Waste-related information needs, international concepts, challenges and guidance on waste statistics

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Main international policy frameworks requiring waste statistics

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a) Sustainable Development Goals (7 waste-related indicators);

b) Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention);

c) European Union: 7th Environment Action Programme, resource efficient Europe and its circular economy package;

d) OECD: Recommendation of the Council on the Environmentally Sound Management of Waste;

Other international initiatives where waste is an important consideration requiring the availability of waste statistics:

- Green economy initiatives
- UNEP 10-year framework programme on Sustainable Consumption and Production
- reporting under the United Nations Framework Convention on Climate Change (UNFCCC)
- European Sustainable Consumption and Production Action Plan
- European Regulation 2150/2002/EC on waste statistics and the European Agreement concerning the International Carriage of Dangerous Goods by Road
- Etc.

Waste-related SDG Indicators (I)

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SDG Target 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

SDG Target 12.2: By 2030, achieve the sustainable management and efficient use of natural resources

- **Indicator 8.4.1 / 12.2.1:** Material footprint, material footprint per capita, and material footprint per GDP
- **Indicator 8.4.2 / 12.2.2:** Domestic material consumption, domestic material consumption per capita, and domestic material consumption per GDP

Waste-related SDG Indicators (II)

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SDG Target 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

- **Indicator 11.6.1:** Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities

SDG Target 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

- **Indicator 12.3.1:** Global food loss index

Waste-related SDG Indicators (III)

SDG Target 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 to air, water and soil in order to minimize their adverse impacts on human health and the environment

– **Indicator 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

– **Indicator 12.4.2:** Hazardous waste generated per capita and proportion of hazardous waste treated, by type of treatment

SDG Target 12.5: By 2050, substantially reduce waste generation through prevention, reduction, recycling and reuse

– **Indicator 12.5.1:** National recycling rate, tons of material recycled

Main international data collections on waste statistics

❑ OECD/Eurostat Joint Questionnaire on waste;

❑ UNSD/UNEP Questionnaire on Environment Statistics (includes a section on waste);

❑ Eurostat data collection via the EU waste statistics regulation;

❑ Eurostat data collection on certain waste streams and shipments of waste

❑ Electronic Reporting System of the Basel Convention: data on the generation and transboundary movement of hazardous waste

→Using all the same concepts and comparable structures

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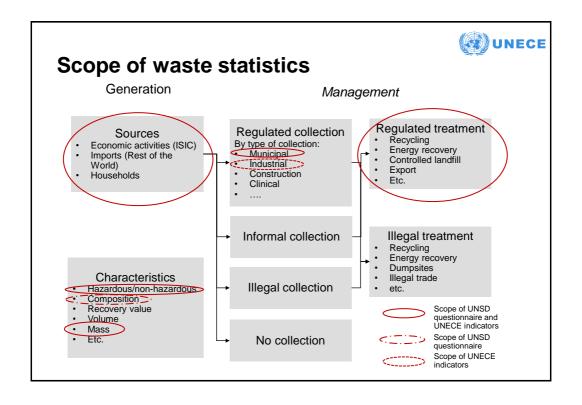# Thematical focus of international waste statistics

Traditionally:
- ❑ Generation of waste (total, per economic activity and households)
- ❑ Management of municipal waste (collection, treatment, disposal, etc.)
- ❑ Management of hazardous waste
- → in terms of mass/year

Nowadays increased information needs also on:
- ❑ Food waste
- ❑ Electronic waste
- ❑ End of life vehicles waste
- ❑ Economic value of waste
- ❑ Etc.
- → some (pilot) data collections exist already by Eurostat, OECD, UNSD

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Scope of waste statistics

Generation

Management

Sources
- Economic activities (ISIC)
- Imports (Rest of the World)
- Households

Regulated collection
By type of collection:
- Municipal
- Industrial
- Construction
- Clinical
- ….

Regulated treatment
- Recycling
- Energy recovery
- Controlled landfill
- Export
- Etc.

Informal collection

Illegal treatment
- Recycling
- Energy recovery
- Dumpsites
- Illegal trade
- etc.

Characteristics
- Hazardous/non-hazardous
- Composition
- Recovery value
- Volume
- Mass
- Etc.

Illegal collection

No collection

Scope of UNSD questionnaire and UNECE indicators

Scope of UNSD questionnaire

Scope of UNECE indicators

UNSD/UNEP Questionnaire on Waste Statistics – Table of Contents

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UNSD

UNEP

United Nations Statistics Division (UNSD) and United Nations Environment Programme (UNEP)
QUESTIONNAIRE 2016 ON ENVIRONMENT STATISTICS

Section: WASTE

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UNSD/UNEP Questionnaire on Waste Statistics – Key Definitions (I)

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- **Waste:** Materials that are not prime products (i.e., products produced for the market) for which the generator has no further use for his own purpose of production, transformation or consumption, and which he discards, or intends or is required to discard. It excludes material directly recycled or reused at the place of generation (i.e., establishment) and waste materials that are directly discharged into ambient water or air as wastewater or air pollution.

- **Hazardous waste:** Hazardous waste refers to the categories of waste to be controlled according to the Basel Convention on the control of transboundary movements of hazardous waste and their disposal (Article 1.1 and Annex I).

- **Management of waste:** Collection, transport, treatment and disposal of waste, including after-care of disposal sites.

- **Recycling:** Any reprocessing of waste material in a production process that diverts it from the waste stream, except reuse as fuel. Both reprocessing as the same type of product, and for different purposes should be included. Recycling within industrial plants i.e., at the place of generation should be excluded.

UNSD/UNEP Questionnaire on Waste Statistics – Key Definitions (II)

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- **Municipal waste:** Municipal waste, collected by or on behalf of municipalities, by public or private enterprises, includes waste originating from: households, commerce and trade, small businesses, office buildings and institutions (schools, hospitals, government buildings). It also includes bulky waste (e.g., white goods, old furniture, mattresses) and waste from selected municipal services, e.g., waste from park and garden maintenance, waste from street cleaning services (street sweepings, the content of litter containers, market cleansing waste), if managed as waste. The definition excludes waste from municipal sewage network and treatment, municipal construction and demolition waste.

Municipal waste – waste materials included

Residual waste
(mixed waste from households)
No picture

Recyclables
(paper, glass,
plastics, metals
organic waste)

Bulky waste
(Furniture, large
WEEE [coolers, TVs,
washing machines])

http://www.br.de/radio/bayern1

Hazardous
waste
(paints, inks,
oils, resigns,
detergents
etc.)

http://www.all-leer.de/media/custom

http://www.stadt-salzburg.at

eurostat

European
Commission

Municipal waste − waste materials excluded

Waste from municipal sewage network

End-of-life vehicles

http://www.mayer-entsorgungstechnik.de

Construction and demolition waste

http://www.humor.li/bilder/neu/detail/39226

http://www.luchting-gebaeudereinigung.de

eurostat

European Commission

UNSD/UNEP Questionnaire on Waste Statistics – UNECE
Table R1: Generation of waste by source

Line	Category	Unit	1990	2004	2005	2006
1	Agriculture, forestry and fishing (ISIC 01-03)	1000 t				
2	Mining and quarrying (ISIC 05-09)	1000 t				
3	Manufacturing (ISIC 10-33)	1000 t				
4	Electricity, gas, steam and air conditioning supply (ISIC 35)	1000 t				
5	Construction (ISIC 41-43)	1000 t				
6	Other economic activities excluding ISIC 38	1000 t				
7	Households	1000 t				
8	**Total waste generation (=1+2+3+4+5+6+7)**	1000 t				

UNSD/UNEP Questionnaire on Waste Statistics – UNECE
Table R2: Management of Hazardous Waste

Line	Category	Unit	1990	2004	2005	2006
1	Stock of hazardous waste at the beginning of the year	tonnes				
2	Hazardous waste generated during the year	tonnes				
3	Hazardous waste imported during the year	tonnes				
4	Hazardous waste exported during the year	tonnes				
5	**Hazardous waste treated or disposed of during the year (=6+7+9+10)**	tonnes				
6	*Amounts going to:* Recycling	tonnes				
7	Incineration	tonnes				
8	*of which: with energy recovery*	tonnes				
9	Landfilling	tonnes				
10	Other, please specify in the footnote	tonnes				
11	Stock of hazardous waste at the end of the year (=1+2+3-4-5)	tonnes				

UNSD/UNEP Questionnaire on Waste Statistics – UNECE
Table R3: Management of Municipal Waste

Line	Category	Unit	1990	2004	2005	2006
1	Municipal waste collected from households	1000 t				
2	Municipal waste collected from other origins	1000 t				
3	**Total amount of municipal waste collected (=1+2)**	1000 t				
4	Municipal waste imported for treatment/disposal	1000 t				
5	Municipal waste exported for treatment/disposal	1000 t				
6	**Municipal waste managed in the country (=3+4-5)**	1000 t				
7	*Amounts going to:* Recycling	1000 t				
8	Composting	1000 t				
9	Incineration	1000 t				
10	*of which: with energy recovery*	1000 t				
11	Landfilling	1000 t				
12	*of which: controlled landfilling*	1000 t				
13	Other, please specify in the footnote	1000 t				
14	Total population served by municipal waste collection	%				
15	Urban population served by municipal waste collection	%				
16	Rural population served by municipal waste collection	%				

UNSD/UNEP Questionnaire on Waste Statistics – UNECE
Table R4: Composition of Municipal Waste

Line	Category	Unit	1990	2004	2005	2006
1	Paper, paperboard	%				
2	Textiles	%				
3	Plastics	%				
4	Glass	%				
5	Metals	%				
6	Other inorganic material	%				
7	Organic material	%				
8	*of which: food and garden waste*	%				
9	TOTAL	%	100	100	100	100

UNSD/UNEP Questionnaire on Waste Statistics – Table UNECE
R5: Management of Municipal Waste — City Data

Line	Category	Unit	1990	2004	2005	2006
1	Total population of the city	1000 inh.				
2	Percentage of city population served by municipal waste collection	%				
3	Municipal waste collected from households	1000 t				
4	Municipal waste collected from other origins	1000 t				
5	**Total amount of municipal waste collected (=3+4)**	1000 t				
6	*Amounts going to:* Recycling	1000 t				
7	Composting	1000 t				
8	Incineration	1000 t				
9	*of which: with energy recovery*	1000 t				
10	Landfilling	1000 t				
11	*of which: controlled landfilling*	1000 t				
12	Other, please specify in the footnote	1000 t				

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**UNSD/UNEP Questionnaire on Waste Statistics –
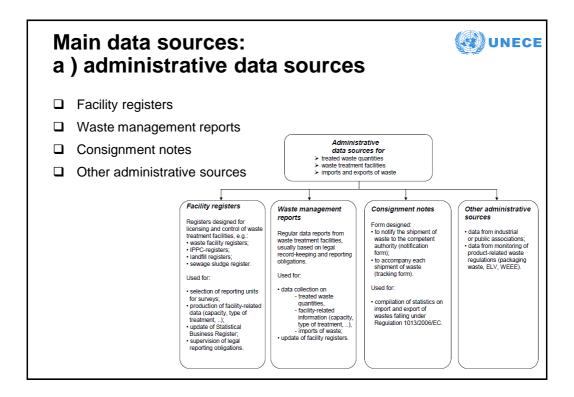Table R6: Supplementary Information Sheet**

❑ Insert national definitions for waste, hazardous waste, municipal waste and other complementary information on waste.

❑ Insert any additional information that can help the interpretation of your data, such as survey methods applied, quality statements on the data, etc.

❑ Describe the difficulties encountered in filling in the questionnaire.

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Some weaknesses of international data collections

❑ No international framework for waste statistics;

❑ No standard international waste classification;

❑ Key terms and definitions are not fully harmonized (e.g. "municipal waste)

❑ Boundary between waste, products and secondary raw materials is not clearly defined;

❑ Several waste flows are difficult to measure and thus sometimes included or excluded in the total figures (e.g. imports and exports of waste)

❑ Different conversion factors are used (e.g. from volume to weight)

❑ Different ways to measure the amounts of waste

→An international Task Force on waste statistics has been established in February 2017 under the auspices of the Conference of European Statisticians (UNECE provides the Secretariat)

Main data sources:
a) administrative data sources

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❑ Facility registers

❑ Waste management reports

❑ Consignment notes

❑ Other administrative sources

Administrative data sources for
➢ treated waste quantities
➢ waste treatment facilities
➢ imports and exports of waste

Facility registers

Registers designed for licensing and control of waste treatment facilities, e.g.:
• waste facility registers;
• IPPC-registers;
• landfill registers;
• sewage sludge register.

Used for:

• selection of reporting units for surveys;
• production of facility-related data (capacity, type of treatment, ..);
• update of Statistical Business Register;
• supervision of legal reporting obligations.

Waste management reports

Regular data reports from waste treatment facilities, usually based on legal record-keeping and reporting obligations.

Used for:

• data collection on
  - treated waste quantities,
  - facility-related information (capacity, type of treatment, ..),
  - imports of waste;
• update of facility registers.

Consignment notes

Form designed:
• to notify the shipment of waste to the competent authority (notification form);
• to accompany each shipment of waste (tracking form).

Used for:

• compilation of statistics on import and export of wastes falling under Regulation 1013/2006/EC.

Other administrative sources

• data from industrial or public associations;
• data from monitoring of product-related waste regulations (packaging waste, ELV, WEEE).

Main data sources:
b) statistical data sources

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❑ Surveys - economic activities relating to waste treatment: NACE Division 38 (Waste collection, treatment and disposal activities; materials recovery)

❑ Estimation procedures

❑ Combination of different sources and methods

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Main methodological references

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❑ European Commission: European List of Waste, pursuant to European Waste Framework Directive

❑ Eurostat: European Waste Classification for Statistics (EWC-Stat), version 4 (waste categories)

❑ Eurostat: Manual on Waste Statistics

❑ Eurostat: guidance on classification of waste according to EWC-Stat categories;

❑ System of Environmental-Economic Accounting (SEEA) Central Framework (2012)

❑ UNSD Environment Statistics Section: UNSD/UNEP Waste Questionnaire

❑ Basel Convention: Waste categories and hazardous characteristics

Thank you very much for your attention!
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Brighton Beach / New York City on 18 June 2016: Informal waste collection