

C-2: Freshwater abstraction

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1) General description

1.1) *Brief definition*

The total volume of freshwater abstracted annually (surface and groundwaters) – provided in total, by economic activity in accordance with the International Standard Industrial Classification of All Economic Activities (ISIC) and as a percentage of renewable freshwater resources – i.e. as the country's water exploitation index (WEI).

1.2) *Units of measurement*

The total volume of freshwater abstraction and the volume by economic activity are measured in million cubic metres per year; the WEI is expressed as a percentage.

1.3) *Context*

Relation to other indicators from the Guidelines - This indicator relates to indicators "C-1: Renewable freshwater resources", "C-3: Total water use", and "C-8: Reuse and recycling of freshwater".

2) Relevance for environmental policy

2.1) *Purpose*

The indicator provides, in relation to total resources available for abstraction, a measure of the pressure on the environment in terms of the abstraction of freshwater resources. It can reflect the extent of water resource scarcity and the distribution of abstracted water among different economic activities.

2.2) *Issue*

Freshwater resources are of major environmental and economic importance. Pressures on freshwater resources are exerted by overexploitation and by environmental degradation. Since water quality is closely linked to water quantity, the relation of freshwater abstraction to the renewal of stocks is a central issue in sustainable freshwater resource management.

In combination with indicator “C-1: Renewable freshwater resources”, this indicator can show to what extent freshwater resources are already used and can help to assess the effectiveness of supply and demand management policies. Changes in the WEI help to analyse how changes in abstraction affect freshwater resources by increasing pressure on them or making them more sustainable. In terms of the threshold values of the WEI, areas for which the water exploitation index is above 20% can be considered as stressed regions, while regions where the WEI exceeds 40% can be considered as areas experiencing severe water stress.

2.3) International agreements and targets

a) Regional level

The ECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes obliges 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.

b) Subregional level

The Environmental Strategy for 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. In the European Union, the Water Framework Directive (2000/60/EC) obliges the Member States to promote the sustainable use of available water resources based on long-term protection and to ensure a balance between abstraction and recharge of groundwater, with the aim of achieving a “good water status” by 2015. Targets are also established via international treaties among riparian countries.

3) Methodology and guidelines

3.1) Data collection and calculations

Water is abstracted by the water supply industry, i.e. public or private bodies whose main functions are water collection, treatment and distribution activities for domestic and industrial needs. It can also be directly abstracted from rivers, lakes, wells or springs by industries, farmers, households, and others for their own use. The indicator incorporates data on the abstraction of freshwater, broken down according to the main activity of the water abstractor as defined by ISIC. The calculations of water abstraction should be based on the data on quantity of abstracted water reported by water users to the relevant authorities. The quantity of water abstracted is either measured directly or calculated on the basis of

energy consumption of pumps. In some cases it is necessary to apply a calculation method using models for some water users (household and agriculture). Water for hydroelectricity generation purposes should be excluded from electricity industry.

The WEI is the mean annual total abstraction of freshwater divided by the mean annual total renewable freshwater resources at the country level, expressed as a percentage. The WEI provides a good national-level overview of the pressures on resources in an easily understandable format, and shows trends of these pressures over time.

3.2) Internationally agreed methodologies and standards

The UNSD/UNEP Questionnaire on Environment Statistics (Table W2); International Recommendations for Water Statistics (IRWS), United Nations 2012.

4) Data sources and reporting

Many countries of South-Eastern and Eastern Europe, Caucasus and Central Asia have databases that provide fairly exhaustive time series regarding freshwater abstraction, which are based on reporting in standard form by enterprises and other relevant organizations. These data are collected in water cadastres. Data on freshwater abstraction are published in annual environmental reports and/or in statistical yearbooks. In many countries, information on freshwater abstraction is published in national state-of-the-environment reports. Statistical agencies provide data to the UNSD Environment Statistics Database.

5) References at the international level

- UNSD/UNEP Questionnaire on Environment Statistics (2013): <http://unstats.un.org/unsd/environment/questionnaire2013.html>;
- 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>

- Environmental Indicator Report 2012, EEA 2012
- European Commission – Water Policy: http://ec.europa.eu/environment/water/index_en.htm
- European Environment Agency (EEA): <http://www.eea.europa.eu/themes/water>
- Europe's Environment: The Fourth Assessment, (EEA, 2007)
- Eurostat: <http://epp.eurostat.ec.europa.eu/portal/page/portal/sdi/indicators>
- Food and Agriculture Organization (FAO): <http://www.fao.org>
- International Recommendations for Water Statistics (IRWS): <http://unstats.un.org/unsd/envaccounting/irws/irwswebversion.pdf>
- International Standard Industrial Classification of All Economic Activities, United Nations, Series M, No. 4, Rev. 3;
- Organization for Economic Co-operation and Development (OECD): <http://oecd.org/env/>
- The European Environment: State and Outlook 2010: Synthesis, EEA 2010
- 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>