Analysis

Measuring sustainable development goals performance: How to monitor policy action in the 2030 Agenda implementation?

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ABSTRACT

Sustainable Development Goals (SDGs) and corresponding targets for 2030 have been adopted by world leaders at the historic UN summit in 2015. Rankings are often constructed in order to hold countries accountable to achieve these targets. This paper illustrates the sensitivity of rankings to the choice of indicators and methodological assumptions by comparing the three most prominent methods using the sample of EU28 countries. The results of our analysis suggest that a country’s relative position depends almost entirely on the chosen method and indicators.

1. Introduction

The measurement of sustainability has been a topic of fierce debate among researchers, policy makers and other stakeholders (Holden et al., 2014; Costanza et al., 2016). The Adoption of the 2030 Agenda and its Sustainable Development Goals (SDGs), targets and related indicators has further enriched this debate (Allen et al., 2018; Liu et al., 2018).

The 2030 Agenda has been adopted to achieve a better and sustainable future for all. It tries to manage the major challenges we face, recognizing that poverty eradication requires strategies that can work on economic growth by ensuring environmental protection and managing a series of social needs including health, education, and gender equality. Its 17 SDGs and related targets have been designed to be monitored through a set of global indicators adopted together with the 2030 Agenda.

On the one hand the UN Statistical Commission with the High Level Expert Group on SDGs indicators and the various repository agencies (such as UNEP, OECD, etc.) work with different stakeholders for the statistical coverage of the indicators organized around the TIER system, which classifies the UN official SDGs indicators on the basis of their level of methodological development and data coverage.

On the other hand, official statistical institutions, think tanks, and the scientific world contribute to a larger debate on the development of analytics tools for SDGs performance.

We present the state of the art by comparing the three most prominent methods to measure SDGs performance at country level: the Sustainable Development Goals Index developed by the Bertelsmann Stiftung and the Sustainable Development Solutions Network – SDSN (Lafortune et al., 2018; Sachs et al., 2018), the OECD’s Distance measure (OECD, 2017), and Progress measures based on Eurostat’s report (Eurostat, 2018). We compare and contrast these methods. Our results suggest a strong discrepancy in existing methods. Depending on the chosen indicators and methods applied, countries can receive substantially different relative evaluations. The final aim of this analysis is to highlight crucial weaknesses that should be addressed to provide a context-dependent analysis to measure country SDGs performance.

2. Setting the scene

In general terms, we define a performance tool on the basis of its ability to provide an overall assessment of developments in the subject at hand, in a way that can be easily interpreted and communicated to the intended target audience. In the present study, this is based on the evaluation of where countries stand in the different domains with respect to achieving the SDGs in 2030.

The choice of indicators and of their targets can be considered as two central points for the definition of a SDGs performance metric. A pivotal element is the identification of the targets, as many objectives laid down by the 17 SDGs (and their related 169 targets) are not defined in quantitative terms. However, a discussion on how to address the key requirements for selecting the most appropriate set of SDGs indicators is not the objective of our analysis. A SDGs indicator set preferably aligns as closely as possible with the targets put forward in the United Nations 2030 Agenda. The UN Statistical Commission is currently developing an indicator framework for monitoring and reporting the SDGs implementation process globally, acknowledging that different indicators might be appropriate in different contexts. Optimal use of statistical indicators to measure the SDGs is country

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context-dependent and, in general, there is a trade-off between breadth of coverage and comparability on the one hand and detail and availability of information on the other hand. Some member states have already developed their own set of indicators to assist them in monitoring progress made in their own national SDG implementation policy, typically in the context of activities related to the Voluntary National Reviews. At the same time, the various National Statistical Offices collaborate with the UN Statistical Commission, contributing to the SDG Progress annual report prepared by the General Secretary of the United Nations, which also allows for a comparison of the progress of the various countries at global level.

This paper focuses on the European Union (EU), which has a set of SDGs indicators at the level of the 17 Goals developed by Eurostat through a collaborative process, specifically for the EU context (Appendix A) and based on high quality data. It can be assumed that for the purpose of our analysis the Eurostat SDGs set of indicators are the most appropriate source of data, as they allow a detailed description of the situation in the EU and its Member States, in relation to the 17 SDGs. The set of indicators for EU member states balances comparability across countries with data quality and appropriate-ness. It should be highlighted that the Eurostat SDGs indicators set is an-chored to a high-level scoreboard of EU policies, headline indicators of the European 2020 strategy, and indicators included in the social scoreboard for the European Pillar of Social Rights. This choice sometimes made it very difficult to contextualize the indicators in the context of the UN Agenda 2030.

In our analysis we identified the target values available in the UN SDGs framework. Then, for those indicators with no reference in the SDGs framework we searched in other international agreements (such as the Biodiversity Convention for Goal 15) and EU policy documents (such as Europe 2020 or the EU Habitat Directive). Finally, we looked at the peer reviewed and grey literature (such as OECD reports and working Papers). We identified targets for 85 out of 145 Eurostat SDGs indicators.\(^1\)

3. Measuring SDG performance

This section reviews three common methods to measure SDGs performance. The range of methods presented here is not comprehensive as our objective is not to review all the existing approaches, yet we aim to highlight crucial weaknesses and identify the main methodological challenges that should be addressed when answering the call for analytical tools to evaluate SDGs performance.

3.1.1. Simple mean

A straightforward approach to constructing a measure of SDG performance is to calculate the mean over all indicators at goal level. As such, all indicators are given an equal weight and the equality of weights applies to all countries – i.e. countries are not allowed to set priorities by weight certain indicators more than others. Before calculating the mean, indicators need to be rescaled in order to account for different unit measures. For example, the average of the employment rate (in percentages, between 0 and 100) and the GDP per capita (in $) will be skewed towards the latter measure. After rescaling all variables, all values are expressed relatively, and the unit of measurement does not matter anymore. The aggregation at goal level can be noted as follows:

\[
I_{ji}^M = \sum_{k=1}^{N_j} \frac{\left( x_{ijk} - \min_{jk} \right)}{N_j \left( \max_{jk} - \min_{jk} \right)}
\]

where \(N_j\) is the number of indicators for SDG \(j\) for which country \(i\) has data and \(x_{ijk}\) denotes the score for indicator \(k\) (within SDG \(j\)) for country \(i\). Subtracting the minimum value across countries for indicator \(k\) (\(\min_{jk}\)), and dividing this difference by the range (\(\max_{jk} - \min_{jk}\)) results in a rescaled value between 0 and 1. This rescaled value is then aggregated with equal weights over all indicators \(k\) within SDG \(j\) to obtain a measure of performance for country \(i\).

This simple mean approach is adopted by the Bertelsmann Stiftung and SDSN when constructing the Bertelsmann Index (BI), both at goal level and overall. The construction of the BI comprises three main steps, described in more detail in their technical report (Lasfonte et al., 2018). Using different data sources (WB, OECD, IMF, UN …) the BI results from (Holden et al., 2014) censoring outliers, (Costanza et al., 2016) rescaling and (Allen et al., 2018) weighting the different indicators. The resulting index measures the relative performance of countries to all countries included in the assessment. Low, medium and high indicator values are also assigned to develop a dashboard assessing country progress for each indicator.

3.1.2. Distance measure

An alternative approach to measuring SDG performance is provided by the OECD’s distance measure (OECD, 2017). Their approach constitutes of calculating the standardized distance to a specified target for each indicator. This is done by dividing the absolute distance of a country to the target and dividing this number by the standard deviation in all countries’ performance on the evaluated indicator. Values below 0 (country surpassed the target) are set to 0. As such, the relative performance of a country will be strongly dependent on which countries were included to compute the standard deviation. Although other data sources were also used, the main input for the analyses was OECD data. The computation of the distance measure for country \(i\) with respect to SDG \(j\) can be denoted as follows:

\[
I_{ji}^D = \sum_{k=1}^{N_j} \frac{\max\left( \frac{T_{ik} - x_{ijk}}{SD_{jk}}, 0 \right)}{N_j}
\]

where \(T_{ik}\) is the target for indicator \(k\) in SDG \(j\), \(x_{ijk}\) is the last available observation \(t\) for country \(i\) with respect to indicator \(k\) in goal \(j\). In order to obtain positive values by subtracting a country’s value and the target for indicator \(k\), all values were transformed such that higher values are preferred. If a country exceeds the target in the latest available year, its distance is set to 0. Once distance measures are obtained for each indicator \(k\), a country’s score for SDG \(j\) can be computed by calculating the simple average of all distances.

3.1.3. Progress measure

A third measure of SDG performance is based on the monitoring report by Eurostat on the progress towards the SDGs in an EU context (2018). We constructed a 2030 value for each country assuming ‘business-as-usual’ (BAU). The BAU growth rate was calculated by extracting the first and last observation for each indicator and by linearly interpolating the end values in 2030. Resulting values for 2030 were aggregated within goals by feature scaling and equal weighting. The advantages of this approach are twofold. First, many more indicators can be included as no targets are required. Second, the use of Eurostat data allows an assessment of SDG performance that accounts for the specific EU context. Formally, this can be written as:

\[
I_{ji}^P = \sum_{k=1}^{N_j} \frac{\left( x_{ijk}^t - \frac{T_{ik}}{SD_{jk}} \right) (2030 - t^i) + x_{ijk}^t}{N_j}
\]

where \(x_{ijk}^t\) (\(x_{ijk}^t\)) is the latest (first) observation of country \(i\) with respect to indicator \(k\) in goal \(j\). The difference between 2030 and the latest year of observation \(t^i\) determines the value to be added to the latest observation \(x_{ijk}^t\) to get the interpolated value for 2030 – assuming a linear trend continues. In order to obtain a performance measure at goal level, progress measures were averaged over all indicators after rescaling values between 0 and 1, similar to the aggregation step done for the simple mean and the Bertelsmann Index.

4. Comparison of existing methods and indicators

To compare the three methods presented above, we constructed mean values, distance measures and progress measures for all goals using Eurostat
Table 1: Comparison of SDG measures.

| Method                  | Number of Indicators | Main data source                                                                                     |
|-------------------------|----------------------|------------------------------------------------------------------------------------------------------|
| Eurostat SDGs set of indicators (2018) | 145                  | R and Eurostat SDGs set of indicators                                                                 |
| Mean (T)                | Distance (T)         |                                                                                                      |
| Simple mean             | 85                   | Eurostat SDGs set of indicators (2018) with identified targets – marked in green in Appendix A        |
| Mean                    | 145                  |                                                                                                      |

When we compare the change in rankings for individual countries, a more nuanced picture emerges. Fig. 2 maps the range of rankings for each single SDG. This range was computed by subtracting a country’s lowest rank from its highest rank, obtained from each of the five methods in Table 1. Green countries indicate a relatively small change in ranking when indicators and methods are changed. Red countries indicate a strong sensitivity to these choices. For example, Slovakia and Luxembourg change their ranking within EU28 countries by 15 to 20 places depending on the chosen methodology and set of indicators while other countries, e.g. Italy and Portugal, receive very consistent rankings. Two results become apparent when analyzing Fig. 2. First, some goals result in more robust rankings (e.g. SDG 16) while other goals are very sensitive to methodological choices (e.g.
SDG 7). Second, some countries change their ranking a lot for certain goals, while they retain consistently their relative positions for other goals. For example, Sweden receives very consistent ranks for SDG 5 while the choice between Simple mean, Distance, Progress or BI matters a lot for SDG 13 in Sweden.

5. Discussion

In the previous section, we highlighted how relative rankings of EU member states are strongly dependent on the choice of methods, and even more so on the choice of indicators. The question remains why context seems to be such an important factor in determining to what extent this particular choice matters. For example, for certain SDGs, this choice did not seem to be crucial (e.g. SDG 1 or SDG 2 in Fig. 2), while in some countries only little variation could be observed across methods and indicators – and even across SDGs (e.g. Italy). One explanation that comes to mind is that countries who consistently under- or over-perform in all indicators might not be affected by the choice of weights, implicit in the chosen method. However, the example of Italy opposes this hypothesis. Although Italy's performance on many indicators is only moderate, it is far from the bottom performer, let alone the bottom performer on all indicators. In our view, there are three hypotheses that might explain the context-dependency of SDGs performance measures. We invite researchers to challenge these in future research and, in so doing, contribute to more robust indicators.

First, one could argue that homogeneous SDGs are captured by more comparable indicators. Looking at Appendix A, it can be seen that indicators for SDG 16 are defined in a narrow sense (with homicide, violence, and sexual violence being strong correlates), whereas the indicator composition of SDG 6 can be considered quite dispersed (with indicators on population having a bath to biochemical oxygen demand in rivers). We do not claim that more SDGs will be needed to ensure more narrow definitions, yet we conclude from our findings that some SDGs are monitored using a somewhat loosely defined indicator set, complicating the comparison of countries as priorities – and hence weights - can be misaligned. We see it as an interesting avenue for future research to evaluate the statistical consistency of SDGs by validating if indicators that are being grouped together actually measure one underlying concept. This could be done by factor, principal component, and reliability analysis, using different data sets, extending the application at hand to EU countries.

Second, differences in policy priorities between countries could exacerbate the importance of choosing a method or indicators. For example, countries that deliberately progress faster in specific indicators at the cost of others will be at a disadvantage when each indicator is given the same weight. It would therefore be an interesting exercise to repeat our analysis focusing solely on countries that explicitly claim to place equal weights on subcomponents of each SDG, and vice versa.

Finally, when targets are missing, the indicators used to obtain a ranking will differ across methods. This follows directly from the fact that not all approaches require targets, yet having targets facilitates the measurement of actually achieving SDGs in 2030 (see Section 3). For example, SDG 13 “Climate Action” consists of 11 indicators, while quantifiable targets could only be identified for 3 of them. It is therefore of major importance that policy agree upon a set of tangible targets, making it easier to benchmark countries to identify best practices, while holding low performers accountable in a credible way. In doing so, policy makers can contribute to the achievement of the SDGs in 2030.

Note that a combination of the above serves as an additional explanation. When the consistency between indicators is not particularly high and a national government decides to prioritize a specific indicator, performance evaluations could be strongly dependent on method choice when a target for this indicator cannot be identified. Once again, this stresses the importance to agree upon a common framework for quantifiable SDG targets.

6. Conclusion

The complexity and the richness of the current debate on how to measure countries SDGs performance is both technical and political. This characteristic makes it difficult to disentangle between a jungle of indices and indicators to measure SDG performance.

On the technical point of view, the presence of plurality of frameworks, possible interpretations and the selection of indicator variables preclude a consensus on a “right” or “objective” method to measure SDGs.
performance. This paper highlights a strong discrepancy in three main existing methods. Our results suggest that a country's relative position depends almost entirely on the chosen method and indicators. For example, in our analysis rank order correlations are sometimes close to 0 or even negative, while individual countries can be either at the top or at the bottom of the EU28 ranking, depending on assumptions made. Naturally, these differences were to be expected as they measure different things.

A different set of indicators implies different priorities. Therefore, we argued that country context dependent indicators should be used as they provide a more consistent data source to evaluate performance of a country. Nonetheless, our results also indicated that rankings can be sensitive to the chosen aggregation method, even when the same indicators are used. This highlights the importance of imposing assumptions when aggregating at goal level. For example, averaging indicators into one composite score at goal level is different from making linear interpolations to 2030 when using Progress measures. The former assumes equal weighting while the latter adds the additional assumption of linearity when making predictions. Each choice of methodology, and hence a choice of assumptions, affects weighting priorities, which in turn can have major implications for relative rankings (Booysen, 2002).

We also highlight an important gap in each of the analyzed methods. None of such methods considers interlinkages. Although this topic is extremely complex (Miola et al., 2019) the holistic nature of the 2030 Agenda makes it a key element of every SDGs implementation policy, thus, emphasizing even more the contextualization of choice of the SDGs performance method.

On the political point of view, the existence of multiple, and in principal equally justifiable, indicator sets and the possibility of conflicting results in aggregating them creates a complex situation. On the one hand, a clear message needs to be communicated. On the other hand, an overly narrow focus on one single analysis can create confusion as the public is confronted with different results. In this context, the strictly political significance of the choice of indicators and methods to monitor the SDGs performance is the central element. The lack of this kind of considerations could be considered as the major weakness of the existing methods. In our opinion ranking countries is not a suited approach to the 2030 Agenda since the search for the best performer is not the purpose of the 2030 Agenda. In some countries the process of implementing the SDGs framework could be more important than the final result in terms of performance. We, then, consider the SDGs performance analysis as a tool informing how much effort is needed to achieve SDGs at country level. It is therefore up to each State to define country specific targets and, then, the choice of the most suited indicators. Moreover, monitoring progress at the level of a single country compared to other countries at global level can be done within the context of the SDG Progress annual report prepared by the General Secretary of the United Nations.

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### Appendix A. EUROSTAT SDGs indicators set 2018, list of targets and the rationale behind

| Goal | Indicator | Eurostat code | 2030 Target | Source |
|------|-----------|---------------|-------------|--------|
| **Goal 1 - No poverty** | People at risk of poverty or social exclusion | sdg_01_10 | Half | UN 1.2: “By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions” |
| | People at risk of income poverty after social transfers | sdg_01_20 | Half | UN 1.2: “By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions” |
| | Severely materially deprived people | sdg_01_30 | Half | UN 1.2: “By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions” |
| | People living in households with very low work intensity | sdg_01_40 | Half | UN 1.2: “By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions” |
| | In work at-risk-of-poverty rate | sdg_01_41 | Half | UN 1.2: “By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions” |
| | Population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames of floor | sdg_01_60 | 0 | UN 11.7: “By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums” |
| | Self-reported unmet need for medical examination and care | sdg_03_60 | 0 | UN 3.8: “Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all” |
| | Population having neither a bath, nor a shower, nor indoor flushing toilet in their household | sdg_06_10 | 0 | UN 6.2: “By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations.” |
| | Population unable to keep home adequately warm | sdg_07_60 | 0 | UN 11.1: “By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums” |
| | Overcrowding rate | sdg_11_10 | Not available | |
| **Goal 2 - Zero hunger** | Obesity rate | sdg_02_10 | 0 | UN 2.2: “By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons” |
| | Agricultural factor income per annual work unit | sdg_02_20 | Double | UN 2.3: “By 2030, double the agricultural productivity and incomes of small-scale food producers, in particular women, indigenous peoples, family farmers, pastoralists and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets and opportunities for value addition and non-farm employment.” |
| | Government support to agricultural research and development | sdg_02_30 | Not available | |
| | Area under organic farming | sdg_02_40 | Not available | |
| | Gross nutrient balance on agricultural land | sdg_02_50 | 0 | OECD (2017) |
| | Ammonia emissions from agriculture | sdg_02_60 | 0 | OECD (2017) |
| | Nitrates in groundwater | sdg_06_40 | 0 | OECD (2013) / 50mg/l: The Nitrates Directive (91/676/EC) |
| | Estimated soil erosion by water | sdg_15_50 | 0 | UN 15.3: “By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.” |
| | Common bird index - EU aggregate | sdg_15_60 | Not available | |
| | Grassland butterfly index - EU aggregate | sdg_15_61 | Not available | |
| **Goal 3 - Good health and well-being** | Life expectancy at birth | sdg_03_10 | Not available | |
| | Share of people with good or very good perceived health | sdg_03_20 | 100 | OECD (2017) |
| | Smoking prevalence | sdg_03_30 | 0 | OECD (2017) |
| | Death rate due to chronic diseases | sdg_03_40 | Not available | |
| | Death rate due to tuberculosis, HIV and hepatitis | sdg_03_41 | 0 | OECD (2017) |
| | Self-reported unmet need for medical examination and care | sdg_03_60 | 0 | UN 3.8: “Achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all” |
| | Obesity rate | sdg_02_10 | 0 | UN 2.2: “By 2030, end all forms of malnutrition, including achieving, by 2025, the internationally agreed targets on stunting and wasting in children under 5 years of age, and address the nutritional needs of adolescent girls, pregnant and lactating women and older persons” |
| | People killed in accidents at work | sdg_08_60 | 0 | UN 8.8: “Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment” |
| | Population living in households considering that they suffer from noise | sdg_11_20 | Not available | |
| | People killed in road accidents | sdg_11_40 | Half | OECD (2017) |
| | Exposure to air pollution | sdg_11_50 | 10 | WHO: reduce PM 2.5 pollution to less than 10 micrograms per cubic meter |
| **Goal 4 - Quality education** | Early leavers from education and training | sdg_04_10 | 0 | UN 4.1: “By 2030, ensure that all girls and boys complete free, equitable and quality primary and secondary education leading to relevant and effective learning outcomes.” |
| | Tertiary educational attainment | sdg_04_20 | Not available | |
| | Participation in early childhood education | sdg_04_30 | 100 | UN 4.2: “By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education” |
| | Underachievement in reading, maths or science | sdg_04_40 | 0 | UN 4.6: “By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy.” |
| Goal 5 - Gender equality | UN 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gender employment gap   | sdg_05_30                                                                                                                                  |
| Gender pay gap in unadjusted form | sdg_05_20                                                                                                                                  |
| Physical and sexual violence to women experienced within 12 months prior to the interview | sdg_05_10                                                                                                                                  |
| seats held by women in national parliaments and governments | sdg_05_50                                                                                                                                  |
| positions held by women in senior management positions | sdg_05_60                                                                                                                                  |
| early leavers from education and training | sdg_04_10                                                                                                                                  |
| Tertiary educational attainment | sdg_04_20                                                                                                                                  |
| inactive population due to caring responsibilities | sdg_05_40                                                                                                                                  |

| Goal 6 - Clean water and sanitation | UN 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Population having neither a bath, nor a shower, nor indoor flushing toilet in their household | sdg_06_10                                                                                                                                  |
| population connected to at least secondary wastewater treatment | sdg_06_20                                                                                                                                  |
| Bioc hemical oxygen demand in rivers | sdg_06_30                                                                                                                                  |
| Nitrate in groundwater | sdg_06_40                                                                                                                                  |
| phosphate in rivers | sdg_06_50                                                                                                                                  |
| water exploitation index | sdg_06_60                                                                                                                                  |
| bathing sites with excellent water quality | sdg_14_40                                                                                                                                  |

| Goal 7 - Affordable and clean energy | UN 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Primary energy consumption | sdg_07_10                                                                                                                                  |
| Final energy consumption | sdg_07_11                                                                                                                                  |
| final energy consumption in households per capita | sdg_07_20                                                                                                                                  |
| energy productivity | sdg_07_30                                                                                                                                  |
| energy productivity | 30% higher                                                                                                                                  |
| share of renewable energy in gross final energy consumption | sdg_07_40                                                                                                                                  |
| energy dependence | sdg_07_50                                                                                                                                  |
| population unable to keep home adequately warm | sdg_07_60                                                                                                                                  |
| greenhouse gas emissions intensity of energy consumption | sdg_13_20                                                                                                                                  |

| Goal 8 - Decent work and economic growth | UN 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Real GDP per capita | sdg_08_10                                                                                                                                  |
| Investment share of GDP | sdg_08_11                                                                                                                                  |
| Young people neither in employment nor in education and training | sdg_08_20                                                                                                                                  |
| employment rate | sdg_08_30                                                                                                                                  |
| Long-term unemployment rate | sdg_08_40                                                                                                                                  |
| people killed in accidents at work | sdg_08_60                                                                                                                                  |
| in work at risk-of-poverty rate | sdg_01_41                                                                                                                                  |
| inactive population due to caring responsibilities | sdg_05_40                                                                                                                                  |
| resource productivity and domestic material consumption | sdg_12_20                                                                                                                                  |

| Goal 9 - Industry, innovation and | UN 8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gross domestic expenditure on R&D | sdg_09_10                                                                                                                                  |

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| Goal 5 - Gender equality | OECD (2017) |
|-------------------------|--------------|
| seats held by women in national parliaments and governments | 50 |
| positions held by women in senior management positions | 50 |

| Goal 6 - Clean water and sanitation | OECD (2017) |
|-------------------------------------|--------------|
| Nitrate in groundwater | 50mg/l (https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive) |

| Goal 7 - Affordable and clean energy | OECD (2017) |
|-------------------------------------|--------------|
| water exploitation index | 10 |

| Goal 8 - Decent work and economic growth | OECD (2017) |
|-------------------------------------|--------------|
| investment share of GDP | 0 |
| Young people neither in employment nor in education and training | 0 |

| Goal 9 - Industry, innovation and | OECD (2017) |
|-------------------------------------|--------------|
| Gross domestic expenditure on R&D | 0 |
### Goal 09 - Responsible consumption and production

| Indicator | Data Source | Status |
|-----------|-------------|--------|
| Consumption of toxic chemicals to EU28 | sdg_12_10 | Not available |
| Resource productivity and domestic material consumption | sdg_12_20 | Not available |
| Average CO₂ emissions per km from new passenger cars | sdg_12_30 | 66.5 (On 8 November 2017, the European Commission presented a legislative proposal setting new CO₂ emission standards for passenger cars and light commercial vehicles (vans) in the European Union for the period after 2020) https://ec.europa.eu/clima/policies/transport/vehicles/proposal_en. Average emissions of the EU fleet of new cars in 2030 will have to be 30% lower than in 2021 (target=95g CO₂/km). |
| Circular material use rate | sdg_12_40 | Not available |
| Generation of waste excluding major mineral wastes | sdg_12_50 | Not available |
| Recycling rate of waste excluding major mineral wastes | sdg_12_60 | 60 Directive 2008/98/EC, Recently revised with the agreement on new waste proposal. |
| Primary energy consumption | sdg_07_10 | Not available |
| Export of toxic chemicals | sdg_17_30 | Not available |

### Goal 10 - Reduced inequalities

| Indicator | Data Source | Status |
|-----------|-------------|--------|
| Purchasing power adjusted GDP per capita | sdg_10_10 | Not available |
| Adjusted gross disposable income of households per capita | sdg_10_20 | Not available |
| Relative median at-risk-of-poverty gap | sdg_10_30 | Not available |
| Income distribution | sdg_10_40 | Not available |
| Income share of the bottom 40% of the population | sdg_10_50 | Not available |
| Asylum applications | sdg_10_60 | Not available |
| People at risk of income poverty after social transfers | sdg_01_20 | half UN 1.2: "By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions" |
| EU financing to developing countries | sdg_17_20 | Not available |
| EU imports from developing countries | sdg_17_30 | Not available |

### Goal 11 - Sustainable cities and communities

| Indicator | Data Source | Status |
|-----------|-------------|--------|
| Overcrowding rate | sdg_11_10 | Not available |
| Population living in households considering that they suffer from noise | sdg_11_20 | Not available |
| Difficulty in accessing public transport | sdg_11_30 | 0 UN 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons |
| People killed in road accidents | sdg_11_40 | half OECD (2017) |
| Exposure to air pollution | sdg_11_50 | 10 WHO: reduce PM 2.5 pollution to less than 10 micrometers per cubic meter |
| Recycling rate of municipal waste | sdg_11_60 | 60 Directive 2008/98/EC, Recently revised with the agreement on new waste proposal. |
| Population living in a dwelling with a leaking roof, damp walls, floors or foundation or rot in window frames of floor | sdg_01_60 | 0 UN 11.1: "By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums" |
| Population connected to at least secondary wastewater treatment | sdg_06_20 | 100 UN 6.2: "By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations." |
| Share of busses and trains in total passenger transport | sdg_09_50 | 19 White paper on transport - COM(2011) 144 final ; https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0144&from=EN |
| Artificial land cover | sdg_15_30 | 0 Resource Efficiency Roadmap, 7th EAP, EU Biodiversity Strategy, COM(2006) 232 (2050 target) |
| Population reporting occurrence of crime, violence or vandalism in their area | sdg_16_20 | 0 UN 16.1: Significantly reduce all forms of violence and related death rates everywhere |

### Goal 12 - Sustainable production and consumption

| Indicator | Data Source | Status |
|-----------|-------------|--------|
| Consumption of toxic chemicals to EU28 | sdg_12_10 | Not available |
| Resource productivity and domestic material consumption | sdg_12_20 | Not available |
| Average CO₂ emissions per km from new passenger cars | sdg_12_30 | 66.5 On 8 November 2017, the European Commission presented a legislative proposal setting new CO₂ emission standards for passenger cars and light commercial vehicles (vans) in the European Union for the period after 2020) https://ec.europa.eu/clima/policies/transport/vehicles/proposal_en. Average emissions of the EU fleet of new cars in 2030 will have to be 30% lower than in 2021 (target=95g CO₂/km). |
| Circular material use rate | sdg_12_40 | Not available |
| Generation of waste excluding major mineral wastes | sdg_12_50 | Not available |
| Recycling rate of waste excluding major mineral wastes | sdg_12_60 | 60 Directive 2008/98/EC, Recently revised with the agreement on new waste proposal. |
| Primary energy consumption | sdg_07_10 | Not available |
| Goal 13 - Climate action | Greenhouse gas emissions | sdg_13_10 | 60 | The European Council in October 2014 endorsed a binding EU target of at least 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990. |
|--------------------------------|---------------------------|------------|-----|--------------------------------------------------------------------------------------------------------------------------------|
| Share of renewable energy in gross final energy consumption | sdg_07_40 | 32 | Parliament and Council provisionally agreed on a share of energy from renewables of at least 32% of the Union’s gross final consumption in 2030, with an upwards revision clause by 2023. |
| Primary energy consumption | sdg_07_10 | Not available | |
| Final energy consumption | sdg_07_11 | Not available | |
| Share of renewable energy in gross final energy consumption | sdg_07_40 | 32 | Parliament and Council provisionally agreed on a share of energy from renewables of at least 32% of the Union’s gross final consumption in 2030, with an upwards revision clause by 2023. |
| Average CO2 emissions per km from new passenger cars | sdg_12_30 | 66.5 | On 8 November 2017, the European Commission presented a legislative proposal setting new CO2 emission standards for passenger cars and light commercial vehicles (vans) in the European Union for the period after 2020 (https://ec.europa.eu/clima/policies/transport/vehicles/propocal_en). Average emissions of the EU fleet of new cars in 2030 will have to be 30% lower than in 2021 (target=95g CO2/km). |
| Mean ocean acidity | sdg_14_50 | Not available | |
| Goal 14 - Life below water | Surface of marine sites designated under NATURA 2000 | sdg_14_10 | Not available | |
| Estimated trends in fish stock biomass in North East Atlantic | sdg_14_21 | Not available | |
| Assessed fish stocks exceeding fishing mortality at maximum sustainable yield | sdg_14_30 | Not available | |
| Bathing sites with excellent water quality | sdg_14_40 | Not available | |
| Mean ocean acidity | sdg_14_50 | Not available | |
| Goal 15 - Life on land | Share of forest area | sdg_15_10 | 3% higher | UN Strategic Plan for Forests |
| Surface of terrestrial sites designated under NATURA 2000 | sdg_15_20 | Not available | |
| Artificial land cover | sdg_15_30 | 0 | Resource Efficiency Roadmap, 7th EAP, EU Biodiversity Strategy, COM(2006)232 (2050 target) |
| Estimated soil erosion by water | sdg_15_50 | 0 | UN 15.3: “By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world”. |
| Common bird index - EU aggregate | sdg_15_60 | Not available | |
| Grassland butterfly index - EU aggregate | sdg_15_61 | Not available | |
| Biochemical oxygen demand in rivers | sdg_06_30 | 0 | UN 6.3: “By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally” |
| Nitrate in groundwater | sdg_06_40 | 0 | OECD/IDB(2011)75/EN. The Nitrate Directive (91/676/EU) |
| Phosphate in rivers | sdg_06_50 | 0 | UN 6.3: “By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally” |
| Goal 16 - Peace, justice and strong institutions | Death rate due to homicide | sdg_16_10 | 0 | UN 16.1: Significantly reduce all forms of violence and related death rates everywhere |
| Population reporting occurrence of crime, violence or vandalism in their area | sdg_16_20 | 0 | UN 16.1: Significantly reduce all forms of violence and related death rates everywhere |
| General government total expenditure on law courts | sdg_16_30 | Not available | |
| Perceived independence of the justice system | sdg_16_40 | 180 | UN 16.3: Promote the rule of law at the national and international levels and ensure equal access to justice for all |
| Corruption Perceptions Index | sdg_16_50 | 180 | UN 16.5: Substantially reduce corruption and bribery in all their forms |
| Population with confidence in EU institutions | sdg_16_60 | 180 | UN 16.6 - Develop effective, accountable and transparent institutions at all levels |
| Physical and sexual violence to women experienced within 12 months prior to the interview | sdg_05_10 | 0 | UN 5.2: Eliminate all forms of violence against all women and girls in the public and private spheres, including trafficking and sexual and other types of exploitation |
| Goal 17 - Partnerships for the goals | Official development assistance as share of gross national income | sdg_17_10 | 0.7 | Joint statement by the Council and the representatives of the governments of the Member States meeting within the Council, the European Parliament and the Commission (2017/C 218/01).The commitment to achieve 0.7% ODA/GNI (by 2015) was already stated in the Council Conclusions of 24 May 2005 (doc. 926/05, paragraph 4.1) |
| EU financing to developing countries | sdg_17_20 | Not available | |
| EU imports from developing countries | sdg_17_30 | Not available | |
| General government gross debt | sdg_17_40 | 60 | The 60% debt/GDP target is laid down in the Treaty on the Functioning of the European Union. The Treaty is complemented by Regulation 1176/2011 on the prevention and correction of macroeconomic imbalances as well as Regulation 1174/2011 on enforcement action to correct excessive macroeconomic imbalances in the euro area. |
| Shares of environmental and labour taxes in total tax revenues | sdg_17_50 | 10 | The share of environmental taxes in total revenues from taxes and social contributions is an indicator of the flagship initiative for a resource-efficient Europe under the Europe 2020 strategy. The objective, which is not binding, is at least a 10% share for the EU by 2020 and remains relevant today. |
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