

Sustainability Terms

Learning Green, Living Green
Frostburg State University

The information on this page is gathered from various sources including: the Environmental Protection Agency, Clean Air-Cool Planet, National Health Council, the Natural Resource Defense Council, the University Corporation for Atmospheric Research, the International Organization for Standardization, the Association of New Jersey Environmental Commission, the National Oceanic & Atmospheric Association, and Carbonfund.org. To view a comprehensive listing of environmental terms, acronyms, and abbreviations developed by the U.S. Environmental Protection Agency, go to: <http://www.epa.gov/OCEPATERMS/>

A - D

Aerosol - Particulate matter, solid or liquid, larger than a molecule but small enough to remain suspended in the atmosphere. Natural sources can include salt, dust, or clay particles that are carried by the wind. Aerosols can also originate as a result of human activities and are often considered pollutants.

Afforestation - The process of planting trees on land that is not a forest, or has not been a forest for a long time.

Alternative energy - Energy derived from nontraditional sources such as natural gas, solar, hydroelectric, wind.

Atmosphere - A mixture of gases surrounding the Earth. By volume, the Earth's atmosphere consists of about 79 percent nitrogen, 21 percent oxygen, less than one percent carbon, and other trace gases.

Atmospheric lifetime- The approximate amount of time it would take for an atmospheric pollutant concentration to return to its natural level (assuming emissions cease) as a result of being converted to another chemical compound or being taken out of the atmosphere via a carbon sink.

Baseline emissions - The emissions that would occur without policy intervention. Baseline estimates are needed to determine the effectiveness of emissions reduction programs.

Bio-fuel – Gas or liquid fuel made from plant material. Includes wood, wood waste, wood liquors, peat, wood sludge, and spent sulfite liquors.

Biomass - Total dry weight of all living organisms that can be supported at each trophic level in the food chain. Also, materials that are biological in origin, including organic material from above or below ground.

Carbon capture and storage – An artificial form of sequestration that prevents carbon emissions by capturing the gases and either chemically changing them or diverting them underground or in deep ocean water.

Carbon dioxide equivalent - A measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). The CO₂ equivalent is commonly expressed as million metric tons of CO₂, and is derived by multiplying the tons of the gas by the associated GWP.

Carbon footprint - The total amount of carbon dioxide (CO₂) and other greenhouse gases emitted over the full life cycle of a person, product, or service. Similar to GHG emissions inventory.

Carbon offset - The act of mitigating ("offsetting") greenhouse gas emissions. An example of this is planting trees to compensate for emissions generated through personal air travel.

Carbon sequestration – The removal and storage of carbon from the atmosphere in carbon sinks (such as oceans, forests or soils) through physical or biological processes, such as photosynthesis.

Carbon sink - A carbon reservoir that absorbs, rather than emits, carbon dioxide. The main natural sinks are oceans and plants that use photosynthesis.

Climate change - Commonly used to refer to all forms of climatic inconsistency; however, because the Earth's climate is never static, the term is more properly used to imply a significant change from one climatic condition to another.

Climate neutrality - Having no net greenhouse gas emissions. This can be achieved by minimizing emissions and using carbon offsets.

Cogeneration power- Production of two useful forms of energy such as high-temperature heat and electricity from the same process.

Compost - Partially decomposed organic plant and animal matter that can be used as a soil conditioner or fertilizer.

Deforestation - The conversion of forested areas to non-forest land for urban development, arable land, pasture, logging, or wasteland.

De minimis emissions- Emissions from any source or group of sources, for one type of gas or several gases, which when summed, are materially insignificant (less than 5 percent of the total).

E - H

Ecosystem - The complex system of plant, animal, fungal, and microorganism communities and their associated non-living environment interacting as an ecological unit.

Emissions - The release of a substance into the atmosphere, usually a gas when referring to the subject of climate change.

Emissions trading - A government-created market to buy and sell greenhouse gas credits. Companies that generate less than the allowed emissions can sell credits allowing buyers to emit more gases than the cap allows.

Energy cap - A government-imposed limit on carbon emissions.

Energy efficiency - The ratio of the useful output of services from an article of industrial equipment to the energy use by such an article. An example would be vehicle miles traveled per gallon of fuel.

Flaring - The burning of waste gases through a flare stack or other device before releasing them to the air.

Fluidized bed combustion (FBC) - A process for burning coal more efficiently, cleanly, and cheaply. A stream of hot air is used to suspend a mixture of powdered coal and limestone during combustion. About 90 to 98 percent of the sulfur dioxide produced during combustion is removed by reaction with limestone to produce solid calcium sulfate.

Fossil fuels - Fuels containing carbon that can be burned to provide heat that can be used directly. They all contain carbon formed through geologic processes over hundreds of millions of years. These include coal, petroleum, and natural gas.

Fugitive emissions- Emissions that are not physically controlled but result from the intentional or unintentional release of greenhouse gases. They commonly arise from the production, processing, transmission, storage, and use of fuels and chemicals, often through joints, seals, packing, gaskets, etc.

Gasohol - Vehicle fuel consisting of a mixture of gasoline and ethyl or methyl alcohol.

General Circulation Model (GCM) - A global, three-dimensional computer model of the climate system which can be used to simulate human-induced climate change.

Geothermal power – Using heat from below the earth's surface to generate electricity with virtually no emissions.

Global warming - The progressive gradual rise of the earth's surface temperature thought to be caused by the greenhouse effect and responsible for changes in global climate patterns.

Global warming potential (GWP) - The index used to translate the level of emissions of various gases into a common measure in order to compare the relative radiative forcing of different gases without directly calculating the changes in atmospheric concentrations.

Greenhouse effect - The effect produced as greenhouse gases allow incoming solar radiation to pass through the Earth's atmosphere, but prevent part of the outgoing infrared radiation from the Earth's surface and lower atmosphere from escaping into outer space.

Greenhouse gas (GHG) - The six gases covered under the Kyoto Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydro fluorocarbons (HFCs), per fluorocarbons (PFCs), and sulphur hexafluoride (SF₆).

Greenhouse gas (GHG) emissions inventory- An entity's baseline quantification of GHG emissions, from which emissions reductions can be measured and progress towards climate neutrality can be tracked.

Hydrogen cell – An energy conversion device that can efficiently capture and use hydrogen to generate pollution-free power for a variety of applications.

Hydropower - Electrical energy produced by falling or flowing water.

IPCC Intergovernmental Panel on Climate Change - Established by the United Nations Environmental Programme and the World Meteorological Organization, this panel assesses scientific, technical and socioeconomic information relevant for the understanding of climate change, its potential impacts and options for adaptation and mitigation.

Irreversibility - A change that cannot be reversed once it is set in motion, , at least on human time scales.

ISO (International Organization for Standardization) - The world's largest developer and publisher of International Standards. ISO is a non-governmental organization with a network of national standards institutes with membership in 157 countries. In particular, ISO 14044 specifies requirements and provides guidelines for life cycle assessment.

Kyoto Protocol - Adopted at the Third Session of the Conference of the Parties (COP) to the UN Framework Convention on Climate Change (UNFCCC) in 1997 in Kyoto, Japan. Country signatories to the Protocol agreed to reduce greenhouse gas emissions by at least 5 percent below 1990 levels in the commitment period 2008 to 2012.

Landfill - Land waste disposal site in which waste is generally spread in thin layers, compacted, and covered with a fresh layer of soil regularly.

LEEDS (Leadership in Energy & Environmental Design) certification - The nationally accepted benchmark for the design, construction, and operation of high performance green buildings.

Life cycle assessment (LCA) - The assessment of the environmental impact of a given product or service throughout its life span.

Methane (CH₄) - A greenhouse gas hydrocarbon that is produced through anaerobic decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas, and incomplete fossil fuel combustion.

Montreal Protocol - The Montreal Protocol and its amendments control the phase-out of ozone depleting substances production and use. In the United States, the Protocol is implemented under the Clean Air Act Amendments of 1990.

Natural gas - Underground deposits of gases consisting of 50 to 90 percent methane and small amounts of heavier gaseous hydrocarbon compounds such as propane and butane.

NOAA (National Oceanic & Atmospheric Association) - An agency within the US Department of Commerce that provides environmental information relevant to economic vitality. This includes daily weather forecasts, severe storm warnings, climate monitoring for fisheries management, coastal restoration, and support of marine commerce.

Non-point source - Large land areas such as a crop fields or urban areas that discharge pollutants into surface and underground water over a large area.

Nuclear energy - Energy released when atomic nuclei undergo a nuclear reaction such as the spontaneous emission of radioactivity, nuclear fission, or nuclear fusion.

Ozone - A colorless gas (O₃) found in the atmosphere, stratosphere, and troposphere which provides a protective layer shielding the Earth from UV radiation.

Ozone depleting substance (ODS)- A family of man-made compounds that includes, but is not limited to, chlorofluorocarbons (CFCs), bromo-fluorocarbons (halons), methyl chloroform, carbon tetrachloride, methyl bromide, and hydro chlorofluorocarbons (HCFCs). These compounds have been shown to deplete stratospheric ozone.

Particulate matter - Solid particles or liquid droplets suspended or carried in the air. Examples include soot, dust, fumes, and mist.

Petroleum - A generic term applied to oil and oil products in all forms, such as crude oil, lease condensate, unfinished oils, natural gas liquids, and finished petroleum products.

Photovoltaic energy - Energy radiated by the sun as electromagnetic waves that is converted into electricity or useable heat.

Point source - A single identifiable source that discharges pollutants into the environment. Examples include smokestacks, sewers, ditches, or pipes.

Pollution- A change in the physical, chemical, or biological characteristics of the air, water, or soil that can affect the health, survival, or activities of organisms in an unwanted way.

Power purchase agreement – A long-term agreement to buy power from a company that produces electricity. Traditionally refers to the purchase of electricity from a power plant. Can also include renewable energy purchases.

R - Z

Recycling - Collecting and reprocessing a resource so it can be used again.

Reforestation - The process of replanting native trees in areas that were once considered forests, but have since been deforested.

Renewable energy - Energy obtained from sources that are essentially inexhaustible, unlike, for example, the fossil fuels, of which there is a finite supply. Renewable sources include wood, waste, geothermal, wind, photovoltaic, and solar thermal.

Sink - A reservoir that uptakes a chemical element or compound from another part of its cycle. For example, soil and trees tend to act as natural sinks for carbon.

Solar energy – Direct radiant energy from the sun, producing no emissions.

Source - Any process or activity that releases a greenhouse gas, an aerosol, or a precursor of a greenhouse gas into the atmosphere.

Sulfur dioxide (SO₂) - A compound composed of sulfur and oxygen molecules. Once emitted into the atmosphere, SO₂ is changed to sulfate aerosols and often results in acid rain.

Sustainable development - Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Terrestrial - Pertaining to land.

Trace gas - Any one of the less common gases found in the Earth's atmosphere. Includes carbon dioxide, water vapor, methane, nitrogen oxides, ozone, and ammonia. Although relatively unimportant in terms of their absolute volume, trace gases have significant effects on the Earth's weather and climate.

Ultraviolet radiation (UV) - A portion of the electromagnetic spectrum with wavelengths shorter than visible light. Shorter wavelength radiation has a greater potential to cause biological damage on living organisms.

United Nations Framework Convention on Climate Change (UNFCCC) - The international treaty unveiled in 1992 that commits signatory countries to stabilize anthropogenic greenhouse gas emissions.

Volatile organic compounds (VOCs) - Organic compounds that evaporate readily into the atmosphere at normal temperatures. VOCs contribute significantly to smog production and certain health problems.

Wind energy - Turbines, similar to gigantic windmills, capture and convert the natural power of the wind into electricity without producing any emissions.

Wood energy - Wood and wood products used as fuel, including cordwood, limb wood, wood chips, bark, sawdust, forest residues, and charcoal.