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## Assessing and documenting quality of indicators: established practices and outstanding issues

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### Abstract

*Statistical indicators often have a close link with policy-making and monitoring and therefore are not just like other statistical products. For this reason, they require a specific metadata different from the ones used for data collections and accounting systems.*

*In particular, metadata on indicators should include a description of the specific context for which the indicator is used (e.g. monitoring a policy strategy), the exact definition and an explanation of the indicator-specific methodology, information which is normally not included in the metadata of datasets. On the other hand, methodological details on the underlying sources may be less relevant for an indicator-specific documentation.*

*Metadata for indicators should also provide a concise grading summarising the overall quality of an indicator. Several approaches could be followed for this purpose, which triggers the need to make choices for the quality dimensions to consider, on how to grade their quality and on if and how to summarise the individual grades.*

*Eurostat has established practices for documenting statistical products in general and for documenting and assessing the quality of indicators. These practices have evolved over time, on the basis of changing needs and with a view to streamline the information for the users. Considerations on possible further improvements are on-going.*

*The paper addresses the issues above on the basis of Eurostat experience, critically reviewing and discussing the various practices which have been, are or could be followed in the near future.*

**Keywords:** Indicators, quality profile, quality grading

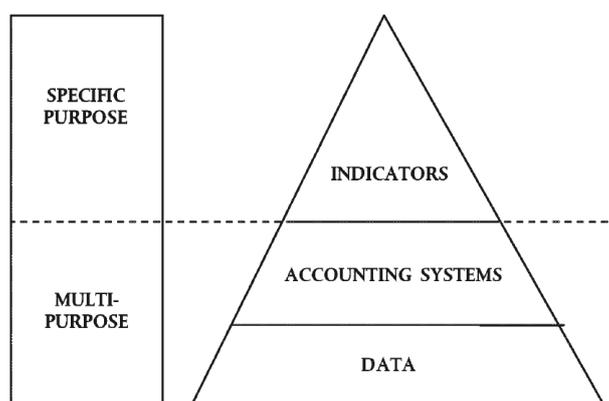
## 1. Introduction: indicators as a special product of official statistics

Statistical indicators are important tools for designing and implementing policies and for monitoring their objectives ('indicators for policy making'), as recognised by the [Lisbon memorandum](#) adopted by the European Statistical System Committee (ESSC) on 25 September 2015. In recent years, the number of indicator sets with policy relevance published by Eurostat has remarkably increased. Examples are Macroeconomic Imbalance Procedure (MIP) indicators, the sustainable development indicators, the Europe 2020 scoreboard and the resource efficiency scoreboard.

*A statistical indicator is a summary measure related to a key issue or phenomenon and derived from a series of observed facts. Indicators can be used to reveal relative positions or show positive or negative change. Indicators are usually a direct input into EU and global policies. In strategic policy fields they are important for setting targets and monitoring their achievement<sup>1</sup>.*

Statistical indicators are derived from statistical data and accounting systems<sup>2</sup>. The main difference consists in the fact that basic data and accounting systems can be used for multiple purposes, while indicators are created for specific purposes, which are determined by the context in which they are used. Indicators answer specific questions from specific stakeholders (see Figure 1).

**Figure 1:** Statistical information infrastructure (<sup>3</sup>)



All statistical products need to be accompanied with appropriate documentation on data sources, compilation methods and quality assessment. This paper argues for the need to develop a specific metadata structure for indicators, different from that used for multipurpose

<sup>1</sup> Annex to [Regulation \(EU\) No 99/2013](#) of the European Parliament and of the Council of 15 January 2013 on the European Statistical Programme 2013-2017, Official Journal of the European Union, L 39, 9.2.2013.

<sup>2</sup> Data are obtained through sources such as sample survey, censuses or administrative sources. Accounting systems are defined as coherent and integrated accounts, balance sheets and tables, based on a set of agreed rules.

<sup>3</sup> Adapted from Annex to [Regulation \(EU\) No 99/2013](#) of the European Parliament and of the Council of 15 January 2013 on the European Statistical Programme 2013-2017, Official Journal of the European Union, L 39, 9.2.2013.

statistics, as well as for a synthetic quality grading system allowing to inform users 'at a glance'.

Section 2 critically reviews Eurostat's current metadata structure for statistical indicators. Section 3 proposes possible solutions to improve it, while section 4 addresses the issue of the quality assessment of indicators. Finally, section 5 presents concluding remarks.

## 2. Issues with Eurostat's current indicator profiles

Metadata accompanying Eurostat's data in [Eurobase](#) follow the Euro-SDMX Metadata Structure (ESMS)<sup>4</sup>. ESMS is the reference metadata template recommended by the European Commission for the European Statistical System (ESS)<sup>5</sup>. It consists of 21 high-level concepts, divided in 43 sub-concepts. ESMS includes among others contact information, date of metadata updates, data description (e.g. statistical population), measurement units, legal basis, confidentiality treatment, dissemination format, a detailed assessment along the standard quality dimensions of official statistics<sup>6</sup>, revision policy, and a detailed description of statistical compilation and processing<sup>7</sup>. The result of a properly compiled ESMS file is an extensive and comprehensive set of information about a statistical data set. Users who read it would gain a deep insight in the data characteristics. On the other hand, this format may discourage users looking for specific, limited information, which may be difficult to identify in the large number of concepts and sub-concepts.

In addition, the ESMS metadata structure is primarily conceived to document standard, multipurpose statistical production, i.e. surveys, administrative data collections and accounts. The users of policy indicators are instead mainly interested in more contextual information, notably in policies for which an indicator is used, in how trends should be interpreted, in if the indicator is fit for purpose, etc. and are less concerned about details on how the underlying data are obtained. In addition, due to the policy context of indicators, their metadata should allow to warn the user on possible quality issues limiting its usability.

At present Eurostat has a dedicated metadata structure for policy indicators, called ESMS-IP, where IP stands for 'Indicator Profile'. The ESMS-IP includes all the concepts and sub-concepts of the standard ESMS, but also shows on the top of the first page a synthetic box, called 'Eurostat Quality Profile', summarising the data source and three quality dimensions for European statistics: accuracy, geographical comparability and comparability over time (see Figure 2). For each of the three quality aspects a grading 'high', 'medium' or 'low' is

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<sup>4</sup> See <http://ec.europa.eu/eurostat/data/metadata/metadata-structure>.

<sup>5</sup> See Commission recommendation of 23 June 2009 (2009/498/EC), at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:168:0050:0055:EN:PDF>

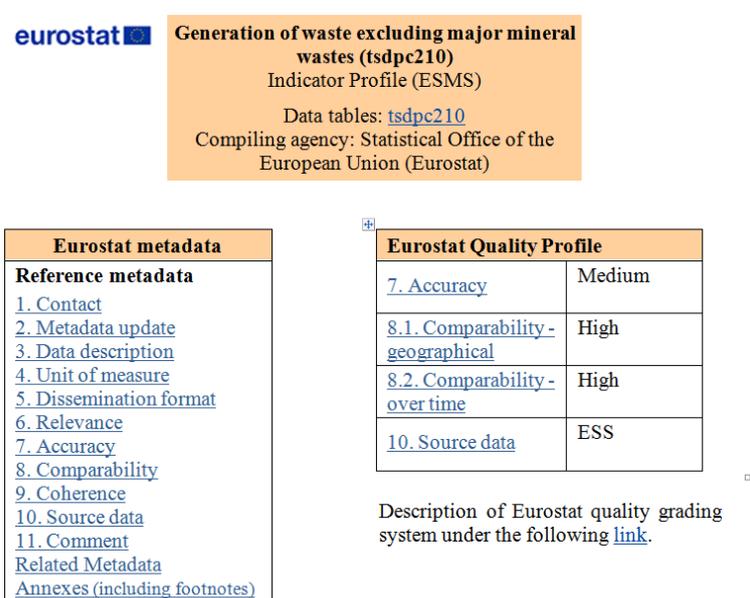
<sup>6</sup> The quality dimensions for statistical output as defined in the European Statistics Code of Practice are: relevance; accuracy and reliability; timeliness and punctuality; coherence and comparability; accessibility and clarity. See: <http://ec.europa.eu/eurostat/documents/3859598/5921861/KS-32-11-955-EN.PDF/5fa1ebc6-90bb-43fa-888f-dde032471e15>

<sup>7</sup> The full list and description of ESMS concepts and sub-concepts is available at: <http://ec.europa.eu/eurostat/documents/10186/6203776/ESMS-Structure-rev122014.xlsx/967ba715-b5cb-4f6e-9a7d-b205cc867d65>

provided in the box, while an extensive description for each quality dimension is available in the main document. Section 4 below provides details on Eurostat's quality assessment of indicators and on possible alternative approaches.

In this way, the ESMS-IP partially meets the specific documentation needs of policy indicators. On the one hand it provides a synthetic quality assessment of the indicator. On the other hand, it still includes all the details of a standard ESMS file, which in some cases are relevant for the underlying statistics but not directly for the derived indicators. We argue therefore for the need to develop more focused indicator profiles. Section 3 presents a proposal currently under discussion at Eurostat.

**Figure 2 – Example of Eurostat Quality Profile box**



As an additional issue, within an organisation it is important to properly attribute responsibility for the compilation and the maintenance of indicator profiles. The specialists in charge of a given data collection will be able to describe in detail the data characteristics and the production process. However, they may not be sufficiently aware of the specific policy context for which indicators derived from that data collection are used. Indicator profiles should therefore be based as much as possible on the existing metadata files produced by data collection managers, but under the responsibility of the policy specialists who put indicators in the right context.

A special case is provided by indicators which are derived from data sets not produced by official statistics. One example taken from Eurostat's database is 'greenhouse gas emissions', for which the source is the European Environment Agency (EEA), but which is a headline indicator in Eurostat's indicators sets on Europe 2020 and on sustainable development. For these indicators metadata should be drafted by the statistical office and then verified by the indicator producer (in the example above the EEA). Eventually, the statistical office will be responsible for the content of the metadata files and the quality assessment of the indicators.

The statistical office should also decline to (re-)publish the indicator if it considers that there are methodological, quality or coverage issues.

### **3. A proposal for streamlined indicator profiles**

As stated above, metadata of indicators for policy making should clearly describe the policy context in which the indicators are used, while they may skip methodological details of the underlying data. Metadata should be short and concise so that the users identify easily the information they need and the indicator owners spend less time and effort to update them. With a view to increase the relevance of the ESMS-IP and to make them more user-friendly, we propose to replace the current template, which consists of 21 concepts divided in 43 sub-concepts, with a more concise one focussing on indicator definition, specificities, data source and data availability; accessibility in different means; policy context and the questions the indicator tries to answer; quality assessment; links with other similar indicators.

The suggested template consists of a selection of ESMS concepts and is therefore fully compatible with ESMS standards. This selection includes:

Concept 1 – 'Contact'.

Concept 2 – 'Metadata update'.

Sub-concept 3.1 - 'Data description': an important concept as it contains all the major information for the indicator: definition, clarification of particularities, policy context, linked data sets and where it is located in the online database.

Concept 4 - 'Unit of measurement'

Concept 10 - 'Dissemination format': it provides the means of dissemination for the indicator (publications, online database, press releases, wiki articles).

Sub-concept 13.1 - 'Relevance – User needs': it describes in detail the policy context of the indicator and discusses the key policy question, key messages and the rationale of the indicator.

Sub-concept 13.3 - 'Completeness': it contains information about data availability.

Sub-concept 14.1 - 'Overall accuracy': it contains information and the grading for accuracy, one of the three quality elements in the 'Eurostat quality profile' box.

Concept 16 - 'Comparability': it contains information and the grading for two of the three quality elements in the 'Eurostat quality profile' box, namely geographical comparability and comparability over time.

Sub-concept 20.1 - 'Source data': it includes references and links to the source data sets.

Concept 21 – 'Comment': it provides references and copyrights. In the future, it will include also links to related indicators.

This new indicator metadata template has several advantages compared to the current ESMS-IP. It is much shorter and lighter; it focusses only on the properties of the indicator and its specific policy context; it requires significantly less time and effort to be completed and maintained; it is more user-friendly. All this while still remaining fully in line with ESMS

standard. No information is lost, as a link to the 'full' ESMS metadata file of the source data is included.

The 'Eurostat quality profile' box on the first page of the current ESMS-IP will be retained. The length of a completed indicator profile will thus not exceed 3-5 pages, against a full ESMS metadata file of 10 pages or more. This length reduction will help users only interested in the indicators and not in the underlying data to more easily find the information they are looking for.

These lighter ESMS-IPs will also be easier to maintain. They will not include information on specific data collection rounds, so that no update will be needed at each new data dissemination. Modifications should only be necessary when the policy context, the specific indicator methodology or the quality of the indicator change, which drastically reduces the need for updates.

If an indicator derives from an ESS data set, then a link to the metadata file of the parent data set will be included in the ESMS-IP ensuring the access to methodological details of the underlying data. For non-ESS indicators, the ESMS-IP should include links to available documentation and the web pages of the producer of the underlying data set. An example of the new template is shown in Annex 1.

#### 4. Quality assessment of indicators

The main goal of the quality profile box in Eurostat's ESMS-IP is to guide the user in the analysis and interpretation of a policy indicator by providing a synthetic quality assessment 'at a glance'. The development of such a quality profile box entails a number of choices.

A first one concerns the **quality dimensions** contributing to this synthetic assessment. While the full metadata file includes an extensive quality assessment along the dimensions of the European Statistics Code of Practice<sup>8</sup>, only a few are considered for the synthetic assessment. The choice depends on the specific context the indicator is used for. Eurostat's quality profile considers *accuracy*, *comparability over time* and *geographical comparability*.

Accuracy and comparability over time are key features for an indicator. An indicator with a large statistical margin of error may send wrong or unreliable signals on where a country or the European Union stand with regard to a given phenomenon. Similarly, statistical breaks in time series prevent a correct assessment of trends, which is crucial to monitor and assess the effectiveness of policies. An 'accurate' indicator with short time series or with time breaks could thus be used as a baseline, but not as a tool to monitor trends. Geographical comparability is particularly relevant for Eurostat, both to construct EU and Euro-area aggregates and to compare between the different EU countries.

A second issue concerns the **assessment criteria** for each of the quality dimension. As Figure 3 shows, Eurostat's current rating of comparability over time is based on the length of a time

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<sup>8</sup> Relevance, Accuracy and reliability, Timeliness and punctuality, Coherence and comparability, Accessibility and clarity, cost and burden. See: <http://ec.europa.eu/eurostat/web/quality/european-statistics-code-of-practice>.

series without methodological breaks. The geographical comparability rating depends on the definition of 'major countries', while (in)accuracy is expressed in terms of size of revisions between the first and the final estimates. In addition, in case two or more sources are used to calculate an indicator, the weakest determines the grade.

**Figure 3 – Eurostat Quality Profile - rating criteria**

Quality concepts	Rating				Comments
	High	Medium	Low	Not applicable	
Comparability - over time	5 years or more without any breaks in time series, due to methodological reasons.	3<5 years without any breaks in time series, due to methodological reasons.	< 3 years without any breaks in time series, due to methodological reasons.	For instance for GDP in PPS	If less than 5 years of data available, then, to rate "High", all years/periods should be without any break in time series <sup>(1)</sup> .
Comparability - between countries (for the most recent period)	Data for all countries are comparable.	Data for all major countries are comparable.	Data for at least one major country is NOT comparable.		The list of major countries depends of the statistical domain <sup>(2)</sup> .
Accuracy (for the last 5 years for major countries)	Corrections counter for < 1 % of the exact or true final value.	Corrections counter for 1 - 5% of the exact or true final value.	Corrections counter for >5% of the exact or true final value.		The list of major countries depends of the statistical domain <sup>(2), (3)</sup> .
Data Source(s)	ESS or Specify other sources (EEA, OECD, ...)				

(1) In cases where a break that may be visualised by a flag in the data table represents an insignificant change/impact, then comparability can still be assessed 'high' – subject to that is clearly explained in the metadata.

(2) Major countries should represent at least 70% of the 'weight of the indicator'.

The weight of the countries or geographical areas may depend for instance of the population, the GDP or the importance of the economic sector (e.g. maritime statistics for NL, Financial sector for LU, etc.). Special cases have to be explained.

(3) In cases when two or more sources are used to calculate an indicator, the weakest determines the grade.

These criteria were introduced by Eurostat in 2012 with a focus on the Europe 2020 and sustainable development indicators, aimed at establishing precise and objective criteria for the quality grading of indicators. They replaced existing criteria which were considered as not very precise and prone to subjective interpretations. A description of the 'old' system can be found in Annex 2. However, the new criteria are not perfect either. As a matter of fact, a degree of subjectivity exists in the definition of the thresholds between the different marks and in the assessment of data comparability between countries. As for accuracy, revisions may not always be the most relevant aspect to look at (e.g. for indicators from sample surveys the standard error may be more appropriate), or may excessively penalise indicators which are regularly revised (e.g. macroeconomic indicators, including GDP).

A third aspect concerns the **grading system**. Eurostat's previous system foresaw a binary quality grading 'High' or 'Restricted' for each quality dimension, and an overall grading based on a combination of grading for the three individual dimensions (see Annex 2). This approach has, at least in theory, the advantage of clearly discriminating on the quality of an indicator. In practice, this often led to a quality over-grading, stemming from subjective interpretation of individual criteria and from lack of an intermediate option (tendency to grade 'high' rather than 'restricted' in doubtful cases). The overall grading was also not very precise, based on rather general considerations, and not directly linked to the rating of the three individual criteria. In addition, a weakness in the assessment of one of the three dimensions impacted directly the overall rating. Finally, this system did not ensure a consistent assessment across different indicators.

To overcome these issues and ensure a more transparent, coherent and objective approach when evaluating the quality of an indicator, the new grading system introduced in 2012 includes three marks instead of two: 'high', 'medium' and 'low' (or 'not applicable').

The overall grading was also abandoned, as it was considered not sufficiently robust and transparent, and only the separate grading for the three quality dimensions is now shown. The data source has also been added to the Eurostat Quality Profile. Figure 4 compares the old and the new grading for the OECD indicator Official Development Assistance.

**Figure 4 – Official Development Assistance: Comparison of old and new Eurostat quality grading**

Quality concepts/ Approach	Overall grading	Comparability over time	Comparability over space	Accuracy	Source
Old Grading	B	Restricted	High	High	
New Grading		Medium	High	High	OECD

## 5. Conclusions

This paper argues that the traditional, long, detailed metadata files are not suitable for indicators. Indicator-specific metadata should be concise and focus on the context for which the indicator is used.

While underlining the importance of providing a quality assessment 'at a glance', the paper shows the difficulties to define truly objective criteria for quality grading, universally applicable to indicators of different nature (survey-based, registered-based, accounts-based, short-term vs. long-term, etc.) and from different sources. Thresholds and grading rules should be carefully considered and adapted to different type of indicators.

After defining the relevant quality dimensions for the synthetic assessment, the way to present the evaluation of an indicator against those dimensions is not a neutral exercise. In particular, the decision on if and how to produce an overall grading can influence the impact of an indicator on policy making.

Policy making more and more uses statistical indicators. Indicators can influence the policy agenda, support the outline of a policy and are key elements for its monitoring. It is therefore crucial that the 'numbers' are accompanied by transparent, clear, accurate and user-friendly information. This information should allow the user, and in particular the policy user, to quickly understand if and how an indicator is fit to support a policy decision.

## Annex 1 - Example of metadata in the proposed ESMS-IP template



### Generation of waste excluding major mineral wastes (tsdpc210)

Indicator Profile (ESMS-IP)

Data tables: [tsdpc210](#)

Compiling agency: Statistical Office of the European Union (Eurostat)

Eurostat metadata
<b>Reference metadata</b>
<a href="#">1. Contact</a>
<a href="#">2. Metadata update</a>
<a href="#">3. Data description</a>
<a href="#">4. Unit of measure</a>
<a href="#">5. Dissemination format</a>
<a href="#">6. Relevance</a>
<a href="#">7. Accuracy</a>
<a href="#">8. Comparability</a>
<a href="#">9. Source data</a>
<a href="#">10. Comment</a>
<a href="#">Related Metadata</a>
<a href="#">Annexes (including footnotes)</a>

Eurostat Quality Profile	
<a href="#">7. Accuracy</a>	Medium
<a href="#">8.1. Comparability - geographical</a>	High
<a href="#">8.2. Comparability - over time</a>	High
<a href="#">9. Source data</a>	ESS

Description of Eurostat quality grading system under the following [link](#).

For any question on data and metadata, please contact: [EUROPEAN STATISTICAL DATA SUPPORT](#)

<b>1. Contact</b>	
<b>1.1. Contact organisation</b>	Statistical Office of the European Union (Eurostat)
<b>1.2. Contact organisation unit</b>	E2: Environmental statistics and accounts; sustainable development
<b>1.5. Contact mail address</b>	2920 Luxembourg LUXEMBOURG
<b>2. Metadata update</b>	
<b>2.1. Metadata last certified</b>	dd/mm/yyyy [date that metadata checked to be valid]
<b>2.2. Metadata last posted</b>	dd/mm/yyyy [date that updated metadata were disseminated]
<b>2.3. Metadata last update</b>	dd/mm/yyyy [date that metadata were updated]
<b>3. Data description</b>	
<p>The indicator presents the amount of waste, excluding major mineral wastes, generated in the EU 28, expressed in kg per inhabitant and year. The indicator allows to monitor waste generation over time for the EU as a whole and to compare the development of waste generation across countries.</p> <p>The indicator covers hazardous (hz) and non-hazardous (nh) waste from all economic sectors and from</p>	

households, including waste from waste treatment (secondary waste) but excluding most mineral waste.

The indicator is based on data compiled according to Annex I of the Waste Statistics Regulation ([Regulation 2150/2002/EC](#)) and according to aggregates of the material-oriented statistical waste nomenclature EWC-Stat in Annex III of the Waste Statistics Regulation (WStatR).

The indicator covers all wastes except the following waste categories:

- Mineral wastes
- Contaminated soils and polluted dredging spoils
- Dredging spoils

Combustion wastes and solidified, stabilised and vitrified wastes are included.

EU waste policies aim to reduce the environmental and health impacts of waste and improve Europe's resource efficiency by preventing the generation of waste.

The indicator is a Sustainable Development Indicator (SDI). It has been chosen for the assessment of the progress towards the objectives and targets of the EU Sustainable Development Strategy. It is also a Resource Efficiency Indicator, as it has been chosen as a dashboard indicator presented in the Resource Efficiency Scoreboard for the assessment of progress towards the objectives and targets of the Europe 2020 flagship initiative on Resource Efficiency.

tsdpc210's table within the SDI set: Eurobase > Tables on EU policy > Sustainable Development Indicators > Sustainable consumption and production > Resource use and waste > [Generation of waste excluding major mineral wastes \(tsdpc210\)](#)

tsdpc210's table within the Europe 2020 set: Eurobase > Tables on EU policy > Europe 2020 Indicators > Resource efficiency > Transforming the economy > Turning waste into a resource > [Generation of waste excluding major mineral wastes \(tsdpc210\)](#)

#### 4. Unit of measure

Waste generation is measured in tonnes. For the indicator the quantity of waste generated is expressed in kg per inhabitant and year.

#### 5. Dissemination format

##### 5.1. Dissemination format - News release

##### 5.2. Dissemination format - Publications

Eurostat Statistical Books: [Sustainable development in the European Union - 2015 monitoring report of the EU Sustainable Development Strategy](#).

##### 5.3. Dissemination format - online database

Eurobase [data table](#); Eurobase [graph](#); Eurobase [map](#)

##### 5.4. Dissemination format - other

[Statistics explained - Waste statistics](#)  
[Environmental Data Centre on Waste](#)

#### 6. Relevance

## 6.1. Relevance - User Needs

### Key policy question

Waste prevention: Are we reducing the generation of waste?

### Key message

For an assessment of the progress that has been achieved towards the related key policy question see: [Sustainable development in the European Union - 2015 monitoring report of the EU Sustainable Development Strategy](#)

### Rationale

Waste represents a loss of resources in the form of both materials and energy. The generation and management of waste also has serious impacts on the environment. The renewed EU Sustainable Development Strategy (SDS) sets the target of 'avoiding the generation of waste and enhancing efficient use of natural resources by applying the concept of life-cycle thinking and promoting reuse and recycling'. This indicator is designed to monitor the development of waste generation in general, and to track progress in view of the SDS prevention / reduction target in particular.

The indicator covers all waste generating sectors, i.e. all economic sectors plus households, thus reflecting waste originating from production and from consumption. Although the indicator focuses mainly on non-mineral wastes which, in 2006, represented 35 % of the total waste generated in the EU 27, it is considered to reflect the general trend in waste generation more accurately and in a more comparable way than the generated total including mineral wastes.

The waste categories 'mineral waste', 'soil' and 'dredging spoil' were excluded from the definition of the indicator for the following reasons:

The high amounts of mineral wastes, soil and dredging spoil (in 2006 about 65 % of the generated total) dominate the indicator value. The respective wastes are generated mainly in the construction sector (50 %) and in the mining/quarrying sector (40 %). Fluctuations in these sectors, specific infrastructure measures or even methodological changes in data collection in one or a few countries would overlay general trends in waste generation in the rest of the economy (especially in small countries).

Comparison of data across countries indicates that data quality and comparability is lower in the construction and in the mining sector than in other economic sectors. Supposed reasons are under-coverage of wastes and differences in the application of the waste definition.

For a considerable share of the wastes excluded from the calculation of the indicator prevention is not the main environmental objective. This applies, for instance, to contaminated soil that needs to be remediated. Therefore, the gain in accuracy and interpretability of the indicator through the exclusion of major non-mineral wastes is assumed to clearly outweigh the shortcoming of representing only about a third of the total waste generated.

### Rationale uncertainty

The following limitations to the interpretation of the indicator exist:

For some countries, significant amounts of hazardous waste are not covered by the indicator because of the exclusion of mineral wastes, soils and dredging spoils (e.g. contaminated soils in Germany).

The indicator includes secondary waste; progress in the (pre-)treatment of waste may thus result in an increase of the indicator because waste is counted twice, as primary and as secondary waste.

The impact of the economic structure on the indicator value must be considered when interpreting the data with regard to developments over time or when comparing the indicator across countries. A decreasing indicator is not necessarily the result of waste prevention measures but may simply result from the outsourcing of waste intensive industries to other countries (and vice versa). With regard to cross-country comparisons the simple assessment that a high indicator value is bad and a low one is good is not

admissible without further investigation, as countries with a high share of waste intensive industries will generally show higher indicator values than countries with, for instance, a strong service sector.

## 6.2. Completeness

See data availability for table [tsdpc210](#)

## 7. Accuracy

### Medium

The quality assurance is a joint responsibility of the Member States and Eurostat. The Member States perform the data collection and describe their sources and methods in a quality report. The overall quality is difficult to assess. Although the concepts, the classifications and the formats are clearly defined, the countries remain free to choose the sources and methods.

The Member States describe the sources and methods in the [quality reports](#). A summary of the quality information at the European level is available in the report to the European Parliament and to the Council: [Quality of waste statistics](#).

(See the description of Eurostat quality grades)

## 8. Comparability

### 8.1. Comparability - geographical

#### High

Due to the common definitions and classifications the comparability of the data across countries is fairly high. Differences between countries with regard to the generated and treated totals become more and more explainable. The continuous improvement of comparability is ensured by the thorough data validation by means of sector specific indicators.

Some problems remain where countries have not used statistical units to link to the economic activities that generate the waste. This does not affect the total amounts of waste reported but hampers the comparability by economic sectors.

(See the description of Eurostat quality grades)

### 8.2. Comparability - over time

#### High

The data is comparable over time unless otherwise stated. A flag 'break in series' is applied to indicate significant changes in methods.

The established data validation system ensures that breaks in time series are identified and either corrected or explained. In addition, the national quality reports have proven to be a useful tool to monitor methodological changes and their impacts in Member States.

To ensure a consistent time series on the level of economic sectors, the data for 2004 and 2006 were adjusted for the changes in the breakdown by sectors that result from the transition to NACE Rev. 2. In addition, the data for 2004 that were missing on account of derogations for 11 countries were imputed retrospectively on the basis of the data for 2006.

(See the description of Eurostat quality grades)

## 9. Source data

ESS

**Data set 1:** Waste Statistics

**Data set provider:** Statistical Office of the European Union (Eurostat) based on data from covered countries

**Link to the data source:** [Generation of waste \[env\\_wasgen\]](#)

**Data set 2:** Waste Statistics

**Data set provider:** Statistical Office of the European Union (Eurostat) based on data from the covered countries

**Link to the data source:** [Waste excluding major mineral wastes \[env\\_wasnmin\]](#)

**Data set 3:** Population

**Data set provider:** Statistical Office of the European Union (Eurostat) based on data from the covered countries

**Link to the data source:** [Population change - Demographic balance and crude rates at national level \[demo\\_gind\]](#).

## 10. Comment

*[Related indicators are currently included in concept 17. In the new ESMS version (ESMS V 2.0) concept 17 will be merged with concept 16. It's more correct to include information on related indicators under 'Comment'.]*

### Related indicators

**Europe 2020:** Landfill rate of waste excluding major mineral wastes ([t2020\\_rt110](#))

SDI: Municipal waste treatment, by type of treatment method ([tsdpc240](#))

### References:

Eurostat, 2010: [Report from the Commission to the European Parliament and the Council on statistics compiled pursuant to the Regulation \(EC\) 2150/2002 on waste statistics and their quality](#). COM(2011) 131 final, 17.3.2011

Master ESMS on Waste excluding major mineral wastes metadata ([env\\_wasnmin\\_esms](#)), Reference Metadata in Euro SDMX Metadata Structure (ESMS)

### Copyrights:

[Eurostat Copyright/License Policy](#) is applicable.

## Related metadata

[env\\_wasnmin\\_esms](#) - Waste excluding major mineral wastes

## Annexes

## Annex 2 - Grading system of old quality profiles

The old quality profiles were presented in separate files from the ESMS file.

They included an overall grading A/B/C, combining three quality criteria: accuracy, comparability across countries and comparability over time.

A binary assessment was foreseen for each quality dimension: high vs. restricted.

The overall grading was assigned according to the criteria below:

- 'A' grading: all of the following conditions are fulfilled.
  - Data from reliable sources applying high standards with regard to methodology/accuracy and is well documented in line with Eurostat metadata standard.
  - The underlying data is collected on the basis of a common methodology for the European Union and, where applicable, data for US and Japan can be considered comparable; major differences being assessed and documented.
  - Data are comparable over time; impact of procedural or conceptual changes being documented.
- 'B' grading:
  - Data are collected from reliable sources applying high standards with regard to methodology/accuracy and is well documented in line with Eurostat metadata standard.
  - There are EITHER some serious shortcomings with regard to comparability across countries (including the lack of data) OR breaks in series for several countries which seriously hamper comparison over time (including the lack of data)
  - Deficiencies with regard to assessing and documenting the impact of these shortcomings might be identified.
- 'C' grading: if one or both of the following conditions apply.
  - Data might have to be interpreted with care as methodology/accuracy does not meet high quality standards.
  - There are some serious shortcomings with regard to comparability across countries (including the lack of data) AND breaks in series for several countries which seriously hamper comparison over time (including the lack of data).