Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all
Target 7.3: By 2030, double the global rate of improvement in energy efficiency
Indicator 7.3.1: Energy intensity measured in terms of primary energy and GDP

Institutional information

Organization(s):

International Energy Agency (IEA)

United Nations Statistics Division (UNSD)

United Nations' Inter-agency Mechanism on Energy (UN Energy)

SE4ALL Global Tracking Framework Consortium (SE4ALL Global Tracking Framework Consortium)

Concepts and definitions

Definition:
Energy intensity is defined as the energy supplied to the economy pet unit value of economic output.

Rationale:

Energy intensity is an indication of how much energy is used to produce one unit of economic output. It is a proxy of the efficiency with which an economy is able to use energy to produce economic output. A lower ratio indicates that less energy is used to produce one unit of output.

Concepts:

Total energy supply, as defined by the International Recommendations for Energy Statistics (IRES), as made up of production plus net imports minus international marine and aviation bunkers plus-stock changes. Gross Domestic Product (GDP) is the measure of economic output. For international comparison purposes, GDP is measured in constant terms at purchasing power parity

Comments and limitations:

Energy intensity is only an imperfect proxy for energy efficiency. It can be affected by a number of factors, such as climate, structure of the economy, nature of economic activities etc. that are not necessarily linked to pure efficiency.

Methodology

Computation Method:

Energy intensity is obtained by dividing total energy supply over GDP.

Disaggregation:

Disaggregation of energy intensity, e.g. by sector, could provide further insights into progress towards energy efficiency. At present it is only feasible to calculate such sector disaggregations for the following sectors – industry, residential, transport, agriculture, households – as reported in the SE4ALL Global Tracking Framework. It would be desirable, over time, to develop more refined sectoral level energy intensity indicators that make it possible to look at energy intensity by industry (e.g. cement, steel) or by type of vehicle (e.g. cars, trucks), for example. Doing so will not be possible without statistical collaboration with the relevant energy consuming sectors.

Decomposition analysis of energy intensity trends seeks to filter out factors that affect energy demand, such as economy wide scale and structure shifts, from more narrowly defined energy intensity shifts. The methodology applies decomposition analysis to isolate a more refined measure of energy intensity, one that sifts out the temporal shift of relative sector weights. This analysis is also reported in the SE4ALL Global Tracking Framework.

Regional aggregates:

Aggregates are calculated, whether by region or global, using total energy supply as weights.

Data Sources

Total energy supply is typically calculated in the making of national energy balances. Energy balances are available for larger economies from the International Energy Agency (IEA) and for all countries in the world from the United Nations Statistics Division (UNSD).

Data Availability

Description:

IEA and UN energy balances combined provide total energy supply data for all countries on an annual basis. GDP data is available for all countries on an annual basis.

Time series:

1990-present

Calendar

Data collection:

Data is collected on an annual basis.

Data release:

The IEA Energy Balances are updated early Fall (publishing information for two calendar years prior). The UN energy balances are made available towards the end of the calendar year (publishing information for two calendar years prior) (The IEA Energy Balances are updated early Fall (publishing information for two calendar years prior). The UN energy balances are made available towards the end of the calendar year (publishing information for two calendar years prior)

Data providers

National statistical offices

Data compilers

Name:

The International Energy Agency (IEA) and the United Nations Statistics Division (UNSD)

Description:

The IEA and UNSD are the primary compilers of national energy balances data. The SE4ALL Global Tracking Framework Consortium combines information from the IEA Energy Balances and the UN Statistics Database.

References

URL:

worldbank.org; iea.org; unstats.un.org

References:

Global Tracking Framework report (2013)
http://trackingenergy4all.worldbank.org/

Global Tracking Framework Report (2015)
http://trackingenergy4all.worldbank.org/

Global Tracking Framework database (2015)
http://data.worldbank.org/data-catalog/sustainable-energy-for-all

UN Energy Statistics Database
http://unstats.un.org/unsd/energy/edbase.htm

IEA Energy Balances and Statistics
http://www.iea.org/statistics/topics/energybalances/"