Metadata for Energy Union indicators

List of available indicators

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¹ Natural gas liquids

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0 UO	DE2: Gap between GHG	Effort Sharing emissions
on	emissions projections and 2020	Effort Sharing Projections
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Jec	DE5: Renewable energy share	RES share transport
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		Fossil fuels avoidance by RES
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	BIC1 . Dublic invoctments on	
ovation veness	Fnorgy Union related R&I	
	(%GDP)	
	RIC2: natents related to Energy	
titi	Union R&I priorities (per	
rch, in ompet	inhabitant)	
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sea d c	the manufacturing sector (excl.	
Res	refining)	
Socio- nomic data	01. CDP chain linked volumes	
	2015	
	02: GDP market prices	
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	oon opulation	
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Energy Security, solidarity and trust

Net Import dependency (total and by main energy carriers):

Definition: Energy net import dependency (NID) shows the proportion of energy that an economy must import the extent to which a country relies upon imports in order to meet its energy needs.

It is defined as net energy imports divided by gross available energy, expressed as a percentage.

NID = (imports-exports) / (gross available energy)

A negative dependency rate indicates a net exporter of energy while a dependency rate in excess of 100 % indicates that part of the energy products have been stocked. It can be defined for all products total as well as for individual fuels i.e. hard coal (anthracite, coking coal and other bituminous coal), crude oil and NGL, natural gas.

Source of data: Eurostat database, energy imports, exports and gross available energy from complete energy balances, annual data, table [nrg_bal_c]

Link to source of data: http://ec.europa.eu/eurostat/data/database

Supplier concentration index (total and by main energy carriers)

Definition: Supplier concentration index (SCI) shows the concentration of main energy carriers imports from suppliers outside of the European Economic Area (EEA)². The SCI is an Herfindahl-Hirschman Index (HHI) scaled in the range of 0-100.

The SCI for a specific energy carrier (i.e. hard coal, crude oil and NGL, natural gas) is computed as the sum of squares of the quotient of net positive imports³ from each trade partner of the country (numerator) and the gross inland consumption of that fuel in the country (denominator). The values of imports, exports and gross inland consumption are in specific units of each carrier.

The aggregate SCI for a country and all above mentioned energy carriers is the weighted average of the SCIs by gross inland consumption (in common units, e.g. ktoe) of solid fuels, oil and products and natural gas and total gross inland consumption

Smaller values of SCI indicate larger diversification and hence can be seen as a proxy for lower risk to energy supply shocks. All else equal, SCIs will be lower in countries where net imports form a smaller part of energy consumption. SCIs will also be lower in a country using a well-balanced source of imports. An SCI of 100 indicates that the given country imports all its energy carriers from an unique supplier, although an SCI of 0 indicates that the country is fully independent of energy imports.

The aggregate SCI for all main energy carriers is computed as the sum of the specific SCIs for each considered energy carrier weighted by the gross inland consumption (GIC):

SCI_{total}= (GIC_{solid} fossil fuels *SCI_{hard} coal + GIC_{oil} and petroleum products *SCI_{crude} oil&NGL+ GIC_{natural} gas *SCIhard natural gas) / GIC_{all} products

Source of data: Eurostat database, energy trade by partner country from tables [nrg_t], gross inland consumption in specific units from commodity balances, tables [nrg_cb], gross inland consumption in common units from energy balances, table [nrg_bal_c]

Link to source of data: http://ec.europa.eu/eurostat/data/database

² Norway is the only EEA country exporting significant volumes of gas and oil to the EU.

³ Net imports=imports minus exports

N-1 criteria for gas infrastructure

Definition: This is an indicator of infrastructure adequacy testing the resilience of the system. It indicates the ability of gas infrastructure to satisfy the total gas demand in the event of a disruption of the single largest gas infrastructure item during days of exceptionally high demand (e.g. extremely cold days). It is expressed as percentages [%] of total demand that can be satisfied with the remaining gas infrastructure. The indicator is modelled by the EU Member States.

The indicator is explained in the Annex II of the Regulation (EU) 2017/1938 concerning measures to safeguard security of gas supply.

Source of data: Member States' Risk Assessments and Preventive Action Plans, JRC calculations.

Link to source of data: https://ec.europa.eu/energy/topics/energy-security/secure-gas-supplies_en

Internal energy market

Electricity interconnectivity level

Definition: Electricity interconnectivity level is the ratio of electricity import interconnection capacity of a given Member State and its total power generation capacity.

It is calculated as the ratio of the synchronous import interconnection capacity and the total generation capacity at 19:00 around the date of 10th January each year.

Source of data: ENTSO-E winter outlook reports

Link to source of data: https://www.entsoe.eu/outlooks/seasonal/

Market concentration of power generation

Definition: The market concentration indicates the level of competitiveness on power generation market of a country.

It is a Herfindahl Hirschman Index (HHI) calculated as the sum of the squared market shares of the electricity generation companies in total installed capacity, with 10,000 corresponding to a monopoly and 0 to a perfect competitive market.

Source of data: S&P Global Platts, World Electric Power Plants Database

Link to the source of data: <u>https://www.spglobal.com/platts/ko/products-services/electric-power/world-electric-power-plants-database</u>

Cumulative Market Share Power Capacities, Main Entities

Definition: The indicator shows the cumulated share of companies in a given country having a share of at least 5 % of their respective national markets with regard to the installed power capacity.

Source of data: Eurostat, electricity market indicators

Link to the source of data: <u>https://ec.europa.eu/eurostat/statistics-</u> explained/index.php/Electricity_market_indicators

Cumulative Market Share Power Generation, Main Entities

Definition: Cumulative Market Share Power Generation is the combined market share of the electricity generating companies having a share of more than 5 % of national electricity generation.

Source: Eurostat, electricity market indicators

Link: https://ec.europa.eu/eurostat/statistics-explained/index.php/Electricity_market_indicators

Market concentration of wholesale gas supply

Definition: The market concentration indicates the level of competitiveness on wholesale gas supply market of a country. It is a Herfindahl Hirschman Index (HHI) calculated as the sum of the squared market shares of the wholesale gas supply companies measured in percentages of total wholesale gas supply, with 10,000 corresponding to a monopoly and 0 to a perfect competitive market.

Source: ACER/CEER monitoring on the internal electricity and gas markets

Link: http://www.acer.europa.eu/Media/News/Pages/MMR-Presentation-2015.aspx

Cumulative market share of main gas retailers

Definition: It represents the combined market share of the gas importers with a market share of 5 % or more.

Source: Eurostat, natural gas market indicators

Link: http://ec.europa.eu/eurostat/statistics-explained/index.php/Natural gas market indicators

Wholesale gas prices

Definition: This indicator presents the average gas prices as available on wholesale markets. It is the simple average of annual wholesale gas prices for a country, based on data presented and methodology developed in Quarterly report on European gas markets.

Source: European Commission, DG Energy, Quarterly reports on gas markets

Link: https://ec.europa.eu/energy/data-analysis/market-analysis_en

Wholesale electricity prices:

Definition: This indicator presents the average electricity prices as available on wholesale power markets. It is the simple average of annual wholesale electricity prices for a country, based on data presented and methodology developed in Quarterly report on European electricity markets.

Source: European Commission, DG Energy, Quarterly reports on electricity markets

Link: https://ec.europa.eu/energy/data-analysis/market-analysis_en

Annual switching rates-electricity - household customers:

Definition: This indicator shows the percentage of final electricity consumers changing electricity suppliers in a given year.

Source: CEER Monitoring Report on the Performance of European Retail Markets

Link: https://www.ceer.eu/1765

Annual switching rates - gas - household customers:

Definition: This indicator shows the percentage of final gas consumers changing natural gas suppliers in a given year.

Source: CEER Monitoring Report on the Performance of European Retail Markets

Link: https://www.ceer.eu/1765

Market Performance Indicator of retail gas and electricity services

Definition: These indicators show the overall customer satisfaction regarding retail gas and electricity services. Market Performance Indicator' (MPI) is a composite index taking into account four key aspects of consumer experience:

- the ease of comparing goods or services on offer,
- consumers' trust in retailers/suppliers to comply with consumer protection rules,
- problems experienced and the degree to which they have led to complaints and
- consumer's satisfaction (i.e. the extent to which the market lives up to what consumers expect).

The four components of the index are weighted equally and the maximum total score is 100.

Source: Consumer Market Monitoring Surveys carried out by Directorate-General for Justice and Consumers (DG JUST), European Commission.

Link:

http://ec.europa.eu/consumers/consumer_evidence/consumer_scoreboards/market_monitoring/index_en.htm

Share of household customers with electricity and gas smart meters

Definition: These indicators shows the share of households' customers with smart meters in total households supplied by electricity/gas in the country

Source: ACER/report on Benchmarking smart metering deployment in the EU-28, 2018

Link: https://op.europa.eu/en/publication-detail/-/publication/b397ef73-698f-11ea-b735-01aa75ed71a1/language-en

Energy affordability

Definition: This indicator is the share of energy related expenditure in total household expenditure for the lowest income decile (i.e. poorest 10 % of population).

It is based on the ad-hoc data collection exercise undertaken by the Commission with support of Eurostat and Member States' statistical offices. The indicator is an update of the Household Budget Survey (HBS) undertaken by EUROSTAT, for which expenditure data are collected every 5 years.

Source: Household Budget Survey, Eurostat database, table [hbs_str_t223]

Link: http://ec.europa.eu/eurostat/data/database

Harmonised index of consumer prices - electricity, gas and other fuels weight into total household expenditure

Definition: Harmonised index of consumer prices (HICP) are economic indicators that measure the change over time of the prices of consumer goods and services acquired by households, including on electricity, gas and other fuels. In other words, they are a set of consumer price indices (CPI) calculated according to a harmonised approach and a single set of definitions. Undertaken by EUROSTAT.

Source: Eurostat database, table [prc_hicp_inw]

Link: https://ec.europa.eu/eurostat/web/hicp

Inability to keep home adequately warm

Definition: The indicator measures the share of population who are unable to keep home adequately warm. Data for this indicator are being collected as part of the European Union Statistics on Income and Living Conditions (EU-SILC) to monitor the development of poverty and social inclusion in the EU. The data collection is based on a survey, which means that indicator values are self-reported.

Source: Eurostat database, SILC [ilc_mdes01]

Link: http://ec.europa.eu/eurostat/data/database

Households electricity prices (second semester, average consumption band, with taxes and levies)

Definition: Average half-yearly electricity prices for households are electricity prices paid by household consumers in consumption band DC (2 500 kWh < Consumption < 5 000 kWh) in the second half of the year, with all taxes and levies included.

Source: Eurostat, energy statistics, table [nrg_pc_204]

Link: http://ec.europa.eu/eurostat/data/database

Households gas prices (second semester, average consumption band, with taxes and levies)

Definition: Average half-yearly natural gas prices for households are gas prices paid by household consumers in consumption band D2 (20GJ < Consumption < 200GJ) in the second half of the year, with all taxes and levies included.

Source: Eurostat, energy statistics, table [nrg_pc_202]

Link: http://ec.europa.eu/eurostat/data/database

Energy Efficiency and moderation of energy demand

Primary energy consumption 2020-2030

Definition: Primary energy consumption is the gross Inland consumption minus final non-energy consumption.

Primary energy consumption 2020-2030 (PEC 2020-2030) is the primary energy consumption estimated according to the old Eurostat methodology that was in place at the time of establishing the Europe 2020 targets (n.b. Eurostat changed the energy balances methodology since 2019). PEC 2020-2030 is the main indicator to track progress towards 2020 and 2030 energy efficiency targets.

The 2020 milestone for European Union (EU) in current composition of 27 Member States is calculated based on the 2020 target for the former EU composition until 2020 as established by the Directive 2012/27/EU.

Source: Eurostat database, energy balances, annual data, table [nrg_bal_c]

Link: http://ec.europa.eu/eurostat/data/database

Final energy consumption 2020-2030

Definition: Final energy consumption is the total energy consumed by end users, such as households, industry, transport, services and agriculture. It is the energy that reaches the final consumer's door and excludes that used by the energy sector itself.

Final energy consumption 2020-2030 (FEC 2020-2030) is the final energy consumption estimated according to the old Eurostat methodology that was in place at the time of establishing the Europe 2020 targets (n.b. Eurostat changed the energy balances methodology since 2019). FEC 2020-2030 is a main indicator to track progress towards 2020 and 2030 energy efficiency targets.

The 2020 milestone for European Union (EU) in current composition of 27 Member States is calculated based on the 2020 target for the former EU composition until 2020 as established by the Directive 2012/27/EU.

Source: Eurostat database, energy balances, annual data, table [nrg_bal_c]

Link: http://ec.europa.eu/eurostat/data/database

Primary energy intensity:

Definition: Primary energy intensity is the primary energy consumption 2020-2030 per unit of GDP. Primary energy intensity gives an indication of the effectiveness of a primary energy consumption in creating an added value unit.

Sources: Eurostat database, PEC 2020-2030 from energy balances, table [nrg_bal_c] and GDP data in euro, chain linked volumes 2015, table [nama_10_gdp]

Link: http://ec.europa.eu/eurostat/data/database

Final energy intensity in industry:

Definition: Final energy intensity in industry is the ratio between final energy consumption in industry and the gross value added for manufacturing and construction sectors.

Sources: Eurostat database, final energy consumption of industry from energy balances, table [nrg_bal_c], gross value added for manufacturing and construction sectors in euro, chain linked volumes 2015, table database [nama_10_a10].

Link: http://ec.europa.eu/eurostat/data/database

Final energy consumption in industry sector

Definition: The final energy consumed in the industry sector.

Source: Eurostat database, energy balances, table [nrg_bal_c]

Link: http://ec.europa.eu/eurostat/data/database

Final energy consumption per m2 in residential sector, at normal climate

Definition: It is the ratio between final energy consumption per dwelling and the average size of dwellings (floor area). Climate normalisation is performed for the energy consumption used for heating only and by the use of heating degree-days (i.e. ratio of actual heating degree days in a year and the mean heating degree-days over a 25 years period). The purpose of these climatic corrections is to leave out the influence of cold winter. This is particularly important when there are large climatic variations from one winter to the other.

Source: Odyssee project, from the online database at below link and early updates through direct communication between Commission and ENERDATA, technical coordinator of the project.

Link: http://www.indicators.odyssee-mure.eu/energy-efficiency-database.html

Final energy consumption of households per capita

Definition: It is the ratio between final energy consumption in households sector and the population of the country.

Source: Eurostat database, final energy consumption of households from table [nrg_bal_c] and total population in the country at 1st January from table [demo_pjan]

Link: http://ec.europa.eu/eurostat/data/database

Final energy consumption in households sector

Definition: It is the final energy consumed in the households sector.

Source: Eurostat database, energy balances, final energy consumption in households sector from table [nrg_bal_c]

Link: http://ec.europa.eu/eurostat/data/database

Final energy consumption in transport sector

Definition: It is the final energy consumed in the transport sector.

Eurostat database, energy balances, final energy consumption in transport sector from table [nrg_bal_c]

Link: http://ec.europa.eu/eurostat/data/database

Share of public transport

Definition: It is the share of collective land transport (i.e. trains, motor coaches, buses and trolley buses) in all passengers' transport means.

Source: Eurostat database, Modal split of passenger transport, table [tran_hv_psmod]

Link: http://ec.europa.eu/eurostat/data/database

Passengers transport activity

Definition: The indicator shows the performance of passengers transport expressed in passenger-kilometres. Passengers transport includes passenger cars, buses and coaches, tram and metro and railway trains.

Source: EC DG MOVE pocketbook EU Transport in figures

Link: https://ec.europa.eu/transport/facts-fundings/statistics_en

Freight transport activity

Definition: The indicator shows the performance of freight transport expressed in tonnes-kilometres. It includes freight transport on road, railways, inland waterways and oil pipelines.

Source: EC DG MOVE pocketbook EU Transport in figures

Link: https://ec.europa.eu/transport/facts-fundings/statistics_en

Final energy intensity in services sector

Definition: It is the ratio between final energy consumption in commercial and public services sector and gross value added for services related sectors.

Sources: Eurostat database, final energy consumption of commercial and public services sector from energy balances, table [nrg_bal_c], gross value added for services sectors (in euro, chain linked volumes 2015), as the sum of the NACE codes G to U, table [nama_10_a10].

Link: http://ec.europa.eu/eurostat/data/database

Final energy consumption in services sector

Definition: The final energy consumed in the commercial and public services sector.

Source: Eurostat database, final energy consumption of commercial and public services sector from energy balances, table [nrg_bal_c]

Link: http://ec.europa.eu/eurostat/data/database

Decarbonisation

Greenhouse gas emissions (total and indexed on reeeference year 1990)

Definition: The total greenhouse gas emissions (without LULUCF, with International aviation) as declared by countries to UNFCCC and the EU Greenhouse Gas Monitoring Mechanism (EU Member States).

The GHG emission reduction is calculated as the ratio between the difference of GHG emissions in the given year and in the reference year 1990 and GHG emissions in the reference year 1990.

Source: European Environment Agency greenhouse gas - data viewer, Total (without LULUCF, with International aviation).

Link: https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer

Gap between greenhouse gas emissions projections and 2020 targets in the effort sharing sectors

Definition: This indicator monitors the gap between the EU and Member States projections for 2020 and their the EU 2020 GHG emission targets in the Effort Sharing sectors, expressed as a percentage of base year emissions (2005).

This indicator is calculated as the ratio between (the difference between emission projections in 2020 in Effort Sharing sectors and the annual emission allocation-AEAs- in the given year) and the annual emissions allocations in the year 2005 (baseline year).

The projections for the year 2020 in the Effort Sharing sectors are those reported by the Member States to the EEA in the scenario based on existing measures in place (ESD WEM scenario). The EU 2020 target is set by the Effort Sharing Decision (ESD), which provides national binding targets from 2013 to 2020 for each Member State.

Source: European Environment Agency and European Commission

Link: The indicator is calculated as indicated above, based on supporting indicators "Member States Effort Sharing projections" and "Effort Sharing Targets" described below. The indicator is presented in the periodical EU climate action reports available at:

https://ec.europa.eu/clima/policies/strategies/progress/monitoring_en

Gap between latest (proxy) inventory of Effort Sharing emissions and interim targets

Definition: This indicator measures the gap between the latest approximated inventory emissions available and its respective effort sharing target, expressed as a percentage of base year emissions (2005).

This indicator is calculated as the ratio between (the difference between emission proxies in the given year in Effort Sharing sectors and the annual emission allocation-AEAs- in same year) and the annual emissions allocations in the year 2005 (baseline year).

Source: European Environment Agency and European Commission

Link: calculated as indicated above and based on supporting indicators "Effort Sharing emissions" and "Effort Sharing Targets" described below. The indicator is presented in the periodical EU climate action reports available at:

https://ec.europa.eu/clima/policies/strategies/progress/monitoring_en

Effort sharing emissions

Definition: Effort sharing emissions are the greenhouse gas emissions under the Effort Sharing Decision (ESD)

ESD emissions for the period 2005–2012 and for the latest year ("Y-1") are estimated by EEA on the basis of national GHG inventory data and ETS emissions.

Source: European Environment Agency, Greenhouse gas emissions under the Effort Sharing Decision (ESD)

Link: https://www.eea.europa.eu/data-and-maps/data/esd-2

Effort Sharing targets

Definition: The Effort Sharing Decision (ESD) No 406/2009/EC establishes annual greenhouse gas emission targets for Member States for the period 2013–2020. These targets concern emissions from most sectors not included in the EU Emissions Trading System (ETS), such as transport, buildings, agriculture and waste. Emissions from land use, land use change and forestry (LULUCF) and international shipping are not included.

Source: European Commission, Climate Action, European Union Transaction Log

Link: https://ec.europa.eu/clima/ets/esdAllocations.do?languageCode=en&esdRegistry=-1&esdYear=2019&search=Search¤tSortSettings=

Member States Effort Sharing projections

Definition: These are the Effort Sharing GHG emissions projections reported by the Member States in the scenario with existing measures (WEM).

The Monitoring Mechanism Regulation ((EC) No 525/2013) requires Member States to report national projections of anthropogenic GHG emissions. Every two years, each EU Member State report GHG projections in a 'with existing measures' scenario for the years 2020, 2025, 2030 and 2035, by gas (or group of gases) and by sector. The reported data are quality checked by the EEA and its European Topic Centre for Climate Change Mitigation and Energy (ETC/CME).

Source: European Environment Agency, Member States' greenhouse gas (GHG) emission projections

Link: https://www.eea.europa.eu/data-and-maps/data/greenhouse-gas-emission-projections-for-7

Share of ETS and ESD emissions

Definition: These indicators reflect the share of the GHG emissions in the Emission Trading Sectors (ETS) and in the Effort Sharing sectors as a ratio on total GHG emissions in both sectors.

Source: European Environment Agency, EU Emissions Trading System (ETS) data viewer (see link below) and Greenhouse gas emissions under the Effort Sharing Decision (ESD, see link above at "Effort sharing emissions")

Link: https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1

LULUCF emissions

Definition: These are the greenhouse gas emissions and removals from land use, land use change and forestry (LULUCF) as declared by countries to UNFCCC and the EU Greenhouse Gas Monitoring Mechanism (EU Member States).

Source: European Environment Agency greenhouse gas - data viewer, GHG emissions in 4-Land Use, Land-Use Change and Forestry (LULUCF).

Link: https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer

Sectoral share of GHG emissions

Definition: These are the shares of greenhouse gas emissions in main economic sectors into national total GHG emissions without international aviation and without LULUCF, based on countries declarations to UNFCCC and the EU Greenhouse Gas Monitoring Mechanism (EU Member States).

Economic sectors	UNFCCC sectors
Total GHG emissions without international aviation, without LULUCF	Total (without LULUCF)
Energy Industries	1.A.1.Energy Industries + 1.B. Fugitive emissions
Industry	1.A.2 Manufacturing Industries and Construction +
	2. Industrial Processes and Solvent Use
Transport	1.A.3 Transport
Agriculture	1.A.4.c Agriculture/Forestry /Fishing + 3. Agriculture
Residential and commercial	1.A.4.a Commercial/Institutional + 1.A.4.b Residential
Waste	5. Waste Management
Others	6. Other sector + ind. CO2 Indirect CO2 +
	1.A.5 Other other sectors

The relationship between mains sectors and the UNFCCC sectors are the followings:

Source: European Environment Agency greenhouse gas - data viewer.

Link: https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer

Greenhouse gas intensity of the economy

Definition: this indicator represents Member States' GHG total GHG emissions (with international aviation, without LULUCF) relative to Gross Domestic Product in chain linked volumes 2015 (GDP 2015). A lower value indicates that a particular economy is less carbon intensive.

Source: total GHG emissions from EEA data viewer (see above at GHG emissions) and GDP 2015, in Euro, from AMECO database of DG ECFIN, European Commission (more details below at supporting indicators). GDP 2015 is also available at Eurostat database, table [nama_10_gdp].

Link to AMECO database: <u>https://ec.europa.eu/info/business-economy-euro/indicators-statistics/economic-database_ameco/ameco-database_en</u>

Greenhouse gas emissions per capita

Definition: The greenhouse gas emission level per capita is the ratio of the total greenhouse gas emissions (with international aviation, without LULUCF) in the country to total population.

Source: EEA GHG data viewer for total GHG emissions (see above description at "GHG emissions") and Eurostat database, table [demo_pjan] for population at 1st January

Link: https://ec.europa.eu/eurostat/data/database

Grenhouse gas emissions from power and heat generation

Definition: This indicator is the ratio between greenhouse gas emissions from Public electricity and heat production and the total gross electricity production and total gross derived heat production of main power and heat producers.

Source: EEA GHG data viewer for GHG emissions (see above link at "GHG emissions") from 1.A.1.a Public electricity and heat production and Eurostat database, table [nrg_bal_c].

Link: https://ec.europa.eu/eurostat/data/database

Average CO2 emissions of new passenger cars

Definition: This indicator shows the average CO2 emissions of new passengers cars sold in a country in a given year. As such, it provides indications as regards developments of a low carbon fleet of passenger cars. The lower the value, the less carbon intensive new sold cars are, leading to a general improvement of the fuel economy.

Source: Eurostat database, table [sdg_12_30]

Link: https://ec.europa.eu/eurostat/data/database

Shares of renewable energy in gross final energy consumption: overall share, in transport, electricity and heating & cooling

Definition: these indicators monitor progress of renewable energy developments and towards renewable energy targets as indicated by the Directive 2009/28/EC on the promotion of the use of energy from renewable sources.

The calculation is based on data collected in the framework of Regulation (EC) No 1099/2008 on energy statistics and complemented by specific supplementary data transmitted by national administrations to Eurostat.

Source: Eurostat database, tables [nrg_ind_ren] for the overall renewable energy share, [nrg_ind_urtd] for renewable energy share in transport, [nrg_ind_ured] for renewable electricity share and [nrg_ind_urhcd] for renewable heating & cooling energy share.

Link: <u>https://ec.europa.eu/eurostat/data/database</u>

Fossil fuel substituted by renewable energy

Definition: This indicator is based on the EEA estimates assuming that the growth of renewable energy since 2005 has substituted an equivalent amount of energy that would have been supplied by other fossil fuel sources. The estimated amount of avoided fossil fuels is represented as share of gross inland consumption (total gross inland consumption minus renewables).

The method for the estimation of fossil fuels substituted by renewable energy is described in detail in the EEA report Renewable energy in Europe — approximated recent growth and knock-on effects.

Source: EEA (for the estimate of fossil fuels avoided), EUROSTAT database, table [nrg_bal_c] (for gross inland consumption)

Link: <u>https://www.eea.europa.eu/themes/energy/renewable-energy/renewable-energy-in-europe-2020</u> and <u>https://ec.europa.eu/eurostat/data/database</u>

GHG avoided emissions due to renewable energy

Definition: This indicator estimates the avoided GHG emissions due to the fossil fuel substitution by renewable energy. The estimated GHG emissions avoided due to renewables are represented as share of total GHG emissions (with international aviation, without LULUCF).

The method for the estimation of the avoided GHG emissions is described in detail in the EEA report Renewable energy in Europe — approximated recent growth and knock-on effects.

Source: EEA

Link: <u>https://www.eea.europa.eu/themes/energy/renewable-energy/renewable-energy-in-europe-2020</u> and <u>https://ec.europa.eu/eurostat/data/database</u>

Research, innovation and competitiveness

Public spending on Energy Union R&I priorities as share of GDP

Definition: The indicator is the share in the GDP of public spending on the Energy Union R&I priorities.

Source: JRC/SETIS, based on IEA for national R&I expenditure data provided by the SET-Plan Steering Group (see below link) and Eurostat for the GDP (Eurostat database, table [nama_10_gdp])

Link: https://setis.ec.europa.eu/publications/setis-research-innovation-data

Patents on Energy Union priorities (patents per million habitants)

Definition: this indicator represents the number of patents on Energy Union R&I priorities divided by total population.

Source: JRC/SETIS based on EPO/PATSTAT for patent data (below link) and Eurostat data for total population (Eurostat database, table [demo_pjan])

Link: https://setis.ec.europa.eu/publications/setis-research-innovation-data

Real Unit energy costs in the manufacturing sector (excluding refineries) as % of value added

Definition: This indicator measures the costs of energy sources needed to obtain one unit of value added for the manufacturing sector, excluding the refinery sector.

Source: European Commission – DG ECFIN, used in Energy Economic Developments in Europe 2014, based on JRC and World Input-Output database (WIOD)

Link: <u>http://ec.europa.eu/economy_finance/publications/european_economy/2014/pdf/ee1_en.pdf</u> (page 24)