

Energy sources wikipedia

As of 2022, energy consumption is still about 80% from fossil fuels.⁴ The Gulf States and Russia are major energy exporters. Their customers include for example the European Union and China, who are not producing enough energy in their own countries to satisfy their energy demand. Total energy consumption tends to increase by about 1-2% per year.⁵ More recently, renewable energy has been growing rapidly, averaging about 20% increase per year in the 2010s.⁶⁷

Two key problems with energy production and consumption are greenhouse gas emissions and environmental pollution. Of about 50 billion tonnes worldwide annual total greenhouse gas emissions,⁸ 36 billion tonnes of carbon dioxide was a result of energy use (almost all from fossil fuels) in 2021.⁹ Many scenarios have been envisioned to reduce greenhouse gas emissions, usually by the name of net zero emissions.

There is a clear connection between energy consumption per capita, and GDP per capita.¹⁰

A significant lack of energy supplies is called an energy crisis.

World total primary energy consumption by type in 2020¹¹

Primary Energy refers to first form of energy encountered, as raw resources collected directly from energy production, before any conversion or transformation of the energy occurs.

Primary energy assessment by IEA follows certain rules^{note 1}; to ease measurement of different kinds of energy. These rules are controversial. Water and air flow energy that drives hydro and wind turbines, and sunlight that powers solar panels, are not taken as PE, which is set at the electric energy produced. But fossil and nuclear energy are set at the reaction heat, which is about three times the electric energy. This measurement difference can lead to underestimating the economic contribution of renewable energy.¹³

Enerdata displays data for "Total energy / production: Coal, Oil, Gas, Biomass, Heat and Electricity" and for "Renewables /% in electricity production: Renewables, non-renewables".⁴

The table lists worldwide PE and the countries producing most (76%) of that in 2021, using Enerdata. The amounts are rounded and given in million tonnes of oil equivalent per year (1 Mtoe = 11.63 TWh (41.9 petajoules), where 1 TWh = 109 kWh) and% of Total. Renewable is Biomass plus Heat plus renewable percentage of Electricity production (hydro, wind, solar). Nuclear is nonrenewable percentage of Electricity production. The above-mentioned underestimation of hydro, wind and solar energy, compared to nuclear and fossil energy, applies also to Enerdata.

The 2021 world total energy production of 14,800 MToe corresponds to a little over 172 PWh / year, or about 19.6 TW of power generation.

2021 world electricity generation by source. Total generation was 28 petawatt-hours.[14]

Energy resources must be processed in order to make it suitable for final consumption. For example, there may be various impurities in raw coal mined or raw natural gas that was produced from an oil well that may make it unsuitable to be burned in a power plant.

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