

G-4: Renewable energy supply

- 1) General description 1**
 - 1.1) Brief definition..... 2*
 - 1.2) Units of measurement 2*
 - 1.3) Context.....2*

- 2) Relevance for environmental policy..... 2**
 - 2.1) Purpose 2*
 - 2.2) Issue 2*
 - 2.3) International agreements and targets..... 3*
 - a) Global level 3*
 - b) Regional level 3*
 - c) Subregional level 3*

- 3) Methodology and guidelines..... 3**
 - 3.1) Data collection and calculations 3*
 - 3.2) Internationally agreed methodologies and standards 4*

- 4) Data sources and reporting..... 4**

- 5) References at the international level..... 4**

1) General description

1.1) *Brief definition*

This indicator shows the amount of renewable energy supply – in total and broken down by sources of energy – and its share in a country's total primary energy supply for a calendar year.

1.2) *Units of measurement*

Thousand tons of oil equivalent (ktoe) for total supply and supply of certain types of renewable energy sources; percentage to express the share of different types of renewable energy sources in total primary energy supply.

1.3) *Context*

Relation to other indicators from the Guidelines - This indicator relates to indicator "G-2: Total primary energy supply".

2) Relevance for environmental policy

2.1) *Purpose*

Renewable energy supply, characterized by the share of renewable energy in the total national energy supply, assesses responses aimed at the reduction of the environmental impact of energy consumption.

2.2) *Issue*

The dependence of the economy on non-renewable energy resources (fossil fuels) cannot be sustainable in the long run, since natural fossil fuel resources are limited, whereas renewable resources can ensure a continuous energy supply. Renewable energy sources can be considered as the best option for reducing the negative environmental impacts of energy production and consumption.

2.3) International agreements and targets

a) Global level

Chapter 4 of the Agenda 21 calls for improving efficiency in the use of energy sources and for a transition to the environmentally friendly use of renewable resources. The United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol call for curbing total greenhouse gas (GHG) emissions, the major share of which is CO₂ emissions caused by combustion of fossil fuels. The Kyoto Protocol establishes limits and targets for total GHG emissions for industrially developed countries and economies in transition (Annex 1 parties).

b) Regional level

The ECE Convention on Long-range Transboundary Air Pollution requires the implementation of concrete measures aimed at the reduction of emissions of pollutants into the air, including those originating in fuel combustion.

c) Subregional level

The Environment Strategy of countries of South-Eastern and Eastern Europe, Caucasus and Central Asia calls, in particular, for the mobilization of domestic and foreign investments for the development of renewable energy sources and the development and dissemination of alternative energy technologies in order to increase the share of renewable energies in the energy mix. In the European Union (EU), Directive 2009/28/EC on the promotion of the use of energy from renewable sources sets the general objective to achieve a 20 % share of energy from renewable sources in the EU gross final consumption of energy. Under this directive, Member States have taken on binding national targets for raising the share of renewable energy in their energy consumption by 2020. These targets, which reflect Member States' different starting points and potential for increasing renewables production, range from 10% in Malta to 49% in Sweden.

3) Methodology and guidelines

3.1) Data collection and calculations

Measuring renewable energy supply relates to the total primary energy supply (see indicator "G-2: Total primary energy supply"). The total primary energy supply is calculated based on a formula taking into account production, exports, imports, international bunkers and changes in fuel stocks. Both data on total primary energy supply and the supply of energy produced

from renewable sources may be available in national energy balances of many countries, as well as from various international information sources on energy.

3.2) Internationally agreed methodologies and standards

The International Recommendations for Energy Statistics (IRES), adopted by the United Nations Statistics Division (UNSD) in 2011 provide data compilers with a complete set of recommendations covering all aspects of the statistical production process framework, from basic concepts, definitions and classifications to data sources, data compilation strategies, energy balances, data quality and statistical dissemination. An Energy Statistics Manual was published by the International Energy Agency (IEA) in 2005. Many other international organizations and agencies collect data on energy supply and consumption using developed methodologies and standards: the Organization for Economic Co-operation and Development (OECD), the European Union Statistical Office (Eurostat), the European Environment Agency (EEA) and the World Bank (see references).

4) Data sources and reporting

In the countries of South-Eastern and Eastern Europe, Caucasus and Central Asia, national energy balances are prepared by the government bodies responsible for economic affairs or in state statistical offices. Data on energy supply in total and by source are published in national energy balances and in statistical yearbooks. UNSD updates and maintains an Energy Statistics Database, based on reports by various countries, including countries of South-Eastern and Eastern Europe, Caucasus and Central Asia. The most comprehensive database on energy balances is maintained by IEA and includes national data as well as data and estimates collected by other international bodies.

5) References at the international level

- United Nations Framework Convention on Climate Change: <http://unfccc.int/2860.php>;
- ECE Convention on Long-range Transboundary Air Pollution: <http://www.unece.org/env/lrtap/welcome.html>;
- International Recommendations for Energy Statistics (IRES): <http://unstats.un.org/unsd/energy/ires/default.htm>;
- United Nations, *Energy Statistics –Definitions, Units of Measure and Conversion Factors*. Series F, No. 44;

- World Bank, *World Development Indicators* (issued annually): <http://databank.worldbank.org/data/views/variableselection/selectvariables.aspx?source=world-development-indicators>;
- OECD/IEA, *Energy Statistics of OECD Countries and Energy Statistics of Non-OECD Countries* (issued annually) Part I: Methodology: http://www.oecd-ilibrary.org/energy/energy-statistics-of-non-oecd-countries_19962851-en ;
- IAEA, UNDESA, IEA, Eurostat and EEA. *Energy Indicators for Sustainable Development: Guidelines and Methodologies*. (IAEA, 2005);
- IEA Energy Statistics Manual (2005): <http://www.iea.org/publications/freepublications/publication/name,3961,en.html>;
- IEA, *Key World Energy Statistics* (2012): <http://www.iea.org/publications/freepublications/publication/name,31287,en.html>;
- OECD Factbook 2013: Energy: http://www.oecd-ilibrary.org/economics/oecd-factbook_18147364;
- EU Thematic Strategy on Air Pollution (2005): <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2005:0446:FIN:EN:PDF>;
- Energy 2020: A Strategy for competitive, sustainable and secure energy [COM(2010) 639 final];
- Energy Efficiency Plan 2011/* COM/2011/0109 final;
- Energy Roadmap 2050 /* COM/2011/0885 final;
- Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32009L0028:EN:NOT>;
- European Commission – Energy policy: http://europa.eu/legislation_summaries/energy/european_energy_policy/index_en.htm;
- European Commission – Renewable energy: http://ec.europa.eu/energy/renewables/targets_en.htm;
- UNSD Energy Statistics: <http://unstats.un.org/unsd/energy/default.htm> ;
- World Bank: <http://www.worldbank.org>;
- OECD I-library - Statistics: <http://www.oecd-ilibrary.org/statistics;jsessionid=1r7pxni2v4lc9.x-oecd-live-01>;
- EEA – Energy: <http://www.eea.europa.eu/themes/energy>;

- Eurostat - Energy: <http://epp.eurostat.ec.europa.eu/portal/page/portal/energy/introduction>;
- International Energy Agency: <http://www.iea.org>.