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REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT AND THE COUNCIL

on statistics compiled pursuant to Regulation (EC) No 2150/2002 on waste statistics and their quality

1. Introduction

Regulation (EC) No 2150/2002 of the European Parliament and of the Council of 25 November 2002 on waste statistics[1] ('the Regulation') establishes a framework for producing statistics on waste in the European Union (EU). Article 8(1) of the Regulation provides the following.

> *The Commission shall, within five years after the date of entry into force of this Regulation and every three years thereafter, submit a report to the European Parliament and the Council on the statistics compiled pursuant to this Regulation and in particular on their quality and the burden on businesses.*

This is the seventh report fulfilling this obligation. The previous reports were published in 2008[2], 2011[3], 2014[4], 2016[5], 2020[6] and 2022[7].

The current report covers the reporting period between 2020 and 2022 (reference year data), for which Member States transmitted data in 2022 and 2024 respectively.

2. Waste Statistics Regulation

The Regulation establishes a framework for the production of EU statistics on the generation, recovery and disposal of waste.

It ensures that waste data is collected and reported in a consistent manner across EU Member States and European Economic Area (EEA) countries, enhancing the accuracy, reliability, and comparability of waste statistics. It promotes transparency and provide access to waste data for policymakers, researchers, and the general public.

Member States must collect data on waste generation (by economic activity, household and other sources), waste treatment (recycling, recovery, disposal, etc.) and waste management (including waste transport and trade), and submit it to the Commission (Eurostat) every two years within 18 months of the end of the reference year[8].

Eurostat publishes the waste data in a user-friendly format, allowing for easy access and comparison across Member States.

In addition to the statistics on waste generation and treatment, the data gathered through the Regulation also supports statistics on policy topics, such as the circular economy[9] and Sustainable Development Goals[10].

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1 OJ L 332, 9.12.2002, p. 1. ELI: http://data.europa.eu/eli/reg/2002/2150/2010-10-18.
2 COM(2008) 355 final, 13.6.2008.
3 COM(2011) 131 final, 17.3.2011.
4 COM(2014) 79 final, 14.2.2014.
5 COM(2016) 701 final, 3.11.2016.
6 COM(2020) 54 final, 14.2.2020.
7 COM(2022) 719 final, 15.12.2022.
8 Regulation (EC) No 2150/2002, Section 7(2) of Annexes I and II.
9 Monitoring framework - Circular economy - Eurostat
10 Information on data - Sustainable development goals - Eurostat

3. Activities since the last report

3.1. Changes in reporting format

Alongside the data they report to the Commission (Eurostat) under the Regulation, Member States also send a quality report. Since the 2024 data collection, the quality report format has been upgraded to the single integrated metadata structure (SIMS)[11], a standardised reporting framework that integrates metadata and quality information in a harmonised format using an international, technical standard (SDMX). This upgrade provides a more detailed and robust structure, aligned with best practices across various statistical domains. Furthermore, the quality report features a new table to assess coverage issues, enable gaps in waste accounting to be identified and improve the overall accuracy of waste generation estimates.

3.2. Waste statistics working group meetings

To develop the comparability and quality of data, Eurostat annually organises meetings of the waste statistics working group, which include national experts from the national statistical institutes of EU Member States, EFTA and candidate countries. Since the last report (in 2022), there have been annual meetings, each lasting one and a half days, where the working group discussed the circular economy, reporting of municipal waste, agricultural waste, sewage sludge and mineral waste and the Eurostat handbook for 2024.

3.3. Country visits

The Commission (Eurostat) conducts bilateral visits to countries to discuss technical matters and gain a better understanding of the methodology applied and its implications on data comparability. Four visits have taken place since the last report: to the Netherlands, Spain, Finland and Bulgaria. The visits focused on the data reported under the Regulation, also addressing additional waste streams (i.e. food waste, batteries, electronic and electric waste and end-of-life vehicles) where relevant. Such visits improve communication and allow for exchanges with the relevant country regarding methodology, providing a better understanding of each country's processes and challenges in relation to waste statistics. Furthermore, the visits constitute a faster and more effective way to discuss and resolve complex issues.

[11] Commission Recommendation (EU) 2023/397 of 17 February 2023 on reference metadata and quality reports for the European Statistical System, replacing Recommendation 2009/498/EC on reference metadata for the European Statistical System,
OJ L 53, 21.2.2023; ELI: http://data.europa.eu/eli/reco/2023/397/oj.

3.4. Quality of the data transmitted since the last report

3.4.1. Timeliness

Compliance with the reporting deadline for the collection of data with reference year 2020 and 2022 remained stable compared to previous years.

Waste generation and treatment datasets were generally submitted on time. For reference year 2020, 25 Member States and one EEA country submitted their data on time, while for reference year 2022, 21 Member States and two EEA countries met the submission deadline.

However, there were delays in the transmission of the data for the reference year 2022 by some countries. Countries also submitted quality reports after the deadline, with two EU countries still pending, potentially due to the new quality report format introduced that year. Voluntary submissions from six Western Balkan countries (Bosnia and Herzegovina, Montenegro, North Macedonia, Albania, Serbia and Kosovo[*]) and Türkiye were also received, with four countries submitting full datasets and quality reports on time. Eurostat sent reminders and intervened in cases of non-submission. The validated data was published in Eurostat's online database for reference years 2018, 2020 and 2022, accompanied by Statistics Explained articles and other information products[12].

3.4.2. Completeness

The waste generation data has become significantly more complete since the year 2010. There has been a substantial decrease in the number of missing figures and countries sending responses that were not complete, with no EU and EEA countries reporting missing figures for both reference years. Six Western Balkan countries (Bosnia and Herzegovina, Montenegro, North Macedonia, Albania, Serbia and Kosovo) and Türkiye also submitted their waste generation reports for the reference year 2022.

There was a similar improvement in waste treatment data, with no missing figures reported for reference years 2020 and 2022. However, some countries report confidential data, which requires additional secondary confidentiality treatment to prevent sensitive national data being derived from the confidential data. This procedure ensures that confidential information remains protected while still allowing aggregate data to be published.

3.4.3. Relevance

The dataset provides comprehensive information on the waste generated and its treatment. It classifies waste by substance and sector of activity, with a primary focus on waste management. However, it does not fully address waste as a resource, as it has limitations, including a lack of data on recycling rates, import and export of waste and preliminary processing stages.

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[*] This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.

[12] New items (ref. year: 2022): https://ec.europa.eu/eurostat/en/web/products-eurostat-news/w/ddn-20241017-1 waste management indicators: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Waste_management_indicators.

Moreover, waste characteristics are dynamic in nature and there is a possibility that substances will be double counted. Both of these factors may affect accuracy. While the data is useful for managing waste infrastructure, these shortcomings mean it is not fully suitable for monitoring circular economy practices.

3.4.4. Accuracy

The accuracy of waste generation data is ensured through a comprehensive approach that combines statistics from all economic sectors and households, including secondary waste and small businesses. To address potential gaps in coverage, data has been supplemented with information from administrative sources or estimates. In recent years, there has been a trend towards increased reliance on administrative sources, with statistical sample surveys being used more selectively to collect complementary data and fill remaining gaps.

This approach is efficient and effective, as it leverages available administrative data and targeted survey data to produce high-quality data on waste generation. This method harnesses the strengths of both data sources. This means it is aligned with the European Statistics Code of Practice, which promotes the use of existing data sources and minimising the burden on respondents. As a result, the accuracy and reliability of waste generation data increase, providing a robust foundation for informed decision-making. Eurostat's quality report checks, which compare business register data with waste reporting system data, have helped improve reliability. Although response rates are low, discrepancies in datasets suggest that the amount of waste generated is underestimated by less than 10%. Inaccuracies may occur due to improper aggregation within NACE codes, potentially meaning that household waste is overestimated.

Overall, while some limitations remain, the data quality is continually improving, and efforts are being made to address the remaining challenges and ensure more accurate and comparable waste generation data.

3.4.5. Accessibility and clarity

In line with the Regulation, waste statistics are made accessible through a comprehensive database and clear, concise articles on the Eurostat website. The database allows users to create customised downloads and provides integrated metadata and quality reports for better understanding. User feedback indicates high satisfaction with data accessibility, with most inquiries related to interpreting published numbers rather than accessing the data, suggesting that Eurostat's database is a user-friendly and intuitive source of information. By providing easy access to waste statistics, Eurostat enables stakeholders across the EU to make informed decisions and promotes transparency in the waste management sector.

3.4.6. Comparability

Data generally has high comparability across countries, due to common definitions and classifications. However, challenges remain, particularly for hazardous waste data, where each country's national legislation might have a different definition of 'hazardousness'. The

dominance of mineral waste, which accounts for approximately two-thirds of total waste, also hinders comparisons between countries. To mitigate this, Eurostat publishes data for the indicator 'Waste excluding major mineral waste', which helps more accurate cross-country comparisons.

Most Member States continue to develop data quality and efficiency through improved data collection and methods. However, these improvements can create breaks in time series, which Member States address by revising datasets and informing users about any revisions. Eurostat flags these discontinuities in the datasets it publishes.

3.4.7. Coherence

The waste statistics demonstrate a high degree of coherence, which is a measure of their ability to be combined in different ways and for various uses. Coherence is evaluated across three dimensions: coherence with national accounts, other cross-domain coherence and internal coherence. For waste statistics, internal coherence is ensured through the consistent transformation of raw data into outputs.

Regarding cross-domain coherence, validation procedures are in place to compare waste statistics with other relevant datasets, such as waste from electrical and electronic equipment (WEEE), packaging, and food waste. While these procedures help to reduce inconsistencies, some discrepancies persist, mainly due to differences in data production departments.

Nevertheless, coherence with national accounts is well illustrated by the relationships between waste generation and socio-economic indicators, such as GDP per capita and government expenditure in waste management. For example, the data shows a positive correlation between waste generation per capita and GDP per capita. However, the relationship between waste generation and expenditure on waste management is less clear, with distinct clusters of countries exhibiting different patterns.

In addition, as the waste management indicator set combines treatment data collected under the Regulation with import/export data from international trade statistics (the COMEXT database) or from national sources, coherence with international trade in goods statistics is also evaluated. These findings emphasise the complexity of the relationships between waste generation, economic activity, and environmental impacts, as well as the importance of continued efforts to improve data coherence and consistency.

3.5. Analysis of the data

The 2022 data collection provided valuable insights into trends and developments in waste generation and management. Notably, the data revealed a continuous and ongoing decrease in the generation of household and similar waste[13], as well as a strong decrease in the direct

[13] Waste that is not generated by households but resembles household waste in its composition. Typical examples include waste from small businesses, offices, schools and public facilities like parks which generate waste types similar to those from residences.

landfilling of this waste stream. Additionally, there was an increase in the separate collection of certain waste streams from households, such as glass, plastic, and bio-waste.

While the data revealed satisfactory levels of quality, opportunities for improvement were identified, particularly with regard to waste streams such as sewage sludge, agricultural waste and construction waste. Eurostat improved its guidance to address the inconsistent classification of mining waste across countries.

The analysis also shed light on the challenges facing the circular economy, in particular regarding plastic and textile waste streams. Significant disparities in per-capita generation and treatment methods were observed, with some countries relying heavily on exports or landfilling due to limited domestic recycling capacity. These findings demonstrate the need to improve infrastructure, reduce reliance on exports and harmonise definitions.

To address these issues, Eurostat expanded the questionnaire to include voluntary reporting of waste imports/exports and other relevant categories to reconcile waste generation and treatment. This will not only increase the quality of estimates but also provide valuable insights in the context of the circular economy.

3.6. Administrative burden

The reporting requirements for waste statistics impose an administrative burden on waste generators and businesses specialised in waste management. In accordance with the Regulation, small companies (with fewer than 10 employees)[14] may mitigate this burden by replacing reporting with data collected directly by Member States.

Member States take various approaches to collecting data, including surveys, administrative data or a combination of surveys and administrative data. The administrative data combines data collected for other purposes, such as for taxation, environmental monitoring or national management of waste.

To ensure accurate data collection, Eurostat provides technical assistance and training to national compilers, both data collectors and respondents.

It is noted that in around 12 Member States collection relies on administrative data, while five use statistical surveys. It was also noted that an increasing number of countries are adopting a combined approach.

There were approximately 6 325 respondents, with each of them spending less than an hour on completing the questionnaire. In terms of cost estimation, based on a comprehensive analysis of quality reports and survey data, the total burden on companies across the EU is approximately EUR 2.2 million (on average EUR 186 000 per Member State per year).

[14] The exemption of small companies from surveys is handled in different ways. Some countries cover small companies by sample surveys and extrapolate the results. However, most countries exclude small companies completely in accordance with Article 3(2) of the Regulation, which allows enterprises of less than 10 employees to be excluded from surveys unless they contribute significantly to the generation of waste. Alternatively, the figures may be extrapolated using factor-based estimation models. Countries have set different exclusion thresholds, determined mostly by the number of employees or by the amount of waste generated per year. Some countries combine the two criteria to make sure that even small companies are covered by data collection when they exceed the defined waste generation threshold.

In line with the Commission's efforts to reduce administrative burden and simplify reporting requirements, the current questionnaire appears to strike a balance and proportionate burden to the objectives pursued. The use of administrative data and combined approaches by Member States contributes to minimising the burden on waste generators and businesses. Overall, the existing reporting requirements for waste statistics seem to be effective in collecting necessary data while keeping the administrative burden to a minimum, thereby supporting the Commission's goal of burden reduction and simplification.

4. Improvement measures

To improve the numerical data reported under the Regulation, Eurostat pursued an efficient, rapid solution that addressed key information needs for modern waste management, particularly for monitoring the transition to a circular economy and calculating recycling rates, which are crucial indicators for assessing progress towards EU environmental and resource efficiency objectives.

Eurostat focused on developing the additional module on the reconciliation of waste generation and treatment, which makes waste data more relevant and comprehensive. The module comprises five detailed tables that track the flow of waste from generation to treatment, covering imports and exports, pre-treatment, thermal treatment and material recovery. This approach provides more detailed information on waste streams and enables recycling and recovery rates for individual waste types to be accurately calculated.

Despite limited reporting of this voluntary module in the 2022 and 2024 reporting rounds, Eurostat used the most comprehensive submissions to create Sankey diagrams, providing a visual representation of waste flows and identifying data gaps. These diagrams, combined with consultations with top-performing countries, have produced some data and paved the way for more reliable and comprehensive reporting in the future.

In order to analyse the circular economy and to make it simpler to monitor recycling and material recovery performance across individual waste streams, Eurostat introduced the waste accounts, a methodological framework and approach to integrate data with different levels of detail and from several sources.

5. Conclusions

The data compiled pursuant to the Regulation provides a comprehensive and reliable source of information on waste generation and treatment in the EU, covering the period from 2002 to 2022.

The data is generally submitted on time and is of sufficient quality to be considered reliable and accurate. The quality of the dataset largely depends on each country’s methodology, which is steadily improving with every data collection cycle. Several factors have contributed to this improvement: the increasing reliance on administrative data, which reduces dependence on extrapolation, and the steady progress being made in data validation, alongside exchange with Member States through guidance, working groups, and country visits.

However, this data has its limitations as information on the circular economy and the use of waste as a resource, due to gaps in data on the pre-treatment, reclassification of waste and international trade in waste, which restricts the availability of comprehensive information beyond final treatment and disposal. Eurostat took steps with the working group to implement the additional module, collected on a voluntary basis since it is not part of the Regulation; unfortunately, the response rate was very low due to resource constraints at Member-State level, and therefore this data cannot yet be used.

As the EU introduces waste reporting obligations for specific waste streams (such as batteries[15], e-waste[16], food waste[17] and packaging waste[18]) under various sector-specific directives and regulations, more information becomes available about those types of waste. However, the Regulation remains the only official reporting by Member States to the Commission with complete coverage of all types of wastes. This is an essential tool to measure the material flows in the circular economy. The Regulation does not measure the flows from waste collection to waste treatment well enough, and particularly, but not only, for cross-boundary flows of wastes. Data improvements in this area are essential to maintain the completeness of the information on the circular economy and the relevance of the Regulation datasets for data analysis.

In addition, the potential to improve the coherence of waste statistics could be explored through cross-checking with external trade and balance-of-payments statistics. This should not impose any additional reporting burden on Member States and would identify areas for future improvements in methodology for international waste flows, thereby boosting the overall quality and reliability of waste statistics.

Despite its limitations, the data transmitted under the Regulation remains the sole source of a comprehensive and holistic overview of waste management across all economic sectors and households in the EU. It provides a unique and accurate representation of economic developments, including trends in waste generation and treatment.

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[15] Directive 2006/66/EC of the European Parliament and of the Council of 6 September 2006 on batteries and accumulators and waste batteries and accumulators. OJ L 266, 26.9.2006, p. 1; ELI: http://data.europa.eu/eli/dir/2006/66/2018-07-04.

[16] Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE). OJ L 197, 24.7.2012, p. 38; ELI: http://data.europa.eu/eli/dir/2012/19/2024-04-08.

[17] Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. OJ L 312, 22.11.2008, p. 3; ELI: http://data.europa.eu/eli/dir/2008/98/2024-02-18.

[18] Regulation (EU) 2025/40 of the European Parliament and of the Council of 19 December 2024 on packaging and packaging waste, amending Regulation (EU) 2019/1020 and Directive (EU) 2019/904, and repealing Directive 94/62/EC; OJ L, 2025/40, 22.1.2025; ELI: http://data.europa.eu/eli/reg/2025/40/oj.