

Glossary & Abbreviations

Anthropogenic greenhouse effect - The larger part of the sun energy (45%) is radiated back into space. Greenhouse gases in the atmosphere contribute to global warming by adsorption and reflection of atmospheric and solar energy. This natural phenomenon is what we call the greenhouse effect, correlated with global temperature change. After the industrial revolution of the 1700's the greenhouse effect was enhanced by greenhouse gas emissions of Anthropogenic nature. The main source of anthropogenic greenhouse gas emissions is fossil fuel combustion.

Biofuels (liquid biofuels such as ethanol and biodiesel) - is defined as solid, liquid or gaseous fuel derived from relatively recently dead biological material and is distinguished from fossil fuels, which are derived from long dead biological material. Theoretically, biofuels can be produced from any (biological) carbon source; although, the most common sources are photosynthetic plants. Various plants and plant-derived materials are used for biofuel manufacturing. Globally, biofuels are most commonly used to power vehicles, heating homes, and cooking stoves. Biofuel industries are expanding in Europe, Asia and the Americas. Recent technology developed at Los Alamos National Lab even allows for the conversion of pollution into renewable bio fuel. Agrofuels are biofuels which are produced from specific crops, rather than from waste processes such as landfill off-gassing or recycled vegetable oil.

Biogas - A combustible gas derived from decomposing biological waste. Biogas normally consists of 50 to 60 percent methane.

Biomass - Biomass is biological material, including corn, switchgrass, and oilseed crops, that can be converted into fuel.

Carbon Dioxide (CO₂) - A colourless, odourless, incombustible gas, formed during respiration, combustion, and organic decomposition and used in food refrigeration, carbonated beverages, inert atmospheres, fire extinguishers, and aerosol. It is the principal anthropogenic greenhouse gas that affects the earth's radiative balance. It has a Global Warming Potential (GWP) of 1 and is used as the reference gas for GWPs of other greenhouse gases.

Carbon dioxide equivalent (CO₂e) - is a quantity that describes, for a given mixture and amount of greenhouse gas, the amount of CO₂ that would have the same global warming potential (GWP), when measured over a specified timescale (generally, 100 years). Carbon dioxide equivalency thus reflects the time-integrated radiative forcing, rather than the instantaneous value described by CO₂e.

Climate change adaptation - initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects.

Climate change mitigation - involves attempts to slow the process of global climate change by lowering the level of greenhouse gases in the atmosphere.

Climate change strategy - a strategy to combat climate change represents a four-fold challenge: the climate risk itself and the political will to face up to it, international participation in efforts to tackle climate change, the innovation needed for changes in the production and use of energy, and adaptation of countries to the unavoidable effects of climate change. Accordingly, any strategy should include: extension of action against climate change to all the polluting countries (with common but differentiated responsibilities) and sectors involved (all modes of transport,

deforestation etc.); enhanced innovation, which includes the implementation and deployment of existing technologies and the development of new technologies (in particular by means of active support policies which take advantage of normal capital replacement); use and development of market-based instruments (such as the emissions trading system introduced by the EU); harnessing of preventive and remedial efforts to adapt to climate change based on the most affected regions and economic sectors.

Co-generation plants - Cogeneration (also combined heat and power, CHP) is the use of a heat engine or a power station to simultaneously generate both electricity and useful heat.

Combined Heat and Power (CHP) - also known as cogeneration, is an efficient, clean, and reliable approach to generating power and thermal energy from a single fuel source. By installing a CHP system designed to meet the thermal and electrical base loads of a facility, CHP can greatly increase the facility's operational efficiency and decrease energy costs. At the same time, CHP reduces the emission of greenhouse gases, which contribute to global climate change.

District heating (less commonly called teleheating) - is a system for distributing heat generated in a centralized location for residential and commercial heating requirements such as space heating and water heating. The heat is often obtained from a cogeneration plant burning fossil fuels but increasingly biomass, although heat-only boiler stations, geothermal heating and central solar heating are also used, as well as nuclear power. District heating plants can provide higher efficiencies and better pollution control than localized boilers. District Heating not only offers excellent opportunities for reducing environmental pollution, but also for achieving the goal of saving energy. It is an extremely flexible technology, which can make use of any fuel including the utilisation of waste energy, renewables and, most significantly, the application of combined heat and power (CHP).

Electricity from renewable energy sources (RES-E) - Electricity produced from renewable energy sources shall mean electricity produced by plants using only renewable energy sources, as well as the proportion of electricity produced from renewable energy sources in hybrid plants also using conventional energy sources and including renewable electricity used for filling storage systems, and excluding electricity produced as a result of storage systems.

Emissions inventory - An emission inventory is an itemized list of emission estimates for sources of air pollution in a given area for a specified time period. A greenhouse gas inventory is an accounting of the amount of greenhouse gases emitted to or removed from the atmosphere over a specific period of time (e.g., one year). A greenhouse gas inventory also provides information on the activities that cause emissions and removals, as well as background on the methods used to make the calculations. Policy makers use greenhouse gas inventories to track emission trends, develop strategies and policies and assess progress. Scientists use greenhouse gas inventories as inputs to atmospheric and economic models.

European Covenant of Mayors - The Covenant of Mayors is an ambitious Commission initiative that seeks to bring together the mayors of Europe's most pioneering cities in a permanent network to exchange and apply good practices to improve their energy efficiency and promote low-carbon business and economic development.

European Member States - Austria, Belgium, Bulgaria, the Czech Republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Ireland, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Spain, Slovakia, Slovenia, Sweden and the United Kingdom are the 27 current members States in the European Union.

European Union (EU) - The European Union is a political and economic union of certain countries in Europe.

Fossil fuels - Fossil fuels or mineral fuels are fossil source fuels, that is carbon or hydrocarbons found in the earth's crust. Fossil fuels range from volatile materials with low carbon: hydrogen ratios like methane, to liquid petroleum to nonvolatile materials composed of almost pure carbon, like anthracite coal. Methane can be found in hydrocarbon fields, alone, associated with oil, or in the form of methane clathrates. It is generally accepted that they formed from the fossilized remains of dead plants and animals by exposure to heat and pressure in the Earth's crust over hundreds of millions of years. This biogenic theory was first introduced by Georg Agricola in 1556 and later by Mikhail Lomonosov in 1757. Fuels from fossil carbon deposits such as oil, natural gas and coal. These are burned in order to gain energy. During these combustion processes greenhouse gases are released.

GDP per capita - The gross domestic product per capita at nominal values, the value of all final goods and services produced within a nation in a given year, converted at market exchange rates to current U.S. dollars, divided by the average (or mid-year) population for the same year. The community GDP displayed in the Community Summary reflects the total number of citizens multiplied by GDP per capita (national).

Gigawatt (GW) - a unit of power equal to 1 billion Watts; 1 million kilowatts, or 1,000 megawatts

Greenhouse Gas Emissions (GHGs) - Greenhouse gases are gases in an atmosphere that absorb and emit radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect.

Heat pumps - Heat pumps offer the most energy-efficient way to provide heating and cooling in many applications, as they can use renewable heat sources in our surroundings. A typical electrical heat pump will just need 100 kWh of power to turn 200 kWh of freely available environmental or waste heat into 300 kWh of useful heat.

Kilowatt hour (kWh) - is a unit of energy: is the product of power in kilowatts multiplied by time in hours. Energy delivered by electric utilities is usually expressed and charged for in kWh.

Local Agenda 21 (LA21) - Local Agenda 21 is a local-government-led, community-wide, and participatory effort to establish a comprehensive action strategy for environmental protection, economic prosperity and community well-being in the local jurisdiction or area.

Local government (LG) - national and regional local government organisations

Megawatt (MW) - is a unit of energy equal to one million watts.

Methane - A hydrocarbon that is a greenhouse gas with a global warming potential most recently estimated at 24,5. Methane (CH₄) is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and oil, coal production and incomplete fossil fuel combustion.

Mt CO₂e - Metric Tonne Carbon Dioxide Equivalent: A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). Carbon dioxide equivalents are commonly expressed as 'million metric tonnes of carbon dioxide equivalents

(MMTCDE)'. The carbon dioxide equivalent for a gas is derived by multiplying the tonnes of the gas by the associated GWP.

Parts per million (ppm) - is commonly used as a measure of small levels of pollutants in air, water, body fluids, etc. This is a way of expressing very dilute concentration of substances. One ppm is equivalent to 1 milligram of something per liter of water (mg/l) or 1 milligram of something per kilogram soil (mg/kg).

Photovoltaics (PV) - is the direct conversion of solar radiation into electricity by the interaction of light with the electrons in a semiconductor device or cell.

Renewable energy sources (RES) - Renewable energy is energy generated from natural resources naturally replenished in a short period of time. The renewable sources used most often are: wind, solar, geothermal heat, wave motion, tidal, hydraulic, biomass, landfill gas, treatment process gas and biogas.

Renewable Heating and Cooling (RES-H) - Heating and cooling are necessary elements of any comprehensive strategy to develop renewables and to achieve sustainability in the energy sector. Renewable heating and cooling can significantly contribute to security of energy supply in the EU and reducing CO₂ emissions.

Small Hydropower (SHP) - Hydropower is available in a range of sizes from a few hundred watts to over 10GW. Small hydropower can be divided into three categories: micro scale (less than 100kW), mini scale (100kW-1MW) and small scale (1MW-10MW) hydro. Micro-hydro systems operate by diverting part of the river flow through a penstock (or pipe) and a turbine, which drives a generator to produce electricity. The water then flows back into the river. Micro-hydro systems are mostly "run of the river" systems, which allow the river flow to continue. This is preferable from an environmental point of view as seasonal river flow patterns downstream are not affected and there is no flooding of valleys upstream of the system. A further implication is that the power output of the system is not determined by controlling the flow of the river, but instead the turbine operates when there is water flow and at an output governed by the flow. This means that a complex mechanical governor system is not required, which reduces costs and maintenance requirements. The systems can be built locally at low cost, and the simplicity gives rise to better long-term reliability.

Solar heating and cooling - an innovative technology for the production of hot and cold fluids. With this type of system, the solar system is coupled to a group absorption refrigerator, and is able to produce cold air conditioning for the summer and warm in winter integrate climate.

Terawatt hours (TWh) - is a unit of measurement equal to one billion kilowatt-hours

Waste - it is referred to rubbish, trash, garbage, or junk depending upon the type of material and the regional terminology. In living organisms, waste relates to unwanted substances or toxins that are expelled from them.

Waste water - is any water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, industry, and/or agriculture and can encompass a wide range of potential contaminants and concentrations.

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