



Circular Economy: from Indicators and Data to Policy-making

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Data Sources, Data Providers and Methodologies



2.1 Data Sources

To create a dataset for the core indicators of circular economy, different data sources were identified and selected according to the following criteria:

- Global international sources were selected as the primary source of information, due to the wider coverage in terms of data availability from countries/regions. The databases used are:
 - The United Nations SDG indicators database (United Nations Statistics Department [UNSD] 2023a)
 - The World Bank Open Data (World Bank [WB] 2023)
- Non-global international sources were selected in case global international sources were not available. The databases used are the following:
 - The OECD Database (Organisation for Economic Co-operation and Development [OECD] 2023). Following the same criterium of coverage previously mentioned, this database with wider coverage was considered as a primary source.
 - Eurostat Database (Eurostat 2023a)

To assess data availability by source, Table 2 presents the percentage of data available from each source when considering (a) core indicators only, (b) core indicators and proxies, and (c) core indicators, sub-indicators and proxies.

Table 2 Distribution of the different data sources in the CE core indicators dataset

Data source	% CE core indicators ²	% CE core indicators and proxies ³	% CE core indicators, sub-indicators and proxies ⁴
United Nations	27%	40%	50%
World Bank	0%	7%	6%
OECD	9%	7%	6%
Eurostat	64%	46%	38%

Source: Author's calculations

2.2 Data Providers

In general, data used to populate the circular economy core indicators dataset have two main providers:

- Data provided by national institutions.
- Indicators estimated by international organizations using country data from different sources. In this case, existing data from some countries can be used to create a model that could be applied to all the regions and/or the global level, or country data are used to estimate other variables. The accuracy of data estimates is lower than for national data.

² The data availability considers only the 15 core circular economy indicators (not the proposed proxies).

³ The proportion shows the availability of 15 core indicators and 4 proxies (proxies are available with a better coverage than the original indicator).

⁴ The proportion shows the availability of 18 core indicators at sub-indicator level and 4 proxies (proxies are available with a better coverage than the original indicator).

For most of the indicators, data are compiled by a national governmental agency. This agency differs depending on the theme of the indicator and the country's administrative organisation. Some examples of institutions at the national level are:

- Ministry of commerce
- Ministry of trade
- Ministry of industry
- Ministry of agriculture/livestock
- Ministry of environment
- Ministry of water resources
- National Statistical Office (NSO)
- Any other national agencies/ministries.

It is quite common that the official agency responsible for providing data to the different international organisations is the NSO as the responsible institution of the National Statistical System. This agency acts as the national official focal point and country counterpart and, in many cases, coordinates the data collection at national level.

Countries, through their focal points, provide data to different international institutions:

- The United Nations compiles data on the Sustainable Development Goals (SDGs) from its Member States through the respective custodian agencies. The United Nations Statistics Division, for example, sends the UNSD/UNEP Questionnaire on Environment Statistics to all countries except those that are covered by the Joint OECD/Eurostat Questionnaire.
- Eurostat compiles data sent by European countries (data are collected by countries at the national level), including member states of the European Union, member states of the European Free Trade Association (EFTA) and candidate countries.

- The OECD compiles and publishes data from OECD countries not working with Eurostat and, in some cases, from all the countries collaborating with the organization.

It is very important to consider that the coverage, in terms of number of countries, varies, as well as the response rate. While Eurostat receives data from a significant percentage of countries that the organization covers (due to existing legal obligation and/or commitment), the response rate for other international institutions can be as low as 50 per cent (e.g. the UNSD/UNEP Questionnaire on Environment Statistics, covering 193 countries).

Box 1 UNSD/UNEP Questionnaire on Environment Statistics, UNSD Questionnaire on Environment Statistics

“The Questionnaire on Environment Statistics is part of the biennial UNSD data collection from all countries except those that are covered by the Joint OECD/Eurostat Questionnaire. Definitions used are provided within each Questionnaire. From one collection cycle to the next, content may change slightly, for example, to meet new demand such as that related to the Sustainable Development Goal agenda. Any such changes are mentioned within the Introduction of the Questionnaire.

Countries’ responses to the Questionnaire are invaluable for monitoring the progress of the below Sustainable Development Goal indicators:

- 6.3.1 Proportion of domestic and industrial wastewater flow safely treated;
- 6.4.1 Change in water-use efficiency over time;
- 6.4.2 Level of water stress; freshwater withdrawal as a proportion of available freshwater resources;
- 11.6.1 Proportion of municipal solid waste collected and managed in controlled facilities out of total municipal waste generated, by cities);
- 12.3.1 (b) Food waste index;
- 12.4.2 Hazardous waste generated per capita; and proportion of hazardous waste treated, by type of treatment; and
- 12.5.1 National recycling rate, tons of material recycled.

The latest round of this Questionnaire was sent to countries in 2022 following 10 previous collection rounds. As much as possible, Questionnaires are sent on a regular biennial basis to a country’s National Statistical Office and Ministry of Environment with request for countries to identify a single focal point for communications with UNSD.”

(UNSD 2023b)

2.3 Existing International Methodologies

Some international institutions have developed methodologies that allow and help countries to calculate data related to circular economy indicators, as for example, the International Energy Agency (IEA), the Food and Agriculture Organization of the United Nations (FAO), UNSD, UNEP, OECD and Eurostat.

A standard international methodology is essential for having a harmonized dataset for every indicator and country. International definitions and concepts are key for further comparability between countries, allowing later regional and global data analysis. As previously mentioned, currently, international definitions are only available for a selected number of core indicators.

Generally, methodologies and guidelines developed are not limited to single data collection methods and it is the country's decision to choose from the different options, considering the cost of the data collection method, national capacities, and administrative organization. The best choice should be taken in terms of relevance, representativeness and reliability of the final data obtained.

The different options for data collection include:

- Surveys (census or sampling surveys): Ideally, when it is possible, countries are encouraged to use a national survey already existing (for example, adding a specific module) to reduce the cost of data collection. Surveys can use interview-based methods, a digital or physical (paper) questionnaires with quantitative and qualitative questions. Sampling surveys are commonly used to collect data from sectors with a large number of units (industries or households).

- Administrative sources: This is a lower cost option but the requirements for using administrative records as statistical data are still challenging for many countries.
- Modelling: When the previous options are not available, modelling tools can be used to estimate national data. In this case, not all countries have the capacity to adequately use modelling and the estimated data might not follow international standards, in terms of quality and accuracy.
- A combination of multiple options previously presented.

Independently of the data collection method used, countries are encouraged to always provide quality reports containing a description of the collection method applied.

It is very important to mention that implementing new data collection instruments is extremely costly (new surveys, new administrative systems and so on) and that national financial and human resources are usually limited. In addition to this, it is also relevant to consider that many countries lack the capacity to carry out new collection methods related to circular economy.

Finally, the value of conducting surveys lies within their regular use and maintenance. As a result, one-off surveys can have some punctual value to formulate circular economy policies, but they cannot be used as evidence base for policy monitoring over time.