of GDP from global, in current USD. The share for each country is obtained from the OECD's latest long-term projections (Economic Outlook 103, July 2018). The EU total is an extrapolated value based on available data for 22 countries. For 2000 and 2019, the extrapolation factor is the proportion between the EU22 Member States and the EU27 Member States from the corresponding World Bank WDI series. For 2040, the factor is obtained by extrapolating the 2000 and 2019 values, assuming the same change between 2019 and 2040 as the one observed between 2000 and 2019. The denominator, world total, is obtained using a similar correction between the available countries and the World Bank world total.	OECD Economic Outlook and World Bank WDI	2000, 2019, 2040	EU value calculated	Extrapolated based on: AT, BE, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, NL, PL, PT, SI, SK, SE
GDP in PPP (share from global)	GP_7A_03	Share of national GDP from global GDP in current PPP. The share for each country is obtained from the OECD's latest long-term projections (Economic Outlook 103, July 2018). See further details under variable GP_7A_02.	OECD Economic Outlook and World Bank WDI	2000, 2019, 2040	EU value calculated	Extrapolated based on: AT, BE, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, NL, PL, PT, SI, SK, SE
GDP per capita (in constant PPP)	GP_7A_04	GDP per capita in constant PPP, from the OECD's latest long-term projections (Economic Outlook 103, July 2018). For the EU, first the total constant PPP GDP and total population are obtained, similarly as for GP_7A_03 and GP_7A_04. For population, the correction factor was based on UN population data and projections.	OECD Economic Outlook, World Bank WDI and UN, Department of Economic and Social Affairs	2000, 2019, 2040	EU value calculated	Extrapolated based on: AT, BE, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, NL, PL, PT, SI, SK, SE

Trade: Exports (share from global)	GP_7A_05	Share of national exports from global exports.	Eurostat	2012, 2018	EU Total	From source
Share of outward FDI from global FDI	GP_7A_06	Share of outward FDI from total global outward FDI flows.	OECD	2010, 2020	EU value	From source
International role of currencies	GP_7A_07	Currency shares in foreign exchange reserves with disclosed currency composition (at current exchange rates).	ECB	2020	Euro area	
Import dependence in cereals	GP_7A_08	The cereal imports dependency ratio shows how much of the available domestic food supply of cereals has been imported and how much comes from the country's own production. It is defined as (cereal imports - cereal exports)/(cereal production + cereal imports - cereal exports). Negative values indicate that the country is a net exporter of cereals. Three year average. High values reflect high dependence and have been colour coded with dark orange, while lower values indicate lower dependence and are coloured yellow or blue.	FAO	2009, 2015	EU value calculated using Member State level imports, exports production data. Missing for 2009.	
Net food trade	GP_7A_09	Exports-imports in all food products as a percent of GDP. Food consists of: food and live animals; beverages and tobacco; animal and vegetable oils, fats and waxes; oilseeds and oleaginous fruit (SITC sections 0, 1, 4 and division 22), WTO aggregates.	WTO	2010	EU Total	Full coverage
Area 7B: Innovation						
Expenditures on R&D (share from global)	GP_7B_01	Expenditures on R&D as a share from global expenditures on R&D.	OECD	2010, 2019	EU value	From source
Share of patents from global patents	GP_7B_02	Number of national patent applications filed under the PCT (priority year) as a share from total global patent applications.	OECD	2010, 2017	EU value	From source
Number of researchers	GP_7B_03	Total number of researchers in FTEs.	OECD	2010, 2018	EU value	From source
Number of top 1000 universities	GP_7B_04	Number of universities among the 1000 top rated universities worldwide.	Center of world university rankings	2021	EU Total	
Foreign university students	GP_7B_05	Total number of tertiary students from abroad (inbound students) studying in a given country minus the number of students at the same level of education from that country studying abroad (outbound students), as a percentage of total tertiary enrolment.	UNESCO	2014, 2018	EU value calculated	for 2014: missing: EL, ES, LT, LU, NL; for 2018: full coverage

Area 7C: Demography						
Share of migrants	GP_7C_01	International migrant stock as % of population (intra EU migrants have been excluded for EU).	UN, Department of Economic and Social Affairs	2010, 2020	EU value calculated	Full coverage
Share of population in the world	GP_7C_02	Population shares from global, past, present and projections.	UN, Department of Economic and Social Affairs	2000, 2020, 2040	EU total calculated	Full coverage
Life expectancy*	GP_7C_03	Life expectancy at birth in number of years, fact and projections.	UN, Department of Economic and Social Affairs	2000-2005, 2015-2020, 2040-2045	Median of Member States	Full coverage
Area 7D: Space and hard power						
Expenditures on space programs (% of total)	GP_7D_01	Expenditure on space programs in current millions of USD.	OECD: The Space Economy in Figures (2019)	2019	Approximated from 2017 relative sizes	2019: FR, IT, DE; 2017: missing BG, CY, HR, LT, LV, MT, SK
Expenditures on space programs (% GDP)	GP_7D_02	Expenditure on space programs (as % of GDP).	OECD: The Space Economy in Figures (2019)	2019	Approximated from 2017 relative sizes	2019: FR, IT, DE; 2017: missing BG, CY, HR, LT, LV, MT, SK
Satellite launches	GP_7D_03	Number of successful satellite launches by country.	Center for Strategic and International Studies	1957-1990, 1991-2015, 2016-2021	EU total calculated	
Military expenditures	GP_7D_04	Military expenditures include all current and capital expenditures on armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities. Excluded are civil defense and current expenditures for previous military activities, such as for veterans' benefits, demobilization, conversion, and destruction of weapons. (in USD)	WB using SIPRI	2010, 2019	EU total	From source
Number of military personnel	GP_7D_05	Total number of armed forces personnel (in Thsds.).	WDI	2010, 2018	EU total	From source

Military personnel in international missions	GP_7D_06	Number of military personnel deployed to international missions.	CIA Factbook for 2020, NATO	2020	EU total calculated	Full coverage
Exports of weapons	GP_7D_07	Value of weapons exported. Weapons include aircrafts, air defence systems, anti-submarine warfare weapons, armoured vehicles, artillery, engines, missiles, sensors, satellites, and ships, expressed in millions of USD. SIPRI Trend Indicator Values (TIVs), 3 year averages.	SIPRI Arms Transfers Database	2009-2011, 2018-2020	EU total calculated	Full coverage