

Symposium: Science-Policy Interfaces and the Environment

A Coded Taxonomy of the Statistical Indicators for Global Reporting of Targets within the UN 2030 Agenda for Sustainable Development¹

Enda Murphy

UCD School of Architecture, Planning and Environmental Policy

Patrick Paul Walsh

*UCD Geary Institute for Public Policy;
Honorary Secretary of the Society*

(read before the Society, 23rd April 2020)

Abstract: In 2015, 193 UN member countries signed Resolution A/RES/70/1 2030 – ‘Transforming our World: the 2030 Agenda for Sustainable Development’. The United Nations (UN) 17 Sustainable Development Goals (SDGs) lie at the heart of this international agenda on sustainable development. The 17 SDGs have associated targets (169) and statistical indicators (251) that aim to assist a follow up and review process for achieving the SDGs. A key contribution of this paper is to create a taxonomy of the SDG Targets, and associated indicators, into desired *Outcomes* for each of the goals, *Linkages* (from a defined goal) across all other goals, *Means of Implementation* (MoIs) to achieve a defined goal and MoIs to achieve the overall agenda across goals. We incorporate our taxonomy into the indicator codes that were developed by UNSD for data transfer, tracking and other statistical purposes in the Global indicator framework for the SDG targets of the 2030 Agenda for Sustainable Development [as contained in the Annex of the resolution adopted by the General Assembly on 6 July 2017, Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2, and annual refinements contained in E/CN.3/2021/2 (Annex)]. The benefit of our taxonomy is shown by way of example using the 83 ‘Environmental’ SDG targets, and associated indicators, spanning the 17 SDG goals, as defined by the UN Environmental Program (EP). Using the available environmental SDG indicator data for Ireland we benchmarked Ireland’s performance on environmental SDG indicators relative to peer nations in the European Union (EU). Overall, the analysis shows that Ireland is 64 per cent of the way towards the aggregate best performers in the EU in available environmental SDGs indicators. We are also able to decompose Ireland’s overall performance by desirable *Outcomes*, *Linkages* and *MoIs* across the available 83 Environmental SDG Targets. Overall a mixed performance is captured. The agenda needs *MoIs* and positive *Linkages* to achieve the desired *Outcomes* in the UN 2030 Agenda for Sustainable Development.

Keywords: UN 2030 Agenda, Taxonomy, Targets, Indicators, Indicator code, Global Reporting.

JELs: Q51, Q56, Q58

1. INTRODUCTION

In 2015, heads of State of 193 member countries of the United Nations signed the Resolution A/RES/70/1 2030, ‘Transforming our World: the 2030 Agenda for Sustainable Development’ (henceforth UN Agenda 2030). The Agenda is made up of a Vision, 17 Sustainable Development Goals (SDGs) (with 169 targets), Means of Implementation (MoIs) and a Follow up and Review mechanism at all levels of governance. The UN Major Groups and non-governmental stakeholder groups, helped create and endorse the agenda. Major groups include civil society organisations, the private sector, academia, and other stakeholders. As a consequence, achievement of the SDGs is perhaps the most significant global effort to ensure a sustainable future for present and future generations. Sustainable development is defined across economic, social, environmental, and governance domains

¹ This research was funded under the Environmental Protection Agency (EPA) Research Programme 2014-2020. The EPA Research Programme is a Government of Ireland initiative funded by the Department of Environment, Climate and Communications. The authors would like to acknowledge the members of the project steering committee for their comments and input, namely Brendan Wall (EPA), Joe Gallagher (DCCA), Mary Smyth (CSO), and Lars Mortensen (EEA). We also thank Ethan Murphy who acted as a research assistant to the project, and particularly for assistance with data harvesting under the UN Global indicator framework for the 2030 Agenda.

making it vitally important to be able to create linkages across these domains with transformative policies, technology and behavioural norms. The agenda emphasises that although national governments are officially responsible for the implementation of the SDGs, it is a shared responsibility of all domains of society: the state, the private sector, academia and the civil society.

The SDGs recognise the necessity of a strongly interlinked and interconnected system that stresses how social and economic prosperity must be achieved without degrading the environment. This interconnectedness creates synergies and trade-offs among the goals. Positive linkages arise when a strong performance in one goal enhances the accomplishment of achieving other SDGs. Such interlinkages draw attention to the negative externalities that can arise from pursuing one goal at the expense of achieving another. None of the SDGs can be achieved in isolation. SDG indicator data is a key enabler for the agenda to work as it requires data on *linkages* alongside *Mol* and *Outcome* targets.

The Inter-Agency and Expert Group (IEAG) on the SDGs has constructed a list of indicators attached to the 169 targets of the agenda in order to direct progress within each of the goals. The performance of these 169 targets can be tracked with 251 indicators. Many of the indicators have only recently been developed and, due to their novelty, some indicators do not have a robust internationally recognised data collection methodology. Furthermore, data for some indicators is not collected, or collected regularly, in all countries. To ease the challenge in implementing the 17 SDGs, the UN Open Working Group (OWG) incorporated key UN agency/treaty desired ‘Outcome’ targets, ‘Means of Implementation’(MoIs) targets and ‘Linkage’ targets into each SDG, 1 to 16. It should be noted that SDG 17 incorporates MoIs for the Agenda as a whole.

A key contribution of this paper is to create a taxonomy of the SDG Targets, and associated indicators, by goals into desired *Outcomes*, *Linkages* and *Means of Implementation* (MoIs). We incorporate our taxonomy into the indicator codes that were developed by UNSD for data transfer, tracking and other statistical purposes in the Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development [as contained in the Annex of the resolution adopted by the General Assembly on 6 July 2017, Work of the Statistical Commission pertaining to the 2030 Agenda for Sustainable Development (A/RES/71/313), annual refinements contained in E/CN.3/2018/2 (Annex II), E/CN.3/2019/2 (Annex II), 2020 Comprehensive Review changes (Annex II) and annual refinements (Annex III) contained in E/CN.3/2020/2, and annual refinements contained in E/CN.3/2021/2 (Annex)].

To illustrate the benefit of the taxonomy for use in Ireland, we apply it to 83 ‘Environmental’ SDG targets, and associated indicators, spanning the 17 SDG goals, as defined by the UNEP. Despite Ireland being ranked 13 in the country performance SDG Index, in the Sustainable Development Solutions Network (SDSN) Sustainable Development Report, Ireland’s performance on the environmental pillar is considered poor (Sachs et al 2021). For this reason we concentrate on the environmental dimension of the SDGs Targets. UNEP has identified 83 unique environmental indicators for our index; only 42 were available for Ireland², and for two of these indicators the most recent data relates to a decade ago. This means that there is a significant data gap in our knowledge of Ireland’s performance with respect to almost half of the UN environmental SDG targets.

Using the available environmental SDG indicator data for Ireland we benchmarked Ireland’s performance on the subset of environmental SDG indicators relative to peer nations in the European Union (EU). Overall, the analysis shows that Ireland is 64 per cent of the way towards the aggregate best performers in the EU in relation to its performance on the available environmental SDGs targets. We are also able to aggregate over Ireland’s indicators by *MoIs*, *Linkages* across goals and desirable *Outcomes* across the available UN Environmental SDG Indicators. The decomposition of aggregation by indicator type reveals Ireland has a very mixed performance in our taxonomy of targets.

The remainder of paper is structured into two sections. Section I provides an outline of our taxonomy of the SDG Targets, and associated indicators, expanded to reflect desired *Outcomes*, *Linkages* and *MoIs*. We incorporate our taxonomy into the indicator codes used for statistical purposes in the Global SDG target and indicator framework. In Section 2 we outline our analysis of the available 83 SDG ‘Environmental’ targets, placing Ireland’s progress firmly within the context of its EU peers in aggregate and within our taxonomy of indicators. Finally, we outline our conclusions.

2. TAXONOMY OF THE SDG TARGETS, AND ASSOCIATED INDICATORS

In Annex I we document the work of the ‘The Inter-Agency and Expert Group’ (IEAG) on the SDGs. We list the 17 SDGs, the 169 targets of the agenda and the proposed 251 indicators associated with these targets. In addition,

² Data correct as of December 2019.

each indicator has a unique indicator code that was developed by UNSD. The availability and quality of data, including the responsible international organisation for the collection of data behind an indicator, can also be linked to this unique UNSD indicator code. Our innovation in this paper is to add two digits to the indicator UNSD code. During the deliberations of the UN OWG that developed the SDG targets, the group worked within an implicit taxonomy that we are explicitly adding to the coding. *Adding 01* to the indicator code specifies that the target, and hence indicator, was considered by the OWG to be an Outcome target. *Adding 02* specifies that the target, and hence indicator, was designated by the OWG to be a linkage target. Finally, *adding 03* specifies that the target, and hence indicator, was designated by the OWG to be a ‘Means of Implementation’ (MoI) target. Along with goal-specific MoIs, Goal 17 ‘Partnerships for the Goals’ is specifically concerned with only MoIs targets on how the SDGs will be achieved overall. In Annex I, the 169 targets of the agenda are documented to be composed of 59 Outcome targets for specific SDGs, 48 linkage targets across SDGs (from a specific SDG) and finally, 62 (MoI) targets. Of the 62 MoI targets, 43 are within the SDGs 1 to 16, while 19 are MoI targets within SDG 17.

This coding can easily be extended further. For example, with extra digits we could link the nature of the MoI to data (031), finance (032), technology (033), education (034), partnership (035) and so on. In terms of linkages, we could link the nature of the linkage to a social (021), economic (022), environmental (023), or governance interaction (024) or combinations of all. For SDG reporting, our taxonomy by Outcomes, Linkages and MoIs has many merits for meetings and reporting. Much of the work programs on the UN 2030 Agenda are based around the MoIs listed above. These are key investments into achieving the SDGs, but today’s investments in MoIs may only have an impact on SDG Outcomes in a few years’ time. It is worthwhile to separate MoIs out when reporting progress on the SDGs. Similarly, achieving progress on the 59 Goal specific targets is good, but nations need to create positive linkages across all the goals for the Agenda to work. Using policy, technology and behavioural change to induce positive linkages should be a key focus of monitoring of progress towards the achievement of the SDGs. Indicators for the linkage targets can be missing and of poor quality. It is important for every country to try and populate these linkage indicators. Countries can feel they are achieving the SDGs under the economic and social desired outcomes, but in reality undocumented negative linkages on the environment can undermine the goal of achieving sustainable development in the longer term. Future generations may not inherit clean air, clean water and fertile soil despite countries doing well on traditional UN Human Development Indicators.

In Annex I we code a unique UNSD indicator code extended to reflect our taxonomy of the SDG Targets, and associated indicators, into desired *Outcomes*, *Linkages* across goals (from a specific goal) and *Means of Implementation* (MoIs). We incorporate our taxonomy into the indicator codes that were developed by UNSD for statistical purposes in the Global target/indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. In section II we undertake an analysis of 83 ‘Environmentally’ related targets as coded by UNEP to show the merits of our taxonomy in a simple analysis of Ireland’s performance on the UN Environmental Indicators relative to the worst and best in class across the EU.

3. AN ANALYSIS OF THE IRISH SDG ‘ENVIRONMENTAL’ TARGETS

Weighting across indicators

The standard approach to measuring an overall performance in SDG environmental targets is to combine ‘normalised’ (usually by an upper and lower bound) indicators into a single composite index. Prominent examples of this approach include the Human Development Index, Multi-dimensional Poverty Index and the SDSN SDG Index (Alkire et al. 2015; Sachs et al 2019). This aggregation requires a weighting of different indicators that implicitly allows for subjective trade-offs across the importance of certain indicators (Alkire et al. 2015). Some indices like the Climate Change Performance Index assign more weight to indicators that they deem to be more important for the environment such as GHG emissions (Burck et al, 2019). Similarly, Yale’s Environmental Performance Index uses a hierarchical weighting system based on the variance of the data for specific indicators, the distribution of global disability-adjusted life-years (DALYs) lost due to particular issues, and their subjective opinion on the “relative gravity” of other indicators (Wendling et al, 2018). However, the norm in the development of a composite index is to ascribe equal weight to each indicator (Sachs et al. 2019).

Normalising indicators to create an Index Score

The high degree of variability in the measurement values associated with individual data points requires that the data be normalised. For example, some data points are measured per capita while others relate to the percentage of a population or an area; some data points are measured in bounded outcomes and others are unbounded. Accordingly, data points need to be standardised by upper and lower bounds so that they can be comparable on a single relative scale across very different indicators.

In terms of normalising indicator data within upper and lower bounds, different approaches can be used. One could use limits by using the absolute quantitative thresholds outlined in the SDGs and targets e.g. universal access to clean water, gender equality, or reduce the proportion of the population in poverty by half. If no such explicit SDG target exists, the upper bound is set to universal access or zero deprivation for the indicators that deal with issues like public service coverage (preschool coverage), access to basic infrastructure (broadband access) and the 'no-one-left-behind' concept of the SDGs (school poverty disparity). Otherwise, science-based targets, could be used for upper and lower bounds. While the overall principles are the same, our methodology diverges from these approaches. Our upper and lower bounds for an indicator in our index are set as the values achieved by the best and the worst performers, respectively, in the EU. This allows for the determination of Ireland's performance relative to its EU peers.

The obvious disadvantage of this method is that in some cases the best performer may not be on track to achieve a specific SDG target and therefore setting this as the upper bound may not demonstrate full SDG implementation. Despite this possible disadvantage, there are a number of benefits associated with the method. First, it allows for a determination of how close or far away Ireland is to what can be reasonably expected in an EU context from countries with similar financial (per capita), political, and social resources. Furthermore, there are only a few environmentally related indicators for which a specific UN target or an unattainable threshold exist. Consequently, the score of the best performer is usually the only upper bound that can be used reliably. Once the upper and lower bounds have been determined, each indicator is given a score from 0 (lower bound) to 1 (upper bound).

Composite Index

As previously described, the standard approach is to combine normalised indicators from different dimensions into a single composite index. In our approach we aggregate with different functional forms that we explain below. We first normalise our environmental indicators by the best and worst in class as defined by other EU Countries performance on that indicator. In this context, the approach taken in developing Ireland's index is to set criteria that must be met for data to be utilised for the construction of an environmental SDG composite index. Those criteria are as follows: (1) any identified data must be in precise alignment with the SDG data indicator or must be an adequate proxy; and (2) the data utilised must be available for a wide range of other global nations to enable a benchmarking of Ireland's performance against other nations. Hence our data has to be internationally comparable to accurately assess Ireland's progress and performance in relation to SDG implementation among peer nations. To that end, and using the aforementioned outlined criteria; we produce an index metric which assesses Ireland's progress on the available environmental SDGs relative to peers in the EU-27. As well as producing a composite environmental SDG index for Ireland, we also decompose the overall SDG Index by Outcome-based indicators (normally key KPIs of UN agencies or a signed legal treaty), Means of Implementation (MoIs) indicators, and Linkage-based indicators using our extended UNSD coding of indicators.

The task of identifying SDG indicators that are either directly or indirectly related to the environment has been assisted greatly by recent work of the United Nations Environment Programme (UNEP). Information on responsible agencies is also embedded into the UNSD indicator code. In 2019, UNEP produced a document entitled 'Measuring Progress Towards Achieving the Environmental Dimension of the SDGs' (UNEP, 2019). That document uses 83 unique 'environmental-related' indicators to measure current progress in the environment. According to the UNEP document, the 'environmental dimension' of the SDGs refers to over half of the 169 targets that directly or indirectly seek to reduce environmental damage or that emphasise the critical role of natural resources and ecosystem services in ensuring human well-being and prosperity. According to the UNEP, if an SDG indicator informs us on the current state of the environment (e.g. extent of habitat destruction, levels of pollution, number of invasive species), or details some factor that has a direct effect on the environment or the services that it provides (e.g. sustainable agriculture, key biodiversity sites in protected areas) then this indicator can be considered as environmentally related. In Measuring Progress, ecosystems services include the production of food and clean water, disease management, climate regulation, and protection against natural disasters. Importantly, the document also states that factors to increase environmental sustainability are only effective if they are backed by law and policy. As a result, indicators that relate to policy coherence and the signing of relevant treaties are considered to be environmentally related.

Of the 251 SDG indicators, our analysis identified 83 unique indicators that are specific to the environment (directly or indirectly) based on the aforementioned UNEP document 'Measuring Progress Towards Achieving the Environmental Dimension of the SDGs'. These data, including its format, spatial scale, source, latest year of availability, and UN Tier classification, are outlined in Annex II. Therein, we also outline the 42 unique environmental indicators for Ireland consisting of 57 data points in total due to the fact that a number of SDG indicators have sub-indicators or are repeated several times through the indicator list which we have included as separate observations. The breakdown of the 57 data points is as follows: 33 outcomes-based indicators (57.8 per cent), 6 Means of Implementation (MoIs) indicators (10.6 per cent) and 13 linkage-based indicators (31.6 per cent).

Once the data observations had been identified, the next step in the analysis was to standardise the data into an index number, a score between zero and one. The data needed to reflect whether the indicator related to a good (desirable) or bad (undesirable) outcome. For example, indicator 2.5.2 measures the proportion of local breeds classified as being at risk which is considered an undesirable outcome. Contrarily, 15.2.1 measures the progress towards sustainable forest management which is a desirable outcome. In order to standardise the data as a desired outcome and place Ireland on a relative range on this indicator within the EU, we used the formula as follows:

$$I_i = \frac{(IRL_i - Min_i)}{(Max_i - Min_i)} \quad \text{if indicator target is desirable} \quad (1)$$

$$I_i = 1 - \frac{(IRL_i - Min_i)}{(Max_i - Min_i)} \quad \text{if indicator target is undesirable} \quad (2)$$

Overall, 65 per cent of our indicators are constructed from data that indicate a desirable outcome. The modalities vary in this respect. Most MoIs, 83 per cent, relate to desirable targets. Outcome targets are at 72 per cent with only 44 per cent of Linkages indicators stated as desirable indicators. The formula(s) corresponds to a ratio of how far Ireland is to the worst EU performer as a percentage of the difference between the best and worst EU performers on each indicator. The formula provides a resultant value for each indicator between 0 and 1, where 1 is the best in class and 0 is the worst in class. It is possible to impose various types of functional forms on the indexation of each indicator. For example, it is possible to square the numerator, the value distance from the Irish data to the min EU performance. This formulation would enable the numerator, and hence the index score, to rise at an increasing rate as performance improves beyond the min EU performer. However, the preference for this study is to not impose any behavioural assertions on the data that might not be justified by science, economic cost, or political constraints. Accordingly, the current study measures distance from these minimum and maximum frontiers in a linear manner between zero and one across all indicators.

A composite SDG Environmental Index can be constructed using either an arithmetic, geometric, or harmonic mean. The arithmetic mean is the most commonly used and easily understood measure of central tendency in a data set. The arithmetic mean of our set of environmental indicators is defined as the sum of the values of each observation divided by the total number of observations. Note that through this method, high scores in certain indicators can compensate for low scores in other indicators.

$$A = \frac{1}{n} \sum_{i=1}^n I_i = \frac{I_1 + I_2 + \dots + I_n}{n} \quad (3)$$

The geometric mean indicates the central tendency of a set of indicators by using the product of their values (as opposed to the arithmetic mean which uses their sum). The geometric mean is defined as the nth root of the product of n numbers as follows:

$$G = (\prod_{i=1}^n I_i)^{\frac{1}{n}} = \sqrt[n]{I_1 I_2 \dots I_n} \quad (4)$$

The geometric mean is always less than the arithmetic mean. If one indicator is close to zero, the product of all indicators will be reduced. A strict process of averaging would give the indicator close to zero an equal weight which could then be compensated for by high scores in other indicators. A high geometric mean would demonstrate a good performance in all indicators with little variance.

The harmonic mean, sometimes called the sub-contrary mean, is calculated by dividing the number of values in the data series by the sum of reciprocals of each value in the data series. This mean, by design, gives more weighting to the indicators with lower index scores. Variance would be 'punished' by giving low scores a greater influence on the overall score:

$$H = \left(\frac{\sum_{i=1}^n I_i^{-1}}{n} \right)^{-1} = \frac{n}{\frac{1}{I_1} + \frac{1}{I_2} + \dots + \frac{1}{I_n}} \quad (5)$$

Empirical findings

Using approaches outlined in the methodology to develop individual indicator indices, we apply the UNSD indicator code that incorporates our taxonomy, to create a composite overall environmental SDG index as well as separate ones disaggregated by whether the associated indicators are Outcomes-based, MoI-based, or Linkage-based. Table 1 presents the results.

Table 1 Environmental Index for Ireland - Results

EU Last Year	Overall Environment	Environment Outcomes	Environment MoIs	Environment Linkages
Arithmetic	.64	.56	.35	.88
Geometric	.43	.44	.08	.82
Harmonic	.05	.05	.02	.78
#obs	63	36	8	19

The calculation of Ireland’s Environmental SDG Index for three averaging approaches (arithmetic mean, geometric mean, and harmonic mean) are outlined in column I of Table 1. The key difference between the three means in terms of index results is that the geometric, and to an even greater extent the harmonic, mean result in lower average values. This is especially the case when there are values in a set that tend towards the lower end of the sets range. Essentially, this means that the harmonic and geometric means penalise lower scores on indicators within the various indices. Note that the results of each index are given on a scale ranging from 0 to 1 where 1 represents Ireland being the best performer in the EU-27 on that specific indicator and 0 represents the opposite. For example, the arithmetic mean result for Ireland for the EU composite environmental SDG index is 0.64. This can be interpreted as Ireland being 64 per cent of the way towards the aggregate best performers in the EU. The result from the geometric means suggests Ireland is only 43 per cent of the way towards the aggregate best performers in the EU while the corresponding value using the harmonic means is 5 per cent. The lower geometric and harmonic means indicate that we have some very poor performance indicators in the overall mix. Overall, the results of the index suggest that Ireland has a considerable way to go to achieving the available environmental indicators as outlined in the 2030 Agenda.

The data can be further disaggregated on the basis of Desired Outcomes, Linkages and MoIs. The results show that Ireland is 56 per cent of the way towards the overall best performer in the EU for Outcome Targets, 35 per cent of the way towards the overall best performer in the EU for MoIs and 88 per cent for Linkages. The lower geometric and harmonic means indicate that desired Outcomes include very poor performances on indicators. These can relate to habitat destruction such as forest cover on our land. MoI data relate to a nation’s capacity building for the various MoIs identified in Agenda 2030 (e.g. SDG Finance, Technologies, Data, Partnerships, Science Policy Interface, Education, Professional Training, Follow up and Review). The results suggest that Ireland is weak with respect to its performance in MoIs. The extremely low geometric and harmonic means indicate that we have some very poor performance indicators in the overall mix with respect to MoIs. One can show that 50 per cent of MoI indicators for Ireland are considered a poor performer within the EU. A lack of investment in MoIs (including gaps in environmental data) does not hold well for the future. By way of contrast with desired Outcomes targets, Ireland’s performance on SDG Linkage indicators is considered to be good. As can be seen in Table 1, Ireland’s performance is considered good with an aggregate linkage performance that is 88.9 per cent as good as the best in the EU. Murphy et al (2021) develop a traffic light system for each indicator and follow up with a policy analysis of the problematic targets using the policy frameworks of the best in class in the EU.

4. SUMMARY

The core contribution of this paper is to create a taxonomy of the SDG Targets, and associated indicators, into desired *Outcomes*, *Linkages*, and *Means of Implementation* (MoIs). We incorporate our taxonomy into the indicator codes that were developed by UNSD for data transfer, tracking and other statistical purposes in the Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development.

To show the benefit of the taxonomy in use in Ireland, we take 83 ‘Environmental’ SDG targets, and associated indicators, spanning the 17 SDG goals, as defined by the UNEP. Using the available environmental SDG indicator data for Ireland for global reporting, we benchmarked Ireland’s performance on environmental SDG indicators relative to peer nations in the European Union (EU). Overall, the analysis shows that Ireland is 64 per cent off the way towards the aggregate best performers in the EU in relation to its performance on the available environmental SDGs targets. Using our coded taxonomy we are also able to break down Ireland’s strengths and weaknesses by MoIs, linkages across goals and desirable outcomes.

A number of important learnings emerge from using our taxonomy on the targets. First, UNEP identified the ‘environmental’ pillar on the basis of SDG targets rather than SDG Goals. For example, the environmental dimension incorporates UNEP environmental indicators from 16 of the 17 SDGs (Goal 10 is the exception) highlighting the fact that the environment is linked, and relevant, to achieving almost all SDGs.

Secondly, the index developed produces separate disaggregated indices broken down by Outcome, Linkages and MoI indicators. This identification can allow policymakers to determine core areas of strength and weakness with respect to investing in the MoIs, inducing positive linkages across policy, research and behaviours and also tracking SDG performance after investing in MoIs and inducing linkages.

Finally, the index created in this paper is constructed on the basis of a nation's performance as a ratio of the best and worst performers in the EU-27 on each individual indicator. This is a valuable innovation since it allows each nation to assess their progress relative to peers on individual indicators. Once identified, the policy approach in the top performing nation can be assessed with the aim of determining the potential effects, in terms of SDG implementation, of adopting similar policies in another country (such as Ireland).

References

- Alkire, S., Foster, J., Seth, S., Santos, M.E., Roche, J.M., Ballon, P., 2015. *Multidimensional Poverty Measurement Analysis*. Oxford: Oxford University Press.
- Burck, J., Hagen, U., Höhne, N., Nascimento, L., and Bals, C. 2019. *The Climate Change Performance Index 2020*. Germany: GermanWatch
- Deaton, A., 2011. *Measuring development: different data, different conclusions?*. Proceedings of the 8th AFD-EUDN Conference, Paris.
- Murphy, E, Walsh, P.P. and Banerjee, A. (2021, in press), "Framework for Achieving the Environmental Sustainable Development Goals" (Wexford: Environmental Protection Agency).
- Sachs, J., Schmidt-Traub, G., Kroll, C., Durand-Delacre, D. and Teksoz, K., 2017. *SDG Index and Dashboards Report 2017*. New York: Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN).
- Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G., 2019. *Sustainable Development Report 2019*. New York: Bertelsmann Stiftung and Sustainable Development Solutions Network (SDSN).
- Sachs, J., Schmidt-Traub, G., Kroll, C., Lafortune, G., Fuller, G., 2021. *Sustainable Development Report 2021*. Cambridge: Cambridge University Press. Available here: DOI: 10.1017/97810091065 [accessed 02/09/21].
- United Nations Environment Programme (UNEP). 2019. *Measuring progress towards achieving the environmental dimension of the SDGs*. Available at: <https://wedocs.unep.org/bitstream/handle/20.500.11822/27627/MeaProg2019.pdf?sequence=1&isAllowed=y> [accessed March 18th 2019].
- United Nations General Assembly (UNGA). 2015. *Transforming Our World: The 2030 Agenda for Sustainable Development– Agenda 2030*. Available from: <https://sdgs.un.org/2030agenda> [Accessed 28 January 2021].
- United Nations Statistics Division (UNSD)., 2019. *Sustainable Development Goal (SDG) indicators correspondence with the Basic Set of Environment Statistics of the FDES 2013*. Available from: https://unstats.un.org/unsd/envstats/fdes/sdgsind_basissetmatrix.pdf. [Accessed 28 January 2021].
- United Nations Statistics Division (UNSD). *Sustainable Development Goal Indicators Website*. Available from: <https://unstats.un.org/sdgs/>. [Accessed 28 January 2021].
- Wendling, Z., Emerson, J., Esty, D. Levy, M., and de Sherbinin, A. 2018. *2018 Environmental Performance Index (EPI)*. 10.13140/RG.2.2.34995.12328.
- Wendling, Z., Emerson, J., Esty, D. Levy, M., and de Sherbinin, A. 2020 *Environmental Performance Index*. New Haven, CT: Yale Centre for Environmental Law & Policy.

ANNEX 1 - Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development*						
Sustainable Development Goal indicators should be disaggregated, where relevant, by income, sex, age, race, ethnicity, migratory status, disability and geographic location, or other characteristics, in accordance with the Fundamental Principles of Official Statistics. ¹						
<i>Goals and targets (from the 2030 Agenda for Sustainable Development)</i>	<i>Indicators</i>	<i>UNSD Indicator Codes[†]</i>	<i>UNSD Indicator Codes Extended</i>	<i>Indicators Outcome</i>	<i>Indicators Linkage</i>	<i>Indicators MoI</i>
Goal 1. End poverty in all its forms everywhere						
1.1 By 2030, eradicate extreme poverty for all people everywhere, currently measured as people living on less than \$1.25 a day	1.1.1 Proportion of the population living below the international poverty line by sex, age, employment status and geographic location (urban/rural)	C010101	C01010101	1	0	0
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	1.2.1 Proportion of population living below the national poverty line, by sex and age	C010201	C01020101	1	0	0
	1.2.2 Proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions	C010202	C01020201	1	0	0
1.3 Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable	1.3.1 Proportion of population covered by social protection floors/systems, by sex, distinguishing children, unemployed persons, older persons, persons with disabilities, pregnant women, newborns, work-injury victims and the poor and the vulnerable	C010301	C01030101	1	0	0
1.4 By 2030, ensure that all men and women, in particular the poor and the vulnerable, have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property, inheritance, natural resources, appropriate new technology and financial services, including microfinance	1.4.1 Proportion of population living in households with access to basic services	C010401	C01040101	1	0	0
	1.4.2 Proportion of total adult population with secure tenure rights to land, (a) with legally recognized documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure	C010402	C01040201	1	0	0
1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters	1.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population	C010501	C01050102	0	1	0
	1.5.2 Direct economic loss attributed to disasters in relation to global gross domestic product (GDP)	C010502	C01050202	0	1	0
	1.5.3 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030	C010503	C01050302	0	1	0
	1.5.4 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	C010504	C01050402	0	1	0
1.a Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation, in order to provide adequate and predictable means for developing countries, in particular least developed countries, to implement programmes and policies to end poverty in all its dimensions	1.a.1 Total official development assistance grants from all donors that focus on poverty reduction as a share of the recipient country's gross national income	C010a01	C010a0103	0	0	1
	1.a.2 Proportion of total government spending on essential services (education, health and social protection)	C010a02	C010a0203	0	0	1
1.b Create sound policy frameworks at the national, regional and international levels, based on pro-poor and gender-sensitive development strategies, to support accelerated investment in poverty eradication actions	1.b.1 Pro-poor public social spending	C010b01	C010b0103	0	0	1
Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture						
	2.1.1 Prevalence of undernourishment	C020101	C02010101	1	0	0

2.1 By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round	2.1.2 Prevalence of moderate or severe food insecurity in the population, based on the Food Insecurity Experience Scale (FIES)	C020102	C02010201	1	0	0
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	2.2.1 Prevalence of stunting (height for age <-2 standard deviation from the median of the World Health Organization (WHO) Child Growth Standards) among children under 5 years of age	C020201	C02020101	1	0	0
	2.2.2 Prevalence of malnutrition (weight for height >+2 or <-2 standard deviation from the median of the WHO Child Growth Standards) among children under 5 years of age, by type (wasting and overweight)	C020202	C02020201	1	0	0
	2.2.3 Prevalence of anaemia in women aged 15 to 49 years, by pregnancy status (percentage)	C020203	C02020301	1	0	0
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	2.3.1 Volume of production per labour unit by classes of farming/pastoral/forestry enterprise size	C020301	C02030102	0	1	0
	2.3.2 Average income of small-scale food producers, by sex and indigenous status	C020302	C02030202	0	1	0
2.4 By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality	2.4.1 Proportion of agricultural area under productive and sustainable agriculture	C020401	C02040102	0	1	0
2.5 By 2020, maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge, as internationally agreed	2.5.1 Number of (a) plant and (b) animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities	C020501	C02050102	0	1	0
	2.5.2 Proportion of local breeds classified as being at risk of extinction	C020503	C02050302	0	1	0
2.a Increase investment, including through enhanced international cooperation, in rural infrastructure, agricultural research and extension services, technology development and plant and livestock gene banks in order to enhance agricultural productive capacity in developing countries, in particular least developed countries	2.a.1 The agriculture orientation index for government expenditures	C020a01	C020a0103	0	0	1
	2.a.2 Total official flows (official development assistance plus other official flows) to the agriculture sector	C020a02	C020a0203	0	0	1
2.b Correct and prevent trade restrictions and distortions in world agricultural markets, including through the parallel elimination of all forms of agricultural export subsidies and all export measures with equivalent effect, in accordance with the mandate of the Doha Development Round	2.b.1 Agricultural export subsidies	C020b02	C020b0203	0	0	1
2.c Adopt measures to ensure the proper functioning of food commodity markets and their derivatives and facilitate timely access to market information, including on food reserves, in order to help limit extreme food price volatility	2.c.1 Indicator of food price anomalies	C020c01	C020c0103	0	0	1
Goal 3. Ensure healthy lives and promote well-being for all at all ages						
3.1 By 2030, reduce the global maternal mortality ratio to less than 70 per 100,000 live births	3.1.1 Maternal mortality ratio	C030101	C03010101	1	0	0
	3.1.2 Proportion of births attended by skilled health personnel	C030102	C03010201	1	0	0

3.2 By 2030, end preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 per 1,000 live births and under-5 mortality to at least as low as 25 per 1,000 live births	3.2.1 Under-5 mortality rate	C030201	C03020101	1	0	0
	3.2.2 Neonatal mortality rate	C030202	C03020201	1	0	0
3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	3.3.1 Number of new HIV infections per 1,000 uninfected population, by sex, age and key populations	C030301	C03030101	1	0	0
	3.3.2 Tuberculosis incidence per 100,000 population	C030302	C03030201	1	0	0
	3.3.3 Malaria incidence per 1,000 population	C030303	C03030301	1	0	0
	3.3.4 Hepatitis B incidence per 100,000 population	C030304	C03030401	1	0	0
	3.3.5 Number of people requiring interventions against neglected tropical diseases	C030305	C03030501	1	0	0
3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being	3.4.1 Mortality rate attributed to cardiovascular disease, cancer, diabetes or chronic respiratory disease	C030401	C03040101	1	0	0
	3.4.2 Suicide mortality rate	C030402	C03040201	1	0	0
3.5 Strengthen the prevention and treatment of substance abuse, including narcotic drug abuse and harmful use of alcohol	3.5.1 Coverage of treatment interventions (pharmacological, psychosocial and rehabilitation and aftercare services) for substance use disorders	C030501	C03050101	1	0	0
	3.5.2 Alcohol per capita consumption (aged 15 years and older) within a calendar year in litres of pure alcohol	C030502	C03050201	1	0	0
3.6 By 2020, halve the number of global deaths and injuries from road traffic accidents	3.6.1 Death rate due to road traffic injuries	C030601	C03060101	1	0	0
3.7 By 2030, ensure universal access to sexual and reproductive health-care services, including for family planning, information and education, and the integration of reproductive health into national strategies and programmes	3.7.1 Proportion of women of reproductive age (aged 15–49 years) who have their need for family planning satisfied with modern methods	C030701	C03070102	0	1	0
	3.7.2 Adolescent birth rate (aged 10–14 years; aged 15–19 years) per 1,000 women in that age group	C030702	C03070202	0	1	0
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	3.8.1 Coverage of essential health services	C030801	C03080102	0	1	0
	3.8.2 Proportion of population with large household expenditures on health as a share of total household expenditure or income	C030802	C03080202	0	1	0
3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	3.9.1 Mortality rate attributed to household and ambient air pollution	C030901	C03090102	0	1	0
	3.9.2 Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)	C030902	C03090202	0	1	0
	3.9.3 Mortality rate attributed to unintentional poisoning	C030903	C03090302	0	1	0
3.a Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate	3.a.1 Age-standardized prevalence of current tobacco use among persons aged 15 years and older	C030a01	C030a0103	0	0	1
3.b Support the research and development of vaccines and medicines for the communicable and non-communicable diseases that primarily affect developing countries, provide access to affordable essential medicines and vaccines, in accordance with the Doha Declaration on the TRIPS Agreement and Public Health, which affirms the right of developing countries to use to the full the provisions in the Agreement on Trade-Related Aspects of Intellectual Property Rights regarding	3.b.1 Proportion of the target population covered by all vaccines included in their national programme	C030b01	C030b0103	0	0	1
	3.b.2 Total net official development assistance to medical research and basic health sectors	C030b02	C030b0203	0	0	1
	3.b.3 Proportion of health facilities that have a core set of relevant essential medicines available and affordable on a sustainable basis	C030b03	C030b0303	0	0	1

flexibilities to protect public health, and, in particular, provide access to medicines for all						
3.c Substantially increase health financing and the recruitment, development, training and retention of the health workforce in developing countries, especially in least developed countries and small island developing States	3.c.1 Health worker density and distribution	C030c01	C030c0103	0	0	1
3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks	3.d.1 International Health Regulations (IHR) capacity and health emergency preparedness	C030d01	C030d0103	0	0	1
	3.d.2 Percentage of bloodstream infections due to selected antimicrobial-resistant organisms	C030d02	C030d0203	0	0	1
Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all						
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	4.1.1 Proportion of children and young people (a) in grades 2/3; (b) at the end of primary; and (c) at the end of lower secondary achieving at least a minimum proficiency level in (i) reading and (ii) mathematics, by sex	C040101	C04010101	1	0	0
	4.1.2 Completion rate (primary education, lower secondary education, upper secondary education)	C040102	C04010201	1	0	0
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	4.2.1 Proportion of children aged 24–59 months who are developmentally on track in health, learning and psychosocial well-being, by sex	C040201	C04020101	1	0	0
	4.2.2 Participation rate in organized learning (one year before the official primary entry age), by sex	C040202	C04020201	1	0	0
4.3 By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university	4.3.1 Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months, by sex	C040301	C04030101	1	0	0
4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill	C040401	C04040101	1	0	0
4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations	4.5.1 Parity indices (female/male, rural/urban, bottom/top wealth quintile and others such as disability status, indigenous peoples and conflict-affected, as data become available) for all education indicators on this list that can be disaggregated	C040501	C04050102	0	1	0
4.6 By 2030, ensure that all youth and a substantial proportion of adults, both men and women, achieve literacy and numeracy	4.6.1 Proportion of population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills, by sex	C040601	C04060102	0	1	0
4.7 By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development	4.7.1 Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment	C040701	C04070102	0	1	0
4.a Build and upgrade education facilities that are child, disability and gender sensitive and provide safe, non-violent, inclusive and effective learning environments for all	4.a.1 Proportion of schools offering basic services, by type of service	C040a01	C040a0103	0	0	1
4.b By 2020, substantially expand globally the number of scholarships available to developing countries, in particular least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and	4.b.1 Volume of official development assistance flows for scholarships by sector and type of study	C040b01	C040b0103	0	0	1

information and communications technology, technical, engineering and scientific programmes, in developed countries and other developing countries						
4.c By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing States	4.c.1 Proportion of teachers with the minimum required qualifications, by education level	C040c01	C040c0103	0	0	1
Goal 5. Achieve gender equality and empower all women and girls						
5.1 End all forms of discrimination against all women and girls everywhere	5.1.1 Whether or not legal frameworks are in place to promote, enforce and monitor equality and non-discrimination on the basis of sex	C050101	C05010101	1	0	0
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	5.2.1 Proportion of ever-partnered women and girls aged 15 years and older subjected to physical, sexual or psychological violence by a current or former intimate partner in the previous 12 months, by form of violence and by age	C050201	C05020101	1	0	0
	5.2.2 Proportion of women and girls aged 15 years and older subjected to sexual violence by persons other than an intimate partner in the previous 12 months, by age and place of occurrence	C050202	C05020201	1	0	0
5.3 Eliminate all harmful practices, such as child, early and forced marriage and female genital mutilation	5.3.1 Proportion of women aged 20–24 years who were married or in a union before age 15 and before age 18	C050301	C05030101	1	0	0
	5.3.2 Proportion of girls and women aged 15–49 years who have undergone female genital mutilation/cutting, by age	C050302	C05030201	1	0	0
5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate	5.4.1 Proportion of time spent on unpaid domestic and care work, by sex, age and location	C050401	C05040102	0	1	0
5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life	5.5.1 Proportion of seats held by women in (a) national parliaments and (b) local governments	C050501	C05050102	0	1	0
	5.5.2 Proportion of women in managerial positions	C050502	C05050202	0	1	0
5.6 Ensure universal access to sexual and reproductive health and reproductive rights as agreed in accordance with the Programme of Action of the International Conference on Population and Development and the Beijing Platform for Action and the outcome documents of their review conferences	5.6.1 Proportion of women aged 15–49 years who make their own informed decisions regarding sexual relations, contraceptive use and reproductive health care	C050601	C05060102	0	1	0
	5.6.2 Number of countries with laws and regulations that guarantee full and equal access to women and men aged 15 years and older to sexual and reproductive health care, information and education	C050602	C05060202	0	1	0
5.a Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws	5.a.1 (a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure	C050a01	C050a0103	0	0	1
	5.a.2 Proportion of countries where the legal framework (including customary law) guarantees women's equal rights to land ownership and/or control	C050a02	C050a0203	0	0	1
5.b Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women	5.b.1 Proportion of individuals who own a mobile telephone, by sex	C050b01	C050b0103	0	0	1

5.c Adopt and strengthen sound policies and enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels	5.c.1 Proportion of countries with systems to track and make public allocations for gender equality and women's empowerment	C050c01	C050c0103	0	0	1
Goal 6. Ensure availability and sustainable management of water and sanitation for all						
6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all	6.1.1 Proportion of population using safely managed drinking water services	C060101	C06010101	1	0	0
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	6.2.1 Proportion of population using (a) safely managed sanitation services and (b) a hand-washing facility with soap and water	C060201	C06020101	1	0	0
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	6.3.1 Proportion of domestic and industrial wastewater flows safely treated	C060301	C06030101	1	0	0
	6.3.2 Proportion of bodies of water with good ambient water quality	C060302	C06030201	1	0	0
6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity	6.4.1 Change in water-use efficiency over time	C060401	C06040101	0	1	0
	6.4.2 Level of water stress: freshwater withdrawal as a proportion of available freshwater resources	C060402	C06040202	0	1	0
6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate	6.5.1 Degree of integrated water resources management	C060501	C06050102	0	1	0
	6.5.2 Proportion of transboundary basin area with an operational arrangement for water cooperation	C060502	C06050202	0	1	0
6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes	6.6.1 Change in the extent of water-related ecosystems over time	C060601	C06060102	0	1	0
6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies	6.a.1 Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan	C060a01	C060a0103	0	0	1
6.b Support and strengthen the participation of local communities in improving water and sanitation management	6.b.1 Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management	C060b01	C060b0103	0	0	1
Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all						
7.1 By 2030, ensure universal access to affordable, reliable and modern energy services	7.1.1 Proportion of population with access to electricity	C070101	C07010101	1	0	0
	7.1.2 Proportion of population with primary reliance on clean fuels and technology	C070102	C07010201	1	0	0
7.2 By 2030, increase substantially the share of renewable energy in the global energy mix	7.2.1 Renewable energy share in the total final energy consumption	C070201	C07020102	0	1	0
7.3 By 2030, double the global rate of improvement in energy efficiency	7.3.1 Energy intensity measured in terms of primary energy and GDP	C070301	C07030102	0	1	0
7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology	7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems	C070a01	C070a0103	0	0	1
7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular least developed countries, small island	7.b.1 Installed renewable energy-generating capacity in developing countries (in watts per capita)	C070b01	C070b0103	0	0	1

developing States and landlocked developing countries, in accordance with their respective programmes of support						
Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all						
8.1 Sustain per capita economic growth in accordance with national circumstances and, in particular, at least 7 per cent gross domestic product growth per annum in the least developed countries	8.1.1 Annual growth rate of real GDP per capita	C080101	C08010101	1	0	0
8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors	8.2.1 Annual growth rate of real GDP per employed person	C080201	C08020101	1	0	0
8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services	8.3.1 Proportion of informal employment in total employment, by sector and sex	C080302	C08030202	0	1	0
8.4 Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead	8.4.1 Material footprint, material footprint per capita, and material footprint per GDP	C200202	C20020202	0	1	0
	8.4.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	C200203	C20020302	0	1	0
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	8.5.1 Average hourly earnings of employees, by sex, age, occupation and persons with disabilities	C080501	C08050102	0	1	0
	8.5.2 Unemployment rate, by sex, age and persons with disabilities	C080502	C08050202	0	1	0
8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training	8.6.1 Proportion of youth (aged 15–24 years) not in education, employment or training	C080601	C08060102	0	1	0
8.7 Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms	8.7.1 Proportion and number of children aged 5–17 years engaged in child labour, by sex and age	C080701	C08070102	0	1	0
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	8.8.1 Fatal and non-fatal occupational injuries per 100,000 workers, by sex and migrant status	C080801	C08080102	0	1	0
	8.8.2 Level of national compliance with labour rights (freedom of association and collective bargaining) based on International Labour Organization (ILO) textual sources and national legislation, by sex and migrant status	C080802	C08080202	0	1	0
8.9 By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products	8.9.1 Tourism direct GDP as a proportion of total GDP and in growth rate	C080901	C08090101	0	1	0
8.10 Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all	8.10.1 (a) Number of commercial bank branches per 100,000 adults and (b) number of automated teller machines (ATMs) per 100,000 adults	C081001	C08100101	0	1	0
	8.10.2 Proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile-money-service provider	C081002	C08100201	0	1	0
8.a Increase Aid for Trade support for developing countries, in particular least developed countries, including through the Enhanced Integrated Framework for Trade-related Technical Assistance to Least Developed Countries	8.a.1 Aid for Trade commitments and disbursements	C080a01	C080a0103	0	0	1

8.b By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization	8.b.1 Existence of a developed and operationalized national strategy for youth employment, as a distinct strategy or as part of a national employment strategy	C080b01	C080b0103	0	0	1
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation						
9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all	9.1.1 Proportion of the rural population who live within 2 km of an all-season road	C090101	C09010101	1	0	0
	9.1.2 Passenger and freight volumes, by mode of transport	C090102	C09010201	1	0	0
9.2 Promote inclusive and sustainable industrialization and, by 2030, significantly raise industry's share of employment and gross domestic product, in line with national circumstances, and double its share in least developed countries	9.2.1 Manufacturing value added as a proportion of GDP and per capita	C090201	C09020101	1	0	0
	9.2.2 Manufacturing employment as a proportion of total employment	C090202	C09020201	1	0	0
9.3 Increase the access of small-scale industrial and other enterprises, in particular in developing countries, to financial services, including affordable credit, and their integration into value chains and markets	9.3.1 Proportion of small-scale industries in total industry value added	C090301	C09030101	1	0	0
	9.3.2 Proportion of small-scale industries with a loan or line of credit	C090302	C09030201	1	0	0
9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities	9.4.1 CO ₂ emission per unit of value added	C090401	C09040102	0	1	0
9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending	9.5.1 Research and development expenditure as a proportion of GDP	C090501	C09050101	0	1	0
	9.5.2 Researchers (in full-time equivalent) per million inhabitants	C090502	C09050201	0	1	0
9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States	9.a.1 Total official international support (official development assistance plus other official flows) to infrastructure	C090a01	C090a0103	0	0	1
9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities	9.b.1 Proportion of medium and high-tech industry value added in total value added	C090b01	C090b0103	0	0	1
9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020	9.c.1 Proportion of population covered by a mobile network, by technology	C090c01	C090c0103	0	0	1
Goal 10. Reduce inequality within and among countries						
10.1 By 2030, progressively achieve and sustain income growth of the bottom 40 per cent of the population at a rate higher than the national average	10.1.1 Growth rates of household expenditure or income per capita among the bottom 40 per cent of the population and the total population	C100101	C10010101	1	0	0
10.2 By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status	10.2.1 Proportion of people living below 50 per cent of median income, by sex, age and persons with disabilities	C100201	C10020101	1	0	0
10.3 Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard	10.3.1 Proportion of population reporting having personally felt discriminated against or harassed in the previous 12 months on the	C200204	C20020401	1	0	0

	basis of a ground of discrimination prohibited under international human rights law					
10.4 Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality	10.4.1 Labour share of GDP	C100401	C10040101	1	0	0
	10.4.2 Redistributive impact of fiscal policy ⁴	C100402	C10040201	1	0	0
10.5 Improve the regulation and monitoring of global financial markets and institutions and strengthen the implementation of such regulations	10.5.1 Financial Soundness Indicators	C100501	C10050101	1	0	0
10.6 Ensure enhanced representation and voice for developing countries in decision-making in global international economic and financial institutions in order to deliver more effective, credible, accountable and legitimate institutions	10.6.1 Proportion of members and voting rights of developing countries in international organizations	C200205	C20020502	0	1	0
10.7 Facilitate orderly, safe, regular and responsible migration and mobility of people, including through the implementation of planned and well-managed migration policies	10.7.1 Recruitment cost borne by employee as a proportion of monthly income earned in country of destination	C100701	C10070102	0	1	0
	10.7.2 Number of countries with migration policies that facilitate orderly, safe, regular and responsible migration and mobility of people	C100702	C10070202	0	1	0
	10.7.3 Number of people who died or disappeared in the process of migration towards an international destination	C100703	C10070302	0	1	0
	10.7.4 Proportion of the population who are refugees, by country of origin	C100704	C10070402	0	1	0
10.a Implement the principle of special and differential treatment for developing countries, in particular least developed countries, in accordance with World Trade Organization agreements	10.a.1 Proportion of tariff lines applied to imports from least developed countries and developing countries with zero-tariff	C100a01	C100a0103	0	0	1
10.b Encourage official development assistance and financial flows, including foreign direct investment, to States where the need is greatest, in particular least developed countries, African countries, small island developing States and landlocked developing countries, in accordance with their national plans and programmes	10.b.1 Total resource flows for development, by recipient and donor countries and type of flow (e.g. official development assistance, foreign direct investment and other flows)	C100b01	C100b0103	0	0	1
10.c By 2030, reduce to less than 3 per cent the transaction costs of migrant remittances and eliminate remittance corridors with costs higher than 5 per cent	10.c.1 Remittance costs as a proportion of the amount remitted	C100c01	C100c0103	0	0	1
Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable						
11.1 By 2030, ensure access for all to adequate, safe and affordable housing and basic services and upgrade slums	11.1.1 Proportion of urban population living in slums, informal settlements or inadequate housing	C110101	C11010101	1	0	0
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	11.2.1 Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities	C110201	C11020101	1	0	0
	11.3.1 Ratio of land consumption rate to population growth rate	C110301	C11030101	1	0	0
11.3 By 2030, enhance inclusive and sustainable urbanization and capacity for participatory, integrated and sustainable human settlement planning and management in all countries	11.3.2 Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically	C110302	C11030201	1	0	0
	11.4.1 Total per capita expenditure on the preservation, protection and conservation of all cultural and natural heritage, by source of funding (public, private), type of heritage (cultural, natural) and level of government (national, regional, and local/municipal)	C110401	C11040101	1	0	0
11.4 Strengthen efforts to protect and safeguard the world's cultural and natural heritage						

11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	11.5.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population	C110501	C11050102	0	1	0
	11.5.2 Direct economic loss in relation to global GDP, damage to critical infrastructure and number of disruptions to basic services, attributed to disasters	C110502	C11050202	0	1	0
11.6 By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management	11.6.1 Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities	C110603	C11060302	0	1	0
	11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)	C110602	C11060202	0	1	0
11.7 By 2030, provide universal access to safe, inclusive and accessible, green and public spaces, in particular for women and children, older persons and persons with disabilities	11.7.1 Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities	C110701	C11070102	0	1	0
	11.7.2 Proportion of persons victim of physical or sexual harassment, by sex, age, disability status and place of occurrence, in the previous 12 months	C110702	C11070202	0	1	0
11.a Support positive economic, social and environmental links between urban, peri-urban and rural areas by strengthening national and regional development planning	11.a.1 Number of countries that have national urban policies or regional development plans that (a) respond to population dynamics; (b) ensure balanced territorial development; and (c) increase local fiscal space	C110a01	C110a0103	0	0	1
11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels	11.b.1 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030	C110b01	C110b0103	0	0	1
	11.b.2 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	C110b02	C110b0203	0	0	1
11.c Support least developed countries, including through financial and technical assistance, in building sustainable and resilient buildings utilizing local materials	<i>No suitable replacement indicator was proposed. The global statistical community is encouraged to work to develop an indicator that could be proposed for the 2025 comprehensive review. See E/CN.3/2020/2, paragraph 23.</i>	C110c01	C110c0103	0	0	1
Goal 12. Ensure sustainable consumption and production patterns						
12.1 Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries	12.1.1 Number of countries developing, adopting or implementing policy instruments aimed at supporting the shift to sustainable consumption and production	C120101	C12010101	1	0	0
12.2 By 2030, achieve the sustainable management and efficient use of natural resources	12.2.1 Material footprint, material footprint per capita, and material footprint per GDP	C200202	C20020202	1	0	0
	12.2.2 Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP	C200203	C20020302	1	0	0
12.3 By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses	12.3.1 (a) Food loss index and (b) food waste index	C120301	C12030102	1	0	0
12.4 By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release	12.4.1 Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement	C120401	C12040101	1	0	0

to air, water and soil in order to minimize their adverse impacts on human health and the environment	12.4.2 (a) Hazardous waste generated per capita; and (b) proportion of hazardous waste treated, by type of treatment	C120402	C12040201	1	0	0
12.5 By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse	12.5.1 National recycling rate, tons of material recycled	C120501	C12050101	1	0	0
12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle	12.6.1 Number of companies publishing sustainability reports	C120601	C12060101	1	0	0
12.7 Promote public procurement practices that are sustainable, in accordance with national policies and priorities	12.7.1 Degree of sustainable public procurement policies and action plan implementation	C120701	C12070102	0	1	0
12.8 By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature	12.8.1 Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment	C120801	C12080102	0	1	0
12.a Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production	12.a.1 Installed renewable energy-generating capacity in developing countries (in watts per capita)	C120a01	C120a0103	0	0	1
12.b Develop and implement tools to monitor sustainable development impacts for sustainable tourism that creates jobs and promotes local culture and products	12.b.1 Implementation of standard accounting tools to monitor the economic and environmental aspects of tourism sustainability	C120b01	C120b0103	0	0	1
12.c Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions, in accordance with national circumstances, including by restructuring taxation and phasing out those harmful subsidies, where they exist, to reflect their environmental impacts, taking fully into account the specific needs and conditions of developing countries and minimizing the possible adverse impacts on their development in a manner that protects the poor and the affected communities	12.c.1 Amount of fossil-fuel subsidies (production and consumption) per unit of GDP	C120c01	C120c0103	0	0	1
Goal 13. Take urgent action to combat climate change and its impacts³						
13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	13.1.1 Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population	C130101	C13010102	0	1	0
	13.1.2 Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030	C130102	C13010202	0	1	0
	13.1.3 Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies	C130103	C13010302	0	1	0
13.2 Integrate climate change measures into national policies, strategies and planning	13.2.1 Number of countries with nationally determined contributions, long-term strategies, national adaptation plans and adaptation communications, as reported to the secretariat of the United Nations Framework Convention on Climate Change	C130201	C13020102	0	1	0
	13.2.2 Total greenhouse gas emissions per year	C130202	C13020201	0	1	0
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	13.3.1 Extent to which (i) global citizenship education and (ii) education for sustainable development are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment	C130301	C13030102	0	1	0
13.a Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly \$100 billion annually by 2020	13.a.1 Amounts provided and mobilized in United States dollars per year in relation to the continued existing collective mobilization goal of the \$100 billion commitment through to 2025	C130a01	C130a0103	0	0	1

from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible						
13.b Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities	13.b.1 Number of least developed countries and small island developing States with nationally determined contributions, long-term strategies, national adaptation plans and adaptation communications, as reported to the secretariat of the United Nations Framework Convention on Climate Change	C130b01	C130b0103	0	0	1
Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development						
14.1 By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution	14.1.1 (a) Index of coastal eutrophication; and (b) plastic debris density	C140101	C14010101	1	0	0
14.2 By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans	14.2.1 Number of countries using ecosystem-based approaches to managing marine areas	C140201	C14020101	1	0	0
14.3 Minimize and address the impacts of ocean acidification, including through enhanced scientific cooperation at all levels	14.3.1 Average marine acidity (pH) measured at agreed suite of representative sampling stations	C140301	C14030101	1	0	0
14.4 By 2020, effectively regulate harvesting and end overfishing, illegal, unreported and unregulated fishing and destructive fishing practices and implement science-based management plans, in order to restore fish stocks in the shortest time feasible, at least to levels that can produce maximum sustainable yield as determined by their biological characteristics	14.4.1 Proportion of fish stocks within biologically sustainable levels	C140401	C14040101	1	0	0
14.5 By 2020, conserve at least 10 per cent of coastal and marine areas, consistent with national and international law and based on the best available scientific information	14.5.1 Coverage of protected areas in relation to marine areas	C140501	C14050101	1	0	0
14.6 By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation ⁴	14.6.1 Degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing	C140601	C14060102	0	1	0
14.7 By 2030, increase the economic benefits to small island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism	14.7.1 Sustainable fisheries as a proportion of GDP in small island developing States, least developed countries and all countries	C140701	C14070102	0	1	0
14.a Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, in order to improve ocean health and to enhance the contribution of marine biodiversity to the development of developing countries, in particular small island developing States and least developed countries	14.a.1 Proportion of total research budget allocated to research in the field of marine technology	C140a01	C140a0103	0	0	1

14.b Provide access for small-scale artisanal fishers to marine resources and markets	14.b.1 Degree of application of a legal/regulatory/policy/institutional framework which recognizes and protects access rights for small-scale fisheries	C140b01	C140b0103	0	0	1
14.c Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in the United Nations Convention on the Law of the Sea, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of “The future we want”	14.c.1 Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources	C140c01	C140c0103	0	0	1
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss						
15.1 By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements	15.1.1 Forest area as a proportion of total land area	C150101	C15010101	1	0	0
	15.1.2 Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type	C150102	C15010201	1	0	0
15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	15.2.1 Progress towards sustainable forest management	C150201	C15020101	1	0	0
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	15.3.1 Proportion of land that is degraded over total land area	C150301	C15030101	1	0	0
15.4 By 2030, ensure the conservation of mountain ecosystems, including their biodiversity, in order to enhance their capacity to provide benefits that are essential for sustainable development	15.4.1 Coverage by protected areas of important sites for mountain biodiversity	C150401	C15040101	1	0	0
	15.4.2 Mountain Green Cover Index	C150402	C15040201	1	0	0
15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	15.5.1 Red List Index	C150501	C15050101	1	0	0
15.6 Promote fair and equitable sharing of the benefits arising from the utilization of genetic resources and promote appropriate access to such resources, as internationally agreed	15.6.1 Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits	C150601	C15060102	0	1	0
15.7 Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife products	15.7.1 Proportion of traded wildlife that was poached or illicitly trafficked	C200206	C20020602	0	1	0
15.8 By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species	15.8.1 Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species	C150801	C15080102	0	1	0
15.9 By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts	15.9.1 (a) Number of countries that have established national targets in accordance with or similar to Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011–2020 in their national biodiversity strategy and action plans and the progress reported towards these targets; and (b) integration of biodiversity into national accounting and reporting systems, defined as implementation of the System of Environmental-Economic Accounting	C150902	C15090202	0	1	0
15.a Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystems	15.a.1 (a) Official development assistance on conservation and sustainable use of biodiversity; and (b) revenue generated and finance mobilized from biodiversity-relevant economic instruments	C150a01	C150a0103	0	0	1

15.b Mobilize significant resources from all sources and at all levels to finance sustainable forest management and provide adequate incentives to developing countries to advance such management, including for conservation and reforestation	15.b.1 (a) Official development assistance on conservation and sustainable use of biodiversity; and (b) revenue generated and finance mobilized from biodiversity-relevant economic instruments	C150b01	C150b0103	0	0	1
15.c Enhance global support for efforts to combat poaching and trafficking of protected species, including by increasing the capacity of local communities to pursue sustainable livelihood opportunities	15.c.1 Proportion of traded wildlife that was poached or illicitly trafficked	C150c01	C150c0103	0	0	1
Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels						
16.1 Significantly reduce all forms of violence and related death rates everywhere	16.1.1 Number of victims of intentional homicide per 100,000 population, by sex and age	C160101	C16010101	1	0	0
	16.1.2 Conflict-related deaths per 100,000 population, by sex, age and cause	C160102	C16010201	1	0	0
	16.1.3 Proportion of population subjected to (a) physical violence, (b) psychological violence and (c) sexual violence in the previous 12 months	C160103	C16010301	1	0	0
	16.1.4 Proportion of population that feel safe walking alone around the area they live	C160104	C16010401	1	0	0
16.2 End abuse, exploitation, trafficking and all forms of violence against and torture of children	16.2.1 Proportion of children aged 1–17 years who experienced any physical punishment and/or psychological aggression by caregivers in the past month	C160201	C16020101	1	0	0
	16.2.2 Number of victims of human trafficking per 100,000 population, by sex, age and form of exploitation	C160202	C16020201	1	0	0
	16.2.3 Proportion of young women and men aged 18–29 years who experienced sexual violence by age 18	C160203	C16020301	1	0	0
16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all	16.3.1 Proportion of victims of violence in the previous 12 months who reported their victimization to competent authorities or other officially recognized conflict resolution mechanisms	C160301	C16030101	1	0	0
	16.3.2 Unsentenced detainees as a proportion of overall prison population	C160302	C16030201	1	0	0
	16.3.3 Proportion of the population who have experienced a dispute in the past two years and who accessed a formal or informal dispute resolution mechanism, by type of mechanism	C160303	C16030301	1	0	0
16.4 By 2030, significantly reduce illicit financial and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organized crime	16.4.1 Total value of inward and outward illicit financial flows (in current United States dollars)	C160401	C16040101	1	0	0
	16.4.2 Proportion of seized, found or surrendered arms whose illicit origin or context has been traced or established by a competent authority in line with international instruments	C160402	C16040201	1	0	0
16.5 Substantially reduce corruption and bribery in all their forms	16.5.1 Proportion of persons who had at least one contact with a public official and who paid a bribe to a public official, or were asked for a bribe by those public officials, during the previous 12 months	C160501	C16050101	1	0	0
	16.5.2 Proportion of businesses that had at least one contact with a public official and that paid a bribe to a public official, or were asked for a bribe by those public officials during the previous 12 months	C160502	C16050201	1	0	0

16.6 Develop effective, accountable and transparent institutions at all levels	16.6.1 Primary government expenditures as a proportion of original approved budget, by sector (or by budget codes or similar)	C160601	C16060101	1	0	0
	16.6.2 Proportion of population satisfied with their last experience of public services	C160602	C16060201	1	0	0
16.7 Ensure responsive, inclusive, participatory and representative decision-making at all levels	16.7.1 Proportions of positions in national and local institutions, including (a) the legislatures; (b) the public service; and (c) the judiciary, compared to national distributions, by sex, age, persons with disabilities and population groups	C160701	C16070102	0	1	0
	16.7.2 Proportion of population who believe decision-making is inclusive and responsive, by sex, age, disability and population group	C160702	C16070202	0	1	0
16.8 Broaden and strengthen the participation of developing countries in the institutions of global governance	16.8.1 Proportion of members and voting rights of developing countries in international organizations	C200205	C20020502	0	1	0
16.9 By 2030, provide legal identity for all, including birth registration	16.9.1 Proportion of children under 5 years of age whose births have been registered with a civil authority, by age	C160901	C16090101	0	1	0
16.10 Ensure public access to information and protect fundamental freedoms, in accordance with national legislation and international agreements	16.10.1 Number of verified cases of killing, kidnapping, enforced disappearance, arbitrary detention and torture of journalists, associated media personnel, trade unionists and human rights advocates in the previous 12 months	C161001	C16100101	0	1	0
	16.10.2 Number of countries that adopt and implement constitutional, statutory and/or policy guarantees for public access to information	C161002	C16100201	0	1	0
16.a Strengthen relevant national institutions, including through international cooperation, for building capacity at all levels, in particular in developing countries, to prevent violence and combat terrorism and crime	16.a.1 Existence of independent national human rights institutions in compliance with the Paris Principles	C160a01	C160a0103	0	0	1
16.b Promote and enforce non-discriminatory laws and policies for sustainable development	16.b.1 Proportion of population reporting having personally felt discriminated against or harassed in the previous 12 months on the basis of a ground of discrimination prohibited under international human rights law	C160b01	C160b0103	0	0	1
Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development						
Finance						
17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection	17.1.1 Total government revenue as a proportion of GDP, by source	C170101	C17010103	0	0	1
	17.1.2 Proportion of domestic budget funded by domestic taxes	C170102	C17010203	0	0	1
17.2 Developed countries to implement fully their official development assistance commitments, including the commitment by many developed countries to achieve the target of 0.7 per cent of gross national income for official development assistance (ODA/GNI) to developing countries and 0.15 to 0.20 per cent of ODA/GNI to least developed countries; ODA providers are encouraged to consider setting a target to provide at least 0.20 per cent of ODA/GNI to least developed countries	17.2.1 Net official development assistance, total and to least developed countries, as a proportion of the Organization for Economic Cooperation and Development (OECD) Development Assistance Committee donors' gross national income (GNI)	C170201	C17020103	0	0	1
17.3 Mobilize additional financial resources for developing countries from multiple sources	17.3.1 Foreign direct investment, official development assistance and South-South cooperation as a proportion of gross national income	C170303	C17030303	0	0	1
	17.3.2 Volume of remittances (in United States dollars) as a proportion of total GDP	C170302	C17030203	0	0	1

17.4 Assist developing countries in attaining long-term debt sustainability through coordinated policies aimed at fostering debt financing, debt relief and debt restructuring, as appropriate, and address the external debt of highly indebted poor countries to reduce debt distress	17.4.1 Debt service as a proportion of exports of goods and services	C170401	C17040103	0	0	1
17.5 Adopt and implement investment promotion regimes for least developed countries	17.5.1 Number of countries that adopt and implement investment promotion regimes for developing countries, including the least developed countries	C170502	C17050203	0	0	1
Technology				0	0	1
17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism	17.6.1 Fixed Internet broadband subscriptions per 100 inhabitants, by speed ⁵	C170602	C17060203	0	0	1
17.7 Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed	17.7.1 Total amount of funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies	C170701	C17070103	0	0	1
17.8 Fully operationalize the technology bank and science, technology and innovation capacity-building mechanism for least developed countries by 2017 and enhance the use of enabling technology, in particular information and communications technology	17.8.1 Proportion of individuals using the Internet	C170801	C17080103	0	0	1
Capacity-building				0	0	1
17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation	17.9.1 Dollar value of financial and technical assistance (including through North-South, South-South and triangular cooperation) committed to developing countries	C170901	C17090103	0	0	1
Trade				0	0	1
17.10 Promote a universal, rules-based, open, non-discriminatory and equitable multilateral trading system under the World Trade Organization, including through the conclusion of negotiations under its Doha Development Agenda	17.10.1 Worldwide weighted tariff-average	C171001	C17100103	0	0	1
17.11 Significantly increase the exports of developing countries, in particular with a view to doubling the least developed countries' share of global exports by 2020	17.11.1 Developing countries' and least developed countries' share of global exports	C171101	C17110103	0	0	1
17.12 Realize timely implementation of duty-free and quota-free market access on a lasting basis for all least developed countries, consistent with World Trade Organization decisions, including by ensuring that preferential rules of origin applicable to imports from least developed countries are transparent and simple, and contribute to facilitating market access	17.12.1 Weighted average tariffs faced by developing countries, least developed countries and small island developing States	C171201	C17120103	0	0	1
Systemic issues						
<i>Policy and institutional coherence</i>						
17.13 Enhance global macroeconomic stability, including through policy coordination and policy coherence	17.13.1 Macroeconomic Dashboard	C171301	C17130103	0	0	1
17.14 Enhance policy coherence for sustainable development	17.14.1 Number of countries with mechanisms in place to enhance policy coherence of sustainable development	C171401	C17140103	0	0	1

17.15 Respect each country's policy space and leadership to establish and implement policies for poverty eradication and sustainable development	17.15.1 Extent of use of country-owned results frameworks and planning tools by providers of development cooperation	C171501	C17150103	0	0	1
<i>Multi-stakeholder partnerships</i>						
17.16 Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries	17.16.1 Number of countries reporting progress in multi-stakeholder development effectiveness monitoring frameworks that support the achievement of the sustainable development goals	C171601	C17160103	0	0	1
17.17 Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships	17.17.1 Amount in United States dollars committed to public-private partnerships for infrastructure	C171702	C17170203	0	0	1
<i>Data, monitoring and accountability</i>						
17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts	17.18.1 Statistical capacity indicator for Sustainable Development Goal monitoring	C171804	C17180403	0	0	1
	17.18.2 Number of countries that have national statistical legislation that complies with the Fundamental Principles of Official Statistics	C171802	C17180203	0	0	1
	17.18.3 Number of countries with a national statistical plan that is fully funded and under implementation, by source of funding	C171803	C17180303	0	0	1
17.19 By 2030, build on existing initiatives to develop measurements of progress on sustainable development that complement gross domestic product, and support statistical capacity-building in developing countries	17.19.1 Dollar value of all resources made available to strengthen statistical capacity in developing countries	C171901	C17190103	0	0	1
	17.19.2 Proportion of countries that (a) have conducted at least one population and housing census in the last 10 years; and (b) have achieved 100 per cent birth registration and 80 per cent death registration	C171902	C17190203	0	0	1

ANNEX II

United Nations Environment Programme Indicators	Spatial Scale	Source	Data Year(s)
1.4.2. "Proportion of total adult population with secure tenure rights to land, (a) with legally recognized documentation, and (b) who perceive their rights to land as secure, by sex and type of tenure"	Local (Small Areas)	Geohive	2016
1.5.1/11.5.1/ 13.1.1 "Number of deaths, missing persons and directly affected persons attributed to disasters per 100,000 population"	National	UN Stats (UNISDR)	2017
1.5.2/ 11.5.2. "Direct economic loss attributed to disasters in relation to global gross domestic product (GDP)"	National	UN Stats (UNISDR)	2016
		* Geohive	*2016-2017
1.5.3./11.b.1/ 13.1.2. "Number of countries that adopt and implement national disaster risk reduction strategies in line with the Sendai Framework for Disaster Risk Reduction 2015–2030"	National	UN Stats	2015-2017
1.5.4/11.b.2/13.1.3. "Proportion of local governments that adopt and implement local disaster risk reduction strategies in line with national disaster risk reduction strategies"	National	UN Stats (Sendai Framework Monitoring System as provided by designated national focal points)	2015-2017
2.4.1. "Proportion of agricultural area under productive and sustainable agriculture"	National	SDSN Index	2016 - 2019
2.5.1."Number of plant and animal genetic resources for food and agriculture secured in either medium- or long-term conservation facilities"	National	UN Stats (FAO)	2018-2019
2.5.2. "Proportion of local breeds classified as being at risk, not at risk or at unknown level of risk of extinction"	National	UN Stats (FAO)	2000 - 2019
3.9.1. "Mortality rate attributed to household and ambient air pollution"	National	UN Stats (WHO)	2016
3.9.2."Mortality rate attributed to unsafe water, unsafe sanitation and lack of hygiene (exposure to unsafe Water, Sanitation and Hygiene for All (WASH) services)"	National	UN Stats (WHO)	2016
3.9.3. "Mortality rate attributed to unintentional poisoning"	National	UN Stats (WHO)	2000-2016
4.7.1. "Extent to which (i) global citizenship education and (ii) education for sustainable development, including gender equality and human rights, are mainstreamed at all levels in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment"	National	Department of Education and Skills	2015 ((next data release 2020, concerned with data from 2018)
5.a.1. "(a) Proportion of total agricultural population with ownership or secure rights over agricultural land, by sex; and (b) share of women among owners or rights-bearers of agricultural land, by type of tenure"	National	CSO	2016
6.1.1."Proportion of population using safely managed drinking water services"	National	UN Stats (WHO/UNICEF)	2000- 2017
	* Local (Small areas, County, NUTS, Electoral Division)	*Geohive	*2016
6.3.1. "Proportion of wastewater safely treated"	National	UN Stats (WHO)	2018
6.3.2. "Proportion of bodies of water with good ambient water quality"	National	UN Stats (Environment Live)	2017 (next reporting cycle 2020)
	* Local (Small areas, County, NUTS, Electoral Division)	*Geohive	*2015
6.4.1. "Change in water-use efficiency over time"	National	FAO (AquaStat)	1993-2012
6.4.2."Level of water stress: freshwater withdrawal as a proportion of available freshwater resources"	National	UN Stats (United Nations Environment Programme)	2010
6.5.1. "Degree of integrated water resources management implementation (0–100)"	National	UN Stats (United Nations Environment Programme)	2018
6.5.2."Proportion of transboundary basin area with an operational arrangement for water cooperation"	National	UN Stats (UNESCO)	2017
6.6.1."Change in the extent of water-related ecosystems over time"	Local,	UN Stats (UN Environment), EPA, Geological Survey Ireland	*different dates for each data source
	National		
6.a.1. "Amount of water- and sanitation-related official development assistance that is part of a government-coordinated spending plan"	National	OECD	2005-2017

6.b.1. "Proportion of local administrative units with established and operational policies and procedures for participation of local communities in water and sanitation management"	N/A	N/A	N/A
7.1.2. "Proportion of population with primary reliance on clean fuels and technology"	National	UN Stats (WHO)	2000 - 2017
7.2.1. "Renewable energy share in the total final energy consumption"	National	UN Stats (IEA)	2000-2016
	*Local (NUTS),	*Geohive (SEAI, CSO)	*2015-2016
7.3.1. "Energy intensity measured in terms of primary energy and GDP"	National	UN Stats (IEA)	2000 - 2016
7.a.1. "International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems"	National	OECD/IRENA	2012 - 2016
7.b.1. "Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services"	National	OECD	1999-2017
		*CSO	
8.9.2. "Proportion of jobs in sustainable tourism industries out of total tourism jobs"	N/A	N/A	N/A
9.1.1. "Proportion of the rural population who live within 2 km of an all-season road"	National	World Bank	2002
9.4.1. "CO2 emission per unit of value added"	Local (NUTS)	UN Stats	2000 – 2016
	*National	*Geohive	*2016
11.2.1. "Proportion of population that has convenient access to public transport, by sex, age and persons with disabilities"	National	SDSN	2019
		*Eurostat	*2000-2016
11.3.1. "Ratio of land consumption rate to population growth rate"	National	Eurostat	2012-2015
		CSO	
11.3.2. "Proportion of cities with a direct participation structure of civil society in urban planning and management that operate regularly and democratically"	N/A	N/A	N/A
11.4.1. "Total expenditure (public and private) per capita spent on the preservation, protection and conservation of all cultural and natural heritage, by type of heritage (cultural, natural, mixed and World Heritage Centre designation), level of government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship)"	National	Department of Culture, Heritage and Gaeltacht	2018
11.6.1. "Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities"	County (Dublin)	UN Stats	2015
	* Local (Admin. County)	*Geohive (EPA, OSi)	*2013
11.6.2. "Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities (population weighted)"	National	UN Stats (WHO)	2016
11.7.1. "Average share of the built-up area of cities that is open space for public use for all, by sex, age and persons with disabilities"	N/A	N/A	N/A
11.e.1. "Proportion of financial support to the least developed countries that is allocated to the construction and retrofitting of sustainable, resilient and resource-efficient buildings utilizing local materials"	N/A	N/A	N/A
12.1.1. "Number of countries with sustainable consumption and production (SCP) national action plans or SCP mainstreamed as a priority or a target into national policies"	N/A	N/A	N/A
12.2.1./8.4.1. "Material footprint, material footprint per capita, and material footprint per GDP"	N/A	N/A	N/A
12.2.2./ 8.4.2. "Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP"	National	UN Stats (Environment Live Global Material Flows Database)	2000 - 2017
12.3.1. "(a) Food loss index and (b) food waste index"	Local (County, NUTS)	Geohive (CIT, CSO, OSi)	2012
12.4.1. "Number of parties to international multilateral environmental agreements on hazardous waste, and other chemicals that meet their commitments and obligations in transmitting information as required by each relevant agreement"	National	UN Stats (Environment Live)	2015

12.4.2. "Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment"	National	Eurostat, CSO, EPA	2014
12.5.1. "National recycling rate, tons of material recycled"	National	Eurostat	2010-2016
		*EPA	*2010 - 2016
12.6.1. "Number of companies publishing sustainability reports"	National	Global Reporting Initiative	1999 - 2018
12.7.1. "Number of countries implementing sustainable public procurement policies and action plans"	National	United Nations Environment Programme	2018
12.8.1. "Extent to which (i) global citizenship education and (ii) education for sustainable development (including climate change education) are mainstreamed in (a) national education policies; (b) curricula; (c) teacher education; and (d) student assessment"	National	Department of Education and Skills	2015 (next data release 2020, concerned with data from 2018)
12.a.1. "Amount of support to developing countries on research and development for sustainable consumption and production and environmentally sound technologies"	National	OECD	2004-2016
12.b.1. "Number of sustainable tourism strategies or policies and implemented action plans with agreed monitoring and evaluation tools"	National	Faile Ireland	2017
12.c.1. "Amount of fossil-fuel subsidies per unit of GDP (production and consumption) and as a proportion of total national expenditure on fossil fuels"	National	UN Stats	20,132,015
13.2.1. "Number of countries that have communicated the establishment or operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)"	National	United Nations Framework Convention on Climate Change	2015
13.3.1. "Number of countries that have integrated mitigation, adaptation, impact reduction and early warning into primary, secondary and tertiary curricula"	N/A	N/A	N/A
13.3.2. "Number of countries that have communicated the strengthening of institutional, systemic and individual capacity-building to implement adaptation, mitigation and technology transfer, and development actions"	N/A	N/A	N/A
13.a.1. "Mobilized amount of United States dollars per year between 2020 and 2025 accountable towards the \$100 billion commitment"	National	Eurostat	2014-2017
13.b.1. "Number of least developed countries and small island developing States that are receiving specialized support, and amount of support, including finance, technology and capacity-building, for mechanisms for raising capacities for effective climate change-related planning and management, including focusing on women, youth and local and marginalized communities"	N/A	N/A	N/A
14.1.1. "Index of coastal eutrophication and floating plastic debris density"	Local (OSPAR Marine Areas)	Geohive (OSPAR, EPA, Marine Institute)	2014
14.2.1. "Proportion of national exclusive economic zones managed using ecosystem-based approaches"	N/A	N/A	N/A
14.3.1. "Average marine acidity (pH) measured at agreed suite of representative sampling stations"	Regional	Eurostat	1989-2014
14.4.1. "Proportion of fish stocks within biologically sustainable levels"	National	SDSN	2016-2019
14.5.1. "Coverage of protected areas in relation to marine areas"	National	UN Stats (The World Database on Protected Areas, IUCN and UNEP)	2000-2018
14.6.1. "Degree of implementation of international instruments aiming to combat illegal, unreported and unregulated fishing"	National	UN Stats (FAO)	2018
14.7.1. "Sustainable fisheries as a proportion of GDP in small island developing States, least developed countries and all countries"	National	CSO	2007 - 2015
14.a.1. "Proportion of total research budget allocated to research in the field of marine technology"	National	Department of Business, Enterprise and Innovation	2017

14.c.1. "Number of countries making progress in ratifying, accepting and implementing through legal, policy and institutional frameworks, ocean-related instruments that implement international law, as reflected in the United Nations Convention on the Law of the Sea, for the conservation and sustainable use of the oceans and their resources"	National	UN Division for Ocean Affairs and Law of the Sea	*different dates for each data point
15.1.1."Forest area as a proportion of total land area"	National	UN Stats (FAO)	2000-2015
	* Local (County, NUTS, Small Areas, Electoral Division),	* Geohive (NPWS, OSi)	*2017
15.1.2."Proportion of important sites for terrestrial and freshwater biodiversity that are covered by protected areas, by ecosystem type"	National	UN Stats (BirdLife International, IUCN and UNEP-WCMC)	2000-2018
	*Local (Small Areas, Electoral Division),	* Geohive (NPWS, OSi)	*2018
15.2.1."Progress towards sustainable forest management"	National	UN Stats (FAO)	2000 - 2018
15.3.1."Proportion of land that is degraded over total land area"	National	Eurostat	2000-2012
15.4.1."Coverage by protected areas of important sites for mountain biodiversity"	National	UN Stats (BirdLife International, IUCN and UNEP-WCMC)	2000-2018
	*Local (County, NUTS, Small Areas, Electoral Division).	*Geohive (NPWS, OSi)	*2018
15.4.2."Mountain Green Cover Index"	National	UN Stats (FAO)	2017
15.5.1. "Red List Index"	National	UN Stats (BirdLife International and IUCN)	2000 - 2019
15.6.1 "Number of countries that have adopted legislative, administrative and policy frameworks to ensure fair and equitable sharing of benefits"	National	UN Stats (CBD)	2012-2018
15.7.1./15.c.1. "Proportion of traded wildlife that was poached or illicitly trafficked"	National	CITES Trade Database	1975 - 2018
15.8.1."Proportion of countries adopting relevant national legislation and adequately resourcing the prevention or control of invasive alien species"	National	*Different sources for each data point	*Different dates for data points
15.9.1 "Progress towards national targets established in accordance with Aichi Biodiversity Target 2 of the Strategic Plan for Biodiversity 2011–2020"	National	Convention on Biological Diversity	2011- 2016
15.a.1. "Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems"	National	UN Stats (OECD)	2002 - 2017
15.b.1. "Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems"	National	UN Stats (OECD)	2002 - 2017
16.8.1. "Proportion of members and voting rights of developing countries in international organizations"	National	UN Stats	2016-2017
		(Financing for Development Office, DESA (FFDO))	
17.6.1. "Number of science and/or technology cooperation agreements and programmes between countries, by type of cooperation"	N/A	N/A	N/A
17.7.1. "Total amount of approved funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies"	N/A	N/A	N/A
17.9.1. "Dollar value of financial and technical assistance (including through North-South, South-South and triangular cooperation) committed to developing countries"	N/A	N/A	N/A
17.14.1. "Number of countries with mechanisms in place to enhance policy coherence of sustainable development"	National	Department of Communications, Climate Action and Environment	2018

DISCUSSION

Richard Tol: I have questions for three presenters. To Astrid, how open access to scientific papers helps achieving SDGs. The vast majority of academic papers are written for a small group of fellow academics, who already have access. What benefit is there to opening academic journals for all to read? To Dorothy, I note that 68% of people involved in research for the EPA want to build a social media presence, while 50% wants to publish in learned journals and I ask whether those are the right priorities? To Paul Walsh, he raised David LeBlanc's network graph, in which there is no link between climate change and energy. I also ask if the method takes an average across indicators, then does that not implicitly assume that each indicator is equally important? Is that a valid assumption, especially if indicators are produced reflecting data availability rather than data need?

Claudia LaRue: I ask Dorothy Stewart whether the EPA has multi-stakeholder participation in its Board of Directors or in specific committees/task forces, etc?

Sarah Sherlock: I ask Dorothy Stewart if all of the data used in enviromap is created so as to ensure robust data governance and provenance issues e.g. quality management system protocol, as bad/unverified data costs a lot! She suggested open data inputs are a method of accessing more "real time geo-placed" data with verifiable assessors – in return academic research could open too.

Catherine Curran: How can we capitalise on the positive science-policy-citizen interface that we are witnessing in relation to the Covid-19 response and apply this to achieving environmental SDG goals?