SHARE OF RENEWABLE ENERGY SOURCES IN TOTAL ENERGY USE		
Consumption and Production Patterns	**Energy use**	

1. INDICATOR

(a) Name: Share of renewable energy sources in total energy use

(b) Brief Definition: The share of energy from renewable sources in total energy used by the country.

(c) Unit of Measurement: %

(d) Placement in the CSD Indicator Set: Consumption and Production Patterns/Energy use

2. POLICY RELEVANCE

(a) Purpose: This indicator traces the use of renewable energy as a share of country's total energy use.

(b) Relevance to Sustainable/Unsustainable Development: Chapter 4 of Agenda 21 calls for an improvement of efficiency in the use of energy sources and for a transition towards the environmentally friendly use of renewable resources. Energy is a key aspect of consumption and production. Dependence on non-renewable sources can be regarded as unsustainable in the long term. Renewable sources, on the other hand, can supply energy continuously under sustainable management practices and their use in general create less environmental pressure. The ratio of renewable to non-renewable energy sources represents a measure of a country's energy sustainability.

(c) International Conventions and Agreements: Not available.

(d) International Targets/Recommended Standards: Some voluntary targets at national and regional levels have been established.

(e) Linkages to Other Indicators: Interpretation of this indicator is enhanced when combined with annual energy production, annual energy consumption per capita, and lifetime of proven energy reserves. It is also closely linked to some of the environmental indicators such as greenhouse gas emissions and land use change.

3. METHODOLOGICAL DESCRIPTION

(a) Underlying Definitions and Concepts: The two elements comprising this indicator are the consumption of energy from renewable sources, and the total energy consumption.

Renewable sources refer to energy collected from current ambient energy flows or from substances derived from them. They can be classified as combustible or non-combustible. Non-combustible renewables include geothermal, solar, wind, hydro, tide and wave energy. Combustible renewables and wastes include biofuels (biogas, ethanol, biodiesel); biomass products (fuelwood, vegetal waste, pulp and paper waste, animal waste, bagasse), and the portion of industrial and municipal waste (produced by the residential, commercial and public service sectors and collected by the local authorities for disposal) that is used for production of heat and/or power.

The total energy consumption can be found in a country's energy balances under names that can be interchangeably used: "apparent consumption", "gross inland availability", or "total energy requirements"

(b) Measurement Methods: This indicator is computed by dividing the consumption of energy from renewable sources by the total energy consumption.

The total energy consumption is calculated from the following formula: Production of primary energy + Imports – Exports – Bunkers +/- stock changes. (Only production of primary energy is taken into account to avoid double-counting).

Consumption of energy from renewable sources can be calculated using a similar formula, naturally taking into account only renewable energy sources.

However, in some countries, consumption of renewable energy might not always be easily measurable, since exports and imports of energy, and electricity in particular, are often given as totals, without a breakdown by the source. It such cases, the production of energy from renewable sources could be used as a first approximation.

(c) Limitations of the Indicator: Data availability; the lack of standardized methodology; the need to use conversion factors; the challenges associated with summation of various forms of energy (e.g., after-losses electricity with pre-losses energy of fossil fuels). Due to potential export and import of renewable energy, there might be significant differences between production of renewable energy and the actual consumption by the country, so in some cases an adjustment to account for these flows might be necessary.

(d) Alternative Definitions/Indicators: None

4. ASSESSMENT OF DATA

(a) Data Needed to Compile the Indicator: Consumption of energy from renewable resources and wastes; total energy consumption.

(b) National and International Data Availability and Sources: National data and estimates on renewable resources are available from national statistical offices and country publications for many countries. The United Nations Statistics Division and the International Energy Agency of the Organisation for Economic Co-operation and

Development compile data and estimates based on information from national and international sources. Due to the large variety of forms of renewables and their uses, data collection is difficult. Data availability for developing countries may be a limitation.

(c) Data References: United Nations: Energy Statistics Yearbook and Energy Balances and Electricity Profiles; International Energy Agency: Energy Balances of OECD Countries, Energy Balances of Non-OECD Countries; Eurostat, Energy Balance Sheets; World Energy Council: Survey of Energy Resources.

5. AGENCIES INVOLVED IN THE DEVELOPMENT OF THE INDICATOR

(a) Lead Agency: The lead agency is the United Nations Department of Economic and Social Affairs, Statistics Division.

(b) Other Contributing Organizations: Other agencies involved in the development of this indicator are the World Energy Council (WEC), the International Energy Agency of the Organisation for Economic Co-operation and Development (OECD/IAE), Eurostat, and the Economic Commission for Europe.

(c) Data References:

6. REFERENCES

(a) Readings:

World Energy Council: *Survey of Energy Resources*.

United Nations: *Energy Statistics Yearbook*

United Nations: *Concepts and Methods in Energy Statistics, with Special Reference to Energy Accounts and Balances--A Technical Report* (http://unstats.un.org/unsd/publication/SeriesF/SeriesF_29E.pdf)

IAEA, UN DESA, IEA, Eurostat and EEA, 2005. *Energy Indicators for Sustainable Development*. Vienna, IAEA.

(b) Internet Sites: United Nations Statistics Division: http://www.un.org/Depts/unsd