

Energy intensity: GDP produced with one unit of primary energy

Dimension - Environment

Associated Key Factor:

Energy use and prices

Data Source:

Eurostat New Chronos

http://europa.eu.int/newcronos/suite/info/notmeth/en/theme1/strind/enviro_ei.htm

europa.eu.int/comm/eurostat/

General Availability:

Reporting unit: ratio

Reporting level: national

Reporting period: annually

Data available from 1991 to 2002

Availability by country:

1991 - 2002: EU-15+AC

Data Source:

European Project on Energy Efficiency Indicators

www.odyssee-indicators.org/

www.odyssee-indicators.org/Overview/overview.html

General Availability:

Reporting unit: energy consumption over GDP

Reporting level: national

Reporting period: annually

Data available from 1985 to 2000

Availability by country:

1985 - 2000: EU-15

1985 - 2000: Member States (EU-15)

The indicator:

The ratio between the Gross Inland Consumption of Energy and the Gross Domestic Product calculated for a calendar year. It measures the energy consumption of an economy and its overall energy efficiency.

How is it measured?

The Gross Inland Consumption of Energy is calculated as the sum of the Gross Inland Consumption of the five types of energy: coal, electricity, oil, natural gas and renewable energy sources. In addition, each of these figures is calculated as an aggregation of different data on production, storage, trade (imports/exports) and consumption/use of energy. The GDP figures are taken at constant prices to avoid the impact of the inflation, base year 1995 (ESA95).

The energy intensity ratio is the result of dividing the Gross Inland Consumption by the GDP. Since Gross Inland Consumption is measured in kgoe (kilogram of oil equivalent) and GDP in 1000 EUR, this ratio is measured in kgoe per 1000 EUR.

What are the advantages of the indicator?

Such ratios are favoured by economists to assess energy efficiency improvements at the level of the whole economy or at the sector level. Indeed, they consider that any reduction in the amount of energy used to generate one unit of economic output (i.e. a decrease in energy intensity) reflects an energy efficiency improvement. Energy intensities represent some kind of energy productivity (by analogy to labour productivity). They are therefore mainly interesting to assess overall energy efficiency improvements, without taking into account

whether they come from voluntary energy saving actions or from other factors, not necessarily linked to energy (e.g. structural changes, increase of product value added, etc) (Odyssee: www.odyssee-indicators.org/ : 2003)

What are the disadvantages of the Indicator?

The indicator should be differentiated by economic sectors and the transport sector should differentiate between the different transport modes.

What is the policy relevance of the indicator?

Since this measure is an efficiency measure of the economy, it is important to see how improvements could be realized. If the transport sector cannot be considered to be very productive per unit of primary energy. Policy measures improving this productivity would have to be considered. On the other hand transport might be helpful to improve productivity per unit of primary energy in other sectors.

The Indicator is relevant for the following pathways of the FORESIGHT FOR TRANSPORT exercise:

	Transport Impact	External Determining Variable	Intermediate Variable	Contextual Information
A reorientation of European transport policy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Trends regarding renewable energy source (RES) and rational use of energy (RUE)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Technological improvements and alternative fuels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Growth of transport demand	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>