

C-15: Wastewater treatment facilities (Capacity of wastewater treatment facilities and efficiency of treatment)

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1) General description

1.1) *Brief definition*

This indicator specifies the amount of wastewater treated in urban wastewater treatment plants, in independent treatment facilities, and in other treatment plants. It distinguishes mechanical/primary, biological/secondary, and advanced/tertiary treatment specifying designed (nominal) capacity and actual volumes of treated wastewater as well as the designed and actual capacity for the occupation of biochemical oxygen demand (BOD). At the same time, the indicator shows the total treated wastewater and the total amount of BOD removed by wastewater treatment facilities in a country.

1.2) *Units of measurement*

- Number of wastewater treatment facilities as integral numbers;
- Designed (nominal) capacity of wastewater treatment facilities and actual volumes of treated wastewater in million cubic metres per year;
- Amount of BOD removed at wastewater treatment facilities in thousand tons of oxygen (O₂) per year.

1.3) *Context*

Relation to other indicators from the Guidelines - This indicator relates to indicators "C-10: Biochemical oxygen demand (BOD) and concentration of ammonium in rivers", "C-11: Nutrients in freshwater", "C-12: Nutrients in coastal seawaters", "C-14: Population connected to wastewater treatment" and "C-16: Polluted (non-treated) wastewaters".

2) Relevance for environmental policy

2.1) *Purpose*

The indicator provides a measure of pressure on the environment and a measure of response and allows to obtain the information necessary for the development of mechanisms for the protection of water bodies, as well as to evaluate the measures taken to improve the efficiency of the wastewater management system.

2.2) Issue

Wastewater treatment is a basic prerequisite for minimizing pressure on both surface and groundwaters in terms of freshwater pollution by discharged waters. As both groundwaters and surface waters are abstracted for the production of drinking water or even for direct use as drinking water (self-supply), the reduction of water pollution represents one of the basic preconditions for human health and the prevention of water related diseases.

2.3) International agreements and targets

a) Regional level

The ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (and its protocols) obliges the Parties to prevent, control and reduce transboundary impact, use transboundary waters in a reasonable and equitable way and ensure their sustainable and ecologically sound management. Its Protocol on Water and Health requires that the Parties take all appropriate measures to ensure adequate sanitation.

b) Subregional level

The Environmental Strategy of countries of South-Eastern and Eastern Europe, Caucasus and Central Asia, adopted by the 2003 Ministerial Conference "Environment for Europe", requires the preparation and implementation of programmes for integrated water management, including the aim to increase the volume of collected and treated wastewaters.

In the European Union (EU), the Water Framework Directive (Directive 2000/60/EC) obliges the Member States to promote sustainable use based on long-term protection of available water resources and to ensure a balance between abstraction and recharge of water with the aim of achieving a "good water status" by 2015. Directive 91/271/EEC concerning urban wastewater treatment obliges the Member States to ensure that all agglomerations above 2000 population equivalents (p.e.) are provided with collecting systems for urban wastewater and that discharge is subject to secondary treatment or an equivalent treatment. It was fully implemented in the EU-15 countries by 2005 and has to be fully implemented in the 12 new Member States by 2008–2015. Relevant requirements are included in subregional Multilateral Environmental Agreements - MEAs (mainly the Baltic Sea, the Black Sea, the Caspian Sea, the Mediterranean Sea and the Danube River).

3) Methodology and guidelines

3.1) Data collection and calculations

Data can be obtained from the companies operating wastewater treatment facilities. The indicator is calculated by summarizing annual capacities of treatment facilities, volumes of treated wastewater, and amounts of waterborne and removed BOD, in total and by categories (level of treatment, type of operator). To avoid double counting, water subjected to more than one type of treatment should be reported under the highest level of treatment only. Volume of water treated in independent treatment facilities and amounts of waterborne and removed BOD should be estimated.

3.2) Internationally agreed methodologies and standards

The UNSD/UNEP Questionnaire on Environmental Statistics (Table W4); The Joint OECD/Eurostat Questionnaire on the State of the Environment (Inland Waters, Table IV-5); The UNCSD Methodology Sheets for Indicators of Sustainable Development (Wastewater treatment); The ECE/WHO Guidelines on the Setting of Targets, Evaluation of Progress and Reporting under the Protocol on Water and Health; International Recommendations for Water Statistics (IRWS), UNSD 2012.

4) Data sources and reporting

Data are collected based on statistical reporting by countries. In many countries databases and fairly exhaustive time series exist at the level of water cadastres and by the water and sewage supply industry. Countries report data in their inputs to the UNSD Environment Statistics Database.

5) References at the international level

- Council Directive 91/271/EEC of 21 May 1991 concerning urban waste-water treatment
- Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (Water

Framework Directive): http://ec.europa.eu/environment/water/water-framework/index_en.html

- ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes (1992): <http://www.unece.org/fileadmin/DAM/env/water/pdf/watercon.pdf>; amendment 2003: <http://www.unece.org/fileadmin/DAM/env/documents/2004/wat/ece.mp.wat.14.e.pdf>
- European Environment Agency (EEA): <http://www.eea.europa.eu/themes/water>
- Eurostat: <http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/indicators>
- Global water information system of the Food and Agriculture Organization (AQUASTAT): http://www.fao.org/ag/agl/aglw/aquastat/water_res/waterres_tab.htm
- Indicators of Sustainable Development: Guidelines and Methodologies, third edition, United Nations 2007: http://www.un.org/esa/sustdev/natlinfo/indicators/methodology_sheets.pdf
- International Recommendations for Water Statistics (IRWS): <http://unstats.un.org/unsd/envaccounting/irws/irwswebversion.pdf>
- Protocol on Water and Health to the ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes: <http://www.unece.org/fileadmin/DAM/env/documents/2000/wat/mp.wat.2000.1.e.pdf>
- The Protocol on Water and Health: Guidelines on the Setting of Targets, Evaluation of Progress and Reporting, ECE/WHO 2010: http://www.unece.org/env/water/publications/documents/guidelines_target_setting.pdf
- United Nations Statistics Division (UNSD): <http://unstats.un.org/unsd/environment/>
- United Nations Statistics Division (UNSD)/United Nations Environment Programme (UNEP) Questionnaire on Environment Statistics (2013): <http://unstats.un.org/unsd/environment/questionnaire2013.html>
- World Health Organization (WHO): <http://www.euro.who.int/en/home>