



A Glossary of Common Carbon Offset Terms

Additionality - The reduction of carbon dioxide emissions being over and above what would have occurred without the project as a direct incentive for reductions, in addition to the baseline. For example, a reduction would be non-additional if it were simply the result of a plant upgrading equipment for economic reasons. The Climate Trust will consider proposals that demonstrate that the mitigation measures installed by the project would not occur in absence of offset project funding.

Afforestations - Planting of new forests on lands that have not been recently forested.

Alternative Energy - Energy derived from nontraditional sources (e.g., compressed natural gas, solar, hydroelectric, wind).

Baselines - The establishment of the amount of carbon dioxide output that would take place at a facility under normal operations, without a reduction project being put into place.

Baseline Emissions - Emissions that would occur without policy intervention (in a business-as-usual scenario). Baseline estimates are needed to determine the effectiveness of emissions reduction programs.

Biofuel - Gas or liquid fuel made from plant material (biomass), including: wood, wood waste, wood liquors, peat, railroad ties, wood sludge, spent sulfite liquors, agricultural waste, straw, tires, fish oils, tall oil, sludge waste, waste alcohol, municipal solid waste, landfill gases, other waste, and ethanol blended into motor gasoline.

Business-As-Usual - The scenario for future patterns or energy consumption and greenhouse gas emissions which assumes that there will be no major changes in attitudes and priorities.

Carbon Dioxide Emissions Benefit - A quantifiable if the total amount of the reduction can be determined, and the reduction is calculated in a reliable and replicable manner.

Carbon Dioxide Offsets - The results of an action implemented to avoid, sequester or displace emissions of carbon dioxide.

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 tons of carbon dioxide equivalents (MMTCDE)." The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP.

The CO₂E of a non-CO₂ gas is calculated by multiplying the mass of the emissions of the non-CO₂ gas by its GWP:

$$\text{MMTCDE} = (\text{million metric tons of a gas}) * (\text{GWP of the gas})$$

For example, the GWP for methane is approximately 21. This means that the emissions of one million metric tons of methane are equivalent to the emissions of 24.5 million metric tons of carbon dioxide.

Carbon Intensity – The relative amount of carbon emitted per unit of energy or fuels consumed, for example 1.202 pounds per kWh. See emissions co-efficient/factor.

Carbon Sequestration – The uptake and storage of carbon. Trees and plants, for example, absorb carbon dioxide, release the oxygen and store the carbon. Fossil fuels were at one time biomass and continue to store the carbon until burned.

Carbon Sinks - Carbon reservoirs and conditions that take-in and store more carbon (i.e., carbon sequestration) than they release. Carbon sinks can serve to partially offset greenhouse gas emissions. Forests and oceans are large carbon sinks.

Combined Heat and Power (CHP) – A master term for onsite power generation technologies that simultaneously produce electrical or mechanical energy and useful thermal energy.

Cogeneration - The production of two useful forms of energy such as high-temperature heat and electricity from the same process. For example, while boiling water to generate electricity, the leftover steam can be sold for industrial processes or space heating.

Co-Benefits - Additional environmental, health, and socioeconomic that arise from carbon dioxide offset projects in addition to the carbon dioxide emissions benefit. For example, a policy to reduce carbon dioxide emissions might reduce the combustion of coal, but when coal combustion is reduced, so too are the emissions of particulates and sulfur dioxide. The benefits associated with reductions in emissions of particulates and sulfur dioxide is the co-benefits of reductions in carbon dioxide.

Deforestation - Those practices or processes that result in the change of forested lands to non-forest uses. This is often cited as one of the major causes of the enhanced greenhouse effect for two reasons: 1) the burning or decomposition of the wood releases carbon dioxide; and 2) trees that once removed carbon dioxide from the atmosphere in the process of photosynthesis are no longer present and contributing to carbon storage.

Distributed Generation - The use of small-scale power generation technologies located close to the load being served perhaps adding redundancy that increases grid security even while powering emergency lighting or other critical systems.

Emission Inventory - A list of air pollutants emitted into a community's, state's, nation's, or the Earth's atmosphere in amounts per some unit time (e.g. day or year) by type of source. An emission inventory has both political and scientific applications.

Emissions Coefficient/Factor - A unique value for scaling emissions to activity data in terms of a standard rate of emissions per unit of activity (e.g., grams of carbon dioxide emitted per barrel of fossil fuel consumed). See carbon intensity.

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. This process occurs naturally and has kept the Earth's temperature about 59 degrees F warmer than it would otherwise be. Current life on Earth could not be sustained without the natural greenhouse effect.

Greenhouse Gas (GHG) - A gas that contributes to the natural 'greenhouse effect.' The Kyoto Protocol covers a basket of six GHGs produced by human activities: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. An important natural GHG that is not covered by the Protocol is water vapor.

Guarantees - The Climate Trust prefers projects that provide guarantees, especially carbon benefit guarantees. Guarantees are especially important for sequestration projects, and would provide important support for any project proposal. Carbon Dioxide Emissions Benefit guarantees must meet an additionality test, and are preferred over money back guarantees. The Climate Trust would consider the use of a pay-for-performance approach, where The Climate Trust pays a fixed amount per ton of CO₂ delivered over a specified period of time, as a form of guarantee.

Leakage - The extent to which events occurring outside the project boundary tend to reduce a project's carbon dioxide emissions benefit. For example, avoiding deforestation in one place might lead to acceleration in deforestation in some other place. This can apply to all types of carbon dioxide reduction projects.

Metric Ton of Carbon Dioxide Offsets - One metric ton (2,205 pounds or 1.1 short tons) of carbon dioxide avoided, sequestered or displaced.

Monitoring and Verification Plan ("M&V Plan") - An addendum to all Climate Trust contracts that assures that a plan to quantify and verify the amount of carbon dioxide offsets to be produced by a project is put into place.

Permanence - Project ability to weather exposure to variables and events that put at risk their ability to maintain the reduction in carbon dioxide output. The Climate Trust prefers projects that permanently avoid or displace emissions of carbon dioxide, such as energy-related projects, over projects that temporarily sequester carbon.

Point Source - A single identifiable source that discharges pollutants into the environment, such as smokestacks, sewers, ditches, or pipes.

Reforestation - Replanting of forests on lands that have recently been harvested.

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 of energy include wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.

Replicability - The ease with which a project can be replicated.

Regulatory Surplus - The Climate Trust will consider only projects where the Carbon Dioxide Emissions Benefit is over and above what is required by law. An emission reduction is surplus if it is not otherwise required of a source by current regulations or other obligations.

Quantifiability of Offsets - The Climate Trust will consider only projects that directly avoid, displace, or sequester the appropriate greenhouse gas, and where the amount of Carbon Dioxide Emissions Benefit can be quantified, taking into consideration any proposed measurement, monitoring, and evaluation of mitigation measure performance.

Timing of Project Implementation - The Climate Trust will consider only projects where mitigation measures will be implemented in the future, subsequent to contract execution. The Climate Trust will not consider projects where mitigation measures have been implemented prior to contract execution. The implementation of mitigation measures proposed by a project must be planned for completion within five years from the date of contract execution.

A Few Select Kyoto Protocol Terms

Annex I Parties - The industrialized countries legally bound under the Kyoto Protocol meet emissions targets for the period 2008-12.

Certifying Entity - 1) An agency, instrumentality, department or other entity now or in the future established, accredited or recognized by a Mechanism as having legal authority to certify Carbon Dioxide Offsets that are entitled, or may or will be entitled, currently or in the future, to recognition by a Mechanism for compliance determination purposes; (2) Any other agency, instrumentality, department or other entity now existing or that comes into existence in the future that undertakes to certify, on its own authority, Carbon Dioxide Offsets that will or may be recognized by a Mechanism or that will or may have commercial value.

Clean Development Mechanism (CDM) - A procedure under the Kyoto Protocol under which developed countries may finance greenhouse-gas emissions-avoiding projects in developing countries, and receive credits for doing so which they may apply towards meeting mandatory limits on their own emissions.

Clean Development Mechanism Executive Board - A 10-member panel elected at COP-7 which supervises the CDM and has begun operation in advance of the Protocol's entry into force.

Emissions Trading - Mechanism under the Kyoto Protocol through which Parties with emissions commitments may trade units of their emissions allowances with other Parties. The aim is to improve the overall flexibility and economic efficiency of making emissions cuts.

Global Warming Potential (GWP) - A term used to describe the relative potency, molecule for molecule, of a greenhouse gas, taking account of how long it remains active in the atmosphere. The GWPs currently used are those calculated over 100 years. Carbon dioxide is taken as the gas of reference, with a 100-year GWP of 1.

GAS	GWP(approximates)
CO ₂	1
Methane	21
Nitrous Oxide	310
HFC-134a	1,300
HFC-23	11,700
HFC-152a	140
HCF-125	2,800

PFCs*	7,850
SF6	23,900

*This figure is an average GWP for the two PFCs, CF4 and C2F6.

Hydrofluorocarbons (HFCs) – Part of the family of industrial gases included in the basket of six GHGs controlled by the Kyoto Protocol. HFCs have replaced ozone-depleting chlorofluorocarbons (CFCs) in many applications but are powerful GHGs, with 100-year GWPs of between 140 and 11,700.

Intergovernmental Panel on Climate Change (IPCC) - The authoritative, international voice on the science and impacts of climate change, established by governments under the auspices of the World Meteorological Organization and UN Environment Program (UNEP) in 1988. The IPCC produces five-yearly reports assessing the state of scientific knowledge on climate change which represent the international consensus among the hundreds of experts involved. The IPCC also publishes special reports on individual issues, such as sinks.

Joint Implementation (JI) - One of three Kyoto mechanisms, JI allows Annex I Parties to invest in emission-saving projects in other Annex I countries and receive credit for the emissions saved.

Kyoto Mechanism - Also known as flexible mechanisms because they give Annex I countries flexibility in how they meet their emission targets. The three Kyoto mechanisms are Emissions Trading, JI and the CDM.

Kyoto Protocol - An international agreement that has set binding targets for the reduction of greenhouse-gas emissions by industrialized countries. Over 30 developed countries are legally bound to reduce their collective emissions of six greenhouse gases by 5.2 percent from 1990 levels by 2012

Land Use, Land-Use Change and Forestry (LULUCF) - A range of activities which can act either as carbon sinks or as emission sources. This area remains subject to considerable scientific and other uncertainties and risks.

Nitrous Oxide (N2O) - One of the six GHGs controlled by the Kyoto Protocol, with a 100-year GWP of 310.

Sulphur Hexafluoride (SF6) - An industrial gas and the most potent of the six GHGs controlled by the Kyoto Protocol, with a 100-year CO₂E of 23,900.

Sinks - Ecosystems, notably forests and oceans, which can remove carbon from the atmosphere by absorbing and storing it, thereby offsetting CO₂ emissions. The Kyoto Protocol allows certain terrestrial human-induced sinks activities undertaken since 1990 to be counted towards Annex I Parties' emission targets. See also LULUCF.