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# CarbonEdge Dictionary



The CarbonEdge Dictionary has been compiled and is constantly updated by the CarbonEdge team. These are the definitions that we work with and represent our views.

Feedback is welcome and can be sent to [info@carbonedge.com.au](mailto:info@carbonedge.com.au)

## **AAU**

Assigned Amount Unit, a tradeable carbon credit unit under Article 17 of the Kyoto Protocol.

## **Acid Rain**

Also known as “acid deposition.” Acidic aerosols in the atmosphere are removed from the atmosphere by rain, snow, fog or by particles sticking to vegetation. In the atmosphere these gases combine with water to form acids.

## **Adaptation**

As a response to climate change, adaptation involves changing lifestyles to cope with effects of climate change. For example, a coastal community might adapt by building up sea defenses while a farming community might adapt by growing different crops as seasonal conditions change.

## **Adaptive Capacity**

The ability of a system (like an ecosystem) to adapt to climate change or other environmental changes. This may mean offsetting potential damages, taking advantage of new opportunities or coping with consequences. As far as global warming is concerned, adaptive capacity often refers to a country’s ability to adapt. This is often much lower in developing countries, because of restrictions from poverty.

## **Additionality**

According to the Kyoto Protocol, gas emission reductions generated by Clean Development Mechanism and Joint Implementation project activities must be additional to those that otherwise would occur. Additionality is established when there is a positive difference between the emissions that occur in the baseline scenario, and the emissions that occur in the proposed project.

## **Afforestation**

The process of establishing and growing new forests where there have been none in recent history.

## **Alliance of Small Island States (AOSIS)**

The group of Pacific and Caribbean nations who are calling for relatively fast action by developed nations to reduce greenhouse gas emissions. These countries are afraid of the effects of rising sea levels and increased storm activity which is predicted to accompany global warming.

## **Anthropogenic Emissions**

Emissions of particles or substances caused by human activities, such as industry and agriculture.

## **Assigned Amount**

The quantity of greenhouse gases that an Annex I country can release in accordance with the Kyoto Protocol, during the first commitment period of that protocol (2008-12).

## **Avoided deforestation**

Refers to green house gas emissions being avoided or reduced by preventing clearance of forests. It is part of REDD – which is an initiative and approach for Reducing Emissions from Deforestation and forest Degradation.

## **Baseline**

The emission of greenhouse gases that would occur without the some proposed policy intervention or project activity.

## **Biochar**

Charcoal created by pyrolysis of biomass. The resulting charcoal-like material is a form of carbon capture and storage. Charcoal is a stable solid and rich in carbon content, and thus, can be used to lock carbon in the soil. Biochar is of increasing interest because of concerns about climate change caused by emissions of carbon dioxide (CO<sub>2</sub>) and other greenhouse gases (GHG).

## **Biocrude**

Conventional crude oil is an energy dense liquid that is normally transported efficiently from its source – an oil well – to a larger processing facility where it is processed into a range of products for wholesale and retail markets. One of the most significant challenges facing biorefineries of the future is the low energy density of solid biomass and the high costs of materials handling and transport over the large distances from source to refinery. One solution to this problem is the use of small regional, or transportable processing facilities to convert solid biomass into an energy dense, crude liquid mixture that will significantly lower the costs of materials handling and transport. In the same way that crude oil is commonly referred to as simply ‘crude’, biocrude can be used to denote an energy dense mixture of liquid organic chemicals that are produced at source for efficient transportation to a central biorefinery.

## **Biofuel**

Any solid, liquid, or gaseous fuel produced from organic matter. This can mean a wide range of products, some commercially available today. Research is continuing for development of new ones.

## **Biomass**

Biomass comes from materials that were once living, such as plants.

## **Biomass energy**

Energy produced by the conversion of biomass directly to heat – or to a liquid or gas which would be biofuel – for conversion into energy.

## **Biome**

A naturally occurring community of flora and fauna (or the region occupied by such a community) adapted to the particular conditions in which they occur (e.g. tundra). (IPCC)

## **Biosphere**

The region on land, in the oceans, and in the atmosphere inhabited by living organisms. (EPA)

## **Bubble**

This refers to a term for a system which lets several countries meet a reduction target together while having different individual targets.

## **Cap and Trade**

Cap and Trade is a market-based policy. A cap and trade program establishes an ideal cap, or maximum limit, on emissions. Sources covered by the program then receive authorizations to emit – these are emissions allowances and must not be greater than the cap. Each authorized source is then able to determine its own strategy to comply and meet the overall reduction requirement. This might include: selling or purchasing allowances; installing pollution controls, implementing efficiency measures. A cap and trade program does not set particular strategies to be followed, but each emissions source must comply by giving up allowances equal to its actual emissions. Each source must also measure and report all emissions accurately and thoroughly in a timely manner to guarantee that the overall cap is achieved.

## **Carbon Asset**

How much greenhouse gas emission reductions that an emissions reduction project is able to generate and could sell.

## **Carbon Capture and Storage (CCS)**

Is a theoretical approach to mitigating the contribution of fossil fuel emissions to global warming, based on capturing carbon dioxide (CO<sub>2</sub>) from large point sources such as fossil fuel power plants like coal fired power plants. It can also be used to describe the scrubbing of CO<sub>2</sub> from ambient air as a geo-engineering technique. The carbon dioxide might then be permanently stored away from the atmosphere. (See also clean coal)

## **Carbon Cycle**

The global scale exchange of carbon among the atmosphere, oceans, vegetation, soils, and geologic deposits and minerals. This includes components in food chains, in the atmosphere as carbon dioxide, in the hydrosphere and in the geosphere.

## **Carbon Dioxide (CO<sub>2</sub>)**

The greenhouse gas whose concentration in the atmosphere has been increasing at a rate of about 0.5% per year and are now estimated to be about 30% above pre-industrial levels. Increases are being most affected directly by human activities. CO<sub>2</sub> also provides the reference against which to compare all other greenhouse gases (see carbon dioxide equivalents). The major source of CO<sub>2</sub> emissions is fossil fuel combustion – and also produced by forest clearing, biomass burning, and non-energy production processes such as cement production.

## **Carbon Dioxide Capture and Storage**

Is an alternative term used to describe biological techniques such as biochar burial, which use trees, plankton, etc. to capture CO<sub>2</sub> from the air. However, it is more conventional to use the term carbon capture and storage to describe non-biological processes of capturing carbon dioxide from combustion at the source. (See also carbon capture and storage)

## **Carbon Dioxide Equivalent (CO<sub>2</sub>e)**

The universal unit of measurement used to indicate the global warming potential of each of the six greenhouse gases. Carbon dioxide – a naturally occurring gas that is a by product of burning fossil fuels and biomass,

land-use changes, and other industrial processes – is the reference gas against which the other greenhouse gases are measured.

## **Carbon Finance**

Resources provided to projects generating (or expected to generate) greenhouse gas (or carbon) emission reductions in the form of the purchase of such emission reductions.

## **Carbon footprint**

A measure of the greenhouse gas emissions attributable to an activity; it is commonly used at an individual, household or business level.

## **Carbon offset**

Carbon offsets represent reductions in greenhouse gases relative to a business-as-usual baseline. Carbon offsets are tradeable and often used to negate (or offset) all or part of another entities emissions.

## **CFU**

The World Bank's Carbon Finance Unit.

## **Carbon Leakage**

Carbon leakage occurs when there is an increase in carbon dioxide emissions in one country as a result of an emissions reduction by a second country with a strict climate policy.

Carbon leakage may occur for a number of reasons:

- if the emissions policy of a country raises local costs, then another country with a more relaxed policy may have a trading advantage. If demand for these goods remains the same, production may move offshore to the cheaper country with lower standards, and global emissions will not be reduced
- if environmental policies in one country add a premium to certain fuels or commodities, then the demand may decline and their price may fall. Countries that do not place a premium on those items may then take up the demand and use the same supply, negating any benefit.

Carbon leakage does not necessarily imply that the increased emissions are from competing companies; climate policies may have the effect of causing companies to relocate its production to countries without a climate policy in order to take advantage of the economic benefits.

## **Carbon Pollution Reduction Scheme (CPRS)**

The Australian Government's 2008 policy to address anthropogenic climate change through a mix of international and domestic measures and underpinned by a limited number of permits to emit and the establishment of a market to trade in permits.

## **Carbon Sinks**

Carbon reservoirs and conditions that take in and store more carbon (carbon sequestration) than they release. Carbon sinks – such as oceans and forests – can partially offset greenhouse gas emissions.

## **Cellulose**

Cellulose is the structural component of the primary cell wall of green plants, many forms of algae and the oomycetes. Some species of bacteria secrete it to form biofilms. Cellulose is the most common organic compound on Earth.

About 33 percent of all plant matter is cellulose (the cellulose content of cotton is 90 percent and that of wood is 50 percent).

For industrial use, cellulose is mainly obtained from wood pulp and cotton. It is mainly used to produce cardboard and paper; to a smaller extent it is converted into a wide variety of derivative products such as cellophane and rayon. Converting cellulose from energy crops into biofuels such as cellulosic ethanol is under investigation as an alternative fuel source.

## **Certified Emission Reductions (CERs)**

A unit of greenhouse gas emission reductions issued pursuant to the Clean Development Mechanism of the Kyoto Protocol, and measured in metric tons of carbon dioxide equivalent.

## **Chain of Custody of Forest based products**

All the changes of custodianship of forest based products, and products of those products, during the harvesting, transportation, processing and distribution chain from the forest to the end-use.

## **Clean Coal**

Is a term most often used by the media in news stories that reference carbon capture and storage and sequestration (CCS). These technologies are in development and aim to reduce CO<sub>2</sub> at coal fired power plants in order to mitigate climate change. There is no agreement across groups as to when clean coal technology will be available on a

commercial scale. No commercial scale coal-fired power plant currently exists that captures the majority of its emissions. (see also carbon capture and storage)

## **Clean Development Mechanism (CDM)**

The mechanism provided by Article 12 of the Kyoto Protocol, designed to assist developing countries in achieving sustainable development by permitting industrialized countries to finance projects for reducing greenhouse gas emission in developing countries and receive credit for doing so.

## **Climate**

The average weather for a particular area and time period – often about 30 years. Climate is not the same as weather. It is the average pattern of weather for a particular region. Weather describes the short-term state of the atmosphere. Climatic elements include precipitation, temperature, humidity, sunshine, wind velocity, phenomena such as fog, frost, and hail storms, and other measures of the weather.

## **Climate Change (also referred to as 'global climate change')**

The term 'climate change' is sometimes used to refer to all forms of climatic inconsistency, but 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. In some cases, climate change' has been used synonymously with the term, 'global warming'; scientists however, tend to use the term in the wider sense to also include natural changes in climate. (EPA)

## **Climate Feedback**

An atmospheric, oceanic, terrestrial, or other process that is activated by the direct climate change induced by changes in radiative forcing. Climate feedbacks may increase (positive feedback) or diminish (negative feedback) the magnitude of the direct climate change.

## **Climate Forecast**

The most likely description or estimate of the long term change or actual evolution of the climate.

## **Climate Lag**

The delay that occurs in climate change as a result of some factor that changes only very slowly. For example, the effects of releasing more carbon dioxide into the atmosphere may not be known for some time because a large fraction is dissolved in the ocean and only released to the atmosphere many years later.

## **Cogeneration**

The process by which two different and useful forms of energy are produced at the same time. For example, while boiling water to generate electricity, the leftover steam can be sold for industrial processes or space heating.

## **Conference of Parties (COP)**

The meeting of parties to the United Nations Framework Convention on Climate Change.

## **Corporate Social Responsibility (CSR)**

**Also known as corporate responsibility, corporate citizenship, responsible business and corporate social opportunity**

This is a form of corporate self-regulation integrated into a business model. Ideally, CSR policy would function as a built-in, self-regulating mechanism whereby business would monitor and ensure their adherence to law, ethical standards, and international norms. Business would embrace responsibility for the impact of their activities on the environment, consumers, employees, communities, stakeholders and all other members of the public sphere. Furthermore, business would proactively promote the public interest by encouraging community growth and development, and voluntarily eliminating practices that harm the public sphere, regardless of legality. Essentially, CSR is the deliberate inclusion of public interest into corporate decision-making, and the honoring of a triple bottom line: People, Planet, Profit.

## **Damage Function**

The relation between changes in the climate and reductions in economic activity relative to the rate that would be possible in an unaltered climate.

## **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. (EPA)

## **Desertification**

The progressive destruction or degradation of existing vegetative cover to form desert. This can occur due to overgrazing, deforestation, drought, and the burning of extensive areas. Once formed, deserts can only support a sparse range of vegetation. Climatic effects associated with this phenomenon include increased albedo, reduced atmospheric humidity, and greater atmospheric dust (aerosol) loading.

## **Detection of Climate Change**

The process of demonstrating that climate has changed in some defined statistical sense, without providing a reason for that change.

## **Discount rate**

The annual rate at which the effect of future events are reduced so as to be comparable to the effect of present events.

## **Diurnal Temperature Range**

The difference between maximum and minimum temperature over a period of 24 hours. (IPCC)

## **Driving Forces**

Climate scenarios contain various driving forces of climate change, including population growth and socio-economic and technological development. These drivers encompass various future scenarios that might influence greenhouse gas sources and sinks, such as the energy system and land use change.

## **Economic Potential**

The portion of the technical potential for GHG emissions reductions or energy-efficiency improvements that could be achieved cost-effectively in the absence of market barriers. The achievement of the economic potential requires additional policies and measures to break down market barriers.

## **Ecosystem**

An ecological community together with its environment, functioning as a unit. The scale of an ecosystem largely depends on the type of study that is conducted and may range from a small number of populations and their environment to the entire earth.

## **El Niño**

A climatic phenomenon occurring irregularly, but generally every 3 to 5 years. El Niños often first become evident during the Christmas season (El Niño means Christ child) in the surface oceans of the eastern tropical Pacific Ocean. The phenomenon involves seasonal changes in the direction of the tropical winds over the Pacific and abnormally warm surface ocean temperatures. The changes in the tropics are most intense in the Pacific region, These changes can disrupt weather patterns throughout the tropics and can extend to higher latitudes, especially in Central and North America. The relationship between these events and global weather patterns are currently the subject of much research in order to enhance prediction of seasonal to inter annual fluctuations in the climate.

## **EITE (Emissions Intensive Trade Exposed industries)**

Industries that are both emissions intensive because of their high energy use per unit of production and that are also exposed to international trade. For these firms, an additional 'cost of emissions' could increase the competitive pressures they face from international competitors.

## **Emission**

The release of a substance (usually a gas when referring to the subject of climate change) into the atmosphere.

## **Emission Permit**

A non-transferable or trade-able allocation of entitlements by a government to an individual firm to emit a specific amount of a substance.

## **Emission Quota**

The portion or share of total allowable emissions assigned to a country or group of countries within a framework of maximum total emissions and mandatory allocations of resources or assessments.

## **Emission Reductions (ERs)**

The measurable reduction of release of greenhouse gases into the atmosphere from a specified activity or over a specified area, and a specified period of time.

## **Emission Reductions Purchase Agreement (ERPA)**

Agreement which governs the purchase and sale of emission reductions.

## **Emission Reduction Units (ERUs)**

A unit of emission reductions issued pursuant to Joint Implementation. This unit is equal to one metric ton of carbon dioxide equivalent.

## **Emissions Scenario**

Representation of the future development of emissions of greenhouse gases based on a set of assumptions about driving forces and their key relationships.

## **Emission Standard**

A level of emission that under law may not be exceeded.

## **Environmental Management System**

That part of the overall management system that includes organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy of an organization.

## **ETS**

Emissions Trading Scheme: A financial and administrative approach used to control emissions by providing economic incentives for achieving reductions in the emissions of pollutants. It is sometimes called a cap and trade system and operates in effect to increase the cost of emissions to apply financial pressure for less energy to be used. An ETS is the alternative measure to a carbon tax or direct regulation of the level of emissions.

## **Extreme Weather Event**

A manifestation of weather which is rare within its statistical distribution on a particular location. By rare one usually means rarer than the 90th percentile. The characteristics of extreme weather vary according to the location. (Lenn)

## **Equilibrium Response**

The steady state response of the climate system (or a climate model) To an imposed radiative forcing. (IPCC)

## **Final Energy**

Energy supplied that is available to the consumer to be converted into useful energy (e.g. electricity at the wall outlet).

## **First Commitment Period**

Under the Kyoto Protocol, developed countries are required to make binding emissions reduction commitments on a five year basis. The first commitment period is from 2008-2012.

## **Forest Certification**

A procedure to assess the quality of forest management in relation to the criteria of a forest management standard.

## **Forest Certification Scheme**

Set of standards, guidelines and rules covering forest management criteria, chain of custody of wood requirements (where applicable), certification arrangements and procedures and requirements for certification bodies.

## **Fossil Fuel**

A general term for combustible geologic deposits of carbon in reduced (organic) form and of biological origin, including coal, oil, natural gas, oil shales, and tar sands. A major concern is that they emit carbon dioxide into the atmosphere when burnt, thus significantly contributing to the enhanced greenhouse effect.

## **Fossil Fuel Combustion**

Burning of coal, oil (including gasoline), or natural gas. This burning, usually to generate energy, releases carbon dioxide, as well as combustion with products that can include unburned hydrocarbons, methane, and carbon monoxide. Carbon monoxide, methane, and many of the unburned hydrocarbons slowly oxidize into carbon dioxide in the atmosphere. Common sources of fossil fuel combustion include cars and electric utilities.

## **Fossil Fuel Reserves**

The quantity of a fossil fuel that is known to exist, based on geological and engineering evidence, and that can be recovered under current economic conditions and operating capabilities. (IPCC)

## **Fossil Fuel Resources**

The quantity of fossil fuel that is thought to exist and that may be recoverable based on an explicit scenario for future economic conditions and operating capabilities. (IPCC)

## **Full-cost Pricing**

The pricing of commercial goods, such as electric power, that would include in the final price faced by the end user not only the private cost of inputs, but also the cost of externalities created by their production and use. (IPCC)

## **Geosphere**

The soils, sediments, and rock layers of Earth's crust, both continental and beneath the ocean floors. (EPA)

## **Geothermal energy**

Energy that is generated by converting hot water or steam from deep beneath the Earth's surface into electricity. An emerging geothermal technology is known as 'hot rocks' technology.

## **Global Warming**

An increase in the near surface temperature of the Earth. Global warming has occurred in the distant past as the result of natural influences, but the term is most often used to refer to the warming predicted to occur as a result of increased emissions of greenhouse gases. Scientists generally agree that the Earth's surface has warmed by about 1 degree Fahrenheit in the past 140 years. The Intergovernmental Panel on Climate Change (IPCC) recently concluded that increased concentrations of greenhouse gases are causing an increase in the Earth's surface temperature and that increased concentrations of sulfate aerosols have led to relative cooling in some regions, generally over and downwind of heavily industrialized areas. Also see Climate Change and Enhanced Greenhouse Effect.

## **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. GWPs are calculated as the ratio of the radiative forcing that would result from the emissions of one kilogram of a greenhouse gas to that from emission of one kilogram of carbon dioxide over a period of time (usually 100 years). Gases involved in complex atmospheric

chemical processes have not been assigned GWPs due to complications that arise. Greenhouse gases are expressed in terms of Carbon Dioxide Equivalent. The International Panel on Climate Change (IPCC) has presented these GWPs and regularly updates them in new assessments.

## **Greenhouse Effect**

The effect produced as greenhouse gases allow incoming solar radiation to pass through the Earth's atmosphere, but prevent most of the outgoing infra-red radiation from the 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 gases (GHGs)**

These are the gases released by human activity that are responsible for climate change and global warming. The six gases listed in Annex A of the Kyoto Protocol are carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), as well as hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF<sub>6</sub>).

## **Green jobs**

Green jobs reduce the environmental impact of enterprises and economic sectors, ultimately to levels that are sustainable. Specifically, but not exclusively, this includes jobs that help to protect ecosystems and biodiversity; reduce energy, materials, and water consumption through high-efficiency strategies; de-carbonize the economy; and minimize or altogether avoid generation of all forms of waste and pollution.

## **High quality emission reductions**

Emission reductions of a sufficient quality so that, in the opinion of the Trustee, at the time a project is selected and designed, there will be a strong likelihood, to the extent it can be assessed, that PCF Participants may be able to apply their share of emission reductions for the purpose of satisfying the requirements of the UNFCCC, relevant international agreements, or applicable national legislation.

## **Host Country**

The country where an emission reduction project is physically located.

## Hydrosphere

The part of the Earth composed of water including clouds, oceans, seas, ice caps, glaciers, lakes, rivers, underground water supplies, and atmospheric water vapor. (EPA)

## Indirect Aerosol Effect

Aerosols may lead to an indirect radiative forcing of the climate system through acting as condensation nuclei or modifying the optical properties and lifetime of clouds. (Lenn)

## Integrated Drying and Gasification Combined Cycle (IDGCC)

An integrated process for wet reactive coals, such as Latrobe Valley brown coal, whereby the coal is dried using the hot syngas from the gasification process. (see IGCC)

## Integrated Gasification Combined Cycle (IGCC)

A process where fossil fuel is initially not fully combusted but is reacted with steam and pure oxygen or air at high pressure and temperature to form a synthesis gas, which is then combusted in a turbine to produce power. If full capture of carbon dioxide is required, the syngas is further reacted with water to produce carbon dioxide from the carbon monoxide in the gas. Hydrogen is then combusted in turbines to produce power.

## Intergovernmental Panel on Climate Change

The IPCC was established jointly by the United Nations Environment Programme and the World Meteorological Organization in 1988. The purpose of the IPCC is to assess information in the scientific and technical literature related to all significant components of the issue of climate change. The IPCC draws upon hundreds of the world's expert scientists as authors and thousands as expert reviewers. Leading experts on climate change and environmental, social, and economic sciences from some 60 nations have helped the IPCC to prepare periodic assessments of the scientific underpinnings for understanding global climate change and its consequences. With its capacity for reporting on climate change, its consequences, and the viability of adaptation and mitigation measures, the IPCC is also looked to as the official advisory body to the world's governments on the state of the science of the climate change issue. For example, the IPCC organized the development of internationally accepted methods for conducting national greenhouse gas emission inventories. (IPCC)

## International Emissions Trading

Article 17 of the Kyoto Protocol allows developed countries to participate in emissions trading for the purposes of meeting their assigned amounts. (Australia)

## Joint Implementation (JI)

Mechanism provided by Article 6 of the Kyoto Protocol, whereby a country included in Annex I of the UNFCCC and the Kyoto Protocol may acquire Emission Reduction Units when it helps to finance projects that reduce net emissions in another industrialized country (including countries with economies in transition).

## JUSSCANNZ

Acronym describing Japan, the US, Switzerland, Canada, Australia, Norway and New Zealand, the negotiating bloc for the non-EU developed countries. If you add Russia, you can call them the Umbrella Group. (BBC)

## Just Transition

Refers to the principle that support for environmental policies are conditional on a fair distribution of the costs and benefits of those policies across the economy, and on the creation of opportunities for active engagement by those affected in determining the future wellbeing of themselves and their families.

## Kyoto Mechanisms

Mechanisms under the Kyoto Protocol including International Emissions Trading, Clean Development Mechanism and joint Implementation. It may also be argued that the trading bubble under Article 4 is a key mechanism.

## Kyoto Protocol

Adopted at the Third Conference of the Parties to the United Nations Convention on Climate Change held in Kyoto, Japan in December 1997, the Kyoto Protocol commits industrialized country signatories to reduce their greenhouse gas (or "carbon") emissions by an average of 5.2% compared with 1990 emissions, in the period 2008-2012.

## Land Use

The management practice of a certain land cover type (a set of human actions). Land use may be forest, arable land, grassland, urban area or other.

## Land Use Change

Alteration of the management practice on a certain land cover type. Some land use changes influence the climate system because they impact evapotranspiration and sources and sinks of greenhouse gases.

## Levulinic Acid (C<sub>5</sub>H<sub>8</sub>O<sub>3</sub>)

Is a straight chain organic acid also called 5-ketopentanoic acid. It can be produced in high yield in a two-step process (called the Biofine Process: <http://www.mainebioproducts.com/default.asp?page=default&topic=ProcessOverview>) by heating cellulose at 220°C in dilute sulfuric acid at high pressure (25 atmospheres).

## Life cycle analysis (LCA)

Assesses the total environmental impact of products and services so people can purchase and use those products and services with the lightest environmental footprint. The procedures of life cycle assessment (LCA) are part of the ISO 14000 environmental management standards. The analysis considers the product or service's raw material production, manufacture, distribution, all transportation steps necessary or caused by the product's existence, use and disposal. Key aspects of consideration include greenhouse gases, acidification, smog, ozone layer depletion, pollutants and resources used (e.g. water, minerals, energy, and timber).

## Lifetime (Atmospheric)

The lifetime of a greenhouse gas refers to the approximate amount of time it would take for the anthropogenic increment to an atmospheric pollutant concentration to return to its natural level (assuming emissions cease) as a result of either being converted to another chemical compound or being taken out of the atmosphere via a sink. This time depends on the pollutant's sources and sinks as well as its reactivity. The lifetime of a pollutant is often considered in conjunction with the mixing of pollutants in the atmosphere; a long lifetime will allow the pollutant to mix throughout the atmosphere. Average lifetimes can vary from about a week (sulfate aerosols) to more than a century (CFCs, carbon dioxide).

## Lithosphere

The outer part of the earth, consisting of the crust and upper mantle, approximately 100km thick. (Lenn)

## Marginal Cost

The cost on one additional unit of effort. In terms of reducing emissions, it represents the cost of reducing emissions by one more unit.

## Marginal Cost Pricing

The pricing of commercial goods and services such that the price equals the additional cost that arises from the expansion of production by one additional unit.

## Market Barriers

Conditions that prevent or impede the diffusion of cost-effective technologies or practices that could mitigate GHG emissions.

## Market Damages

The value of damages generated by climate change (or some other environmental change) and evaluated based on information available to and usable by a competitive market.

## Market Potential (or Currently Realizable Potential)

The portion of the economic potential for GHG emissions reductions or energy-efficiency improvements that could be achieved under existing market conditions, assuming no new policies and measures.

## Market-based Incentives

Measures intended to directly change relative prices of energy services and overcome market barriers.

## Mean Sea Level (MSL)

The average Relative Sea Level over a period, such as a month or a year, long enough to average out transients such as waves. (Lenn)

## Millennium Development Goals (MDGs)

Commit the international community to an expanded vision of development, one that vigorously promotes human development as the key to sustaining social and economic progress in all countries, and recognizes the importance of creating a global partnership for development. The goals have been commonly accepted as a framework for measuring development progress.

## **Mitigation**

A human intervention to reduce the sources or enhance the sinks of substances that pollute the environment, for example greenhouse gases.

## **Monitoring Plan (MP)**

A set of requirements for monitoring and verification of emission reductions achieved by a project.

## **Natural Regeneration**

A management practice which utilizes naturally occurring tree propagules, such as seed, naturally occurring seedlings or volunteer growth, suckers, or coppice, for the renewal of stock in the forest or for reforestation after a harvesting operation. Natural regeneration is often enhanced by management activities, e.g. seedbed preparation, supply of viable seed, etc.

## **National Greenhouse and Energy Reporting System (NGER System)**

This system is based on the National Greenhouse and Energy Reporting Act 2007, which was passed on 29 September 2007. The Act establishes a mandatory reporting system for corporate greenhouse gas emissions and energy production and consumption. The Act commenced on 1 July 2008.

## **Nitrogen Fertilization**

Enhancement of plant growth through the deposition of nitrogen compounds. In IPCC reports, this typically refers to fertilization from anthropogenic sources of nitrogen such as, man-made fertilizers and nitrogen oxides released from burning fossil fuels. (IPCC)

## **Nitrogen Oxides (NO<sub>x</sub>)**

Gases consisting of one molecule of nitrogen and varying numbers of oxygen molecules. Nitrogen oxides are produced in the emissions of vehicle exhausts and from power stations. In the atmosphere, nitrogen oxides can contribute to formation of photochemical ozone (smog), can impair visibility, and have health consequences; they are thus considered pollutants. (EPA)

## **Nitrous Oxide (N<sub>2</sub>O)**

A powerful greenhouse gas with a global warming potential of 320. Major sources of nitrous oxide include soil cultivation practices, especially the use of commercial and organic fertilizers, fossil fuel combustion, nitric acid production, and biomass burning. (EPA)

## **No Regrets Mitigation Options**

Those whose benefits, such as reduced energy costs and reduced emissions of local/regional pollutants, equal or exceed their cost to society, excluding the benefits of climate change mitigation. They are sometimes known as “measures worth doing anyway.”

## **Non-market Damages**

Damages generated by climate change (or some other environmental change) and that cannot be evaluated by a competitive market because of a lack of information and/or the inability to act on the information.

## **Operational Entity (OE)**

An independent entity, accredited by the CDM Executive Board, which validates CDM project activities, and verifies and certifies emission reductions generated by such projects.

## **Opportunity Cost**

The cost of an economic activity foregone by the choice of another activity.

## **Optimal control rate**

The rate of intervention at which the net present value of the marginal costs of the intervention, equals the net present value of the marginal benefits of intervention.

## **Ozone (O<sub>3</sub>)**

Ozone consists of three atoms of oxygen bonded together in contrast to normal atmospheric oxygen which consists of two atoms of oxygen. Ozone is an important greenhouse gas found in both the stratosphere (about 90% of the total atmospheric loading) and the troposphere (about 10%). Ozone has other effects beyond acting as a greenhouse gas. In the stratosphere, ozone provides a protective layer shielding the Earth from ultraviolet radiation and subsequent harmful health effect on humans and the environment. In the troposphere, oxygen molecules in ozone combine with other chemicals and gases (oxidisation) to cause smog.

## **Patent Corporation Treaty**

The Patent Cooperation Treaty (PCT) is an international patent law treaty, concluded in 1970. It provides a unified procedure for filing patent applications to protect inventions in each of its Contracting States (see Accession section below for current membership information).

A patent application filed under the PCT is called an international application or PCT application.

A single filing of an international application is made with a Receiving Office (RO) in one language. It then results in a search performed by an International Searching Authority (ISA), accompanied with a written opinion regarding the patentability of the invention which is the subject of the application. It is optionally followed by a preliminary examination, performed by an International Preliminary Examining Authority (IPEA). Finally, the examination (if provided by national law) and grant procedures are handled by the relevant national or regional authorities. The PCT does not lead to the grant of an “international patent”, which does not exist.

The States party to the PCT, i.e. the Contracting States, constitute the International Patent Cooperation Union.

## Photosynthesis

The biological synthesis of chemical compounds in the presence of light

The production of organic substances, chiefly sugars, from carbon dioxide and water occurring in green plant cells supplied with enough light to allow chlorophyll to aid in the transformation of the radiant energy into a chemical form.

## Pollutant

Strictly, too much of any substance in the wrong place or at the wrong time is a pollutant. More specifically, atmospheric pollution may be defined as the presence of substances in the atmosphere, resulting from man-made activities or from natural processes that cause adverse effects to human health, property, and the environment.

## PEFC (Programme for Endorsement of Forest Certification schemes)

Is the world's largest forest certification organisation. PEFC promotes sustainable forest management – environmentally, socially beneficial and economically viable management of forests for present and future generations – through independent third party forest certification.

## Precautionary Approach

The approach promoted under the Framework Convention of Climate Change to help achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous interference with the climate system.

## Primary Energy

Energy embodied in natural resources (e.g. coal, crude oil, sunlight, uranium) that has not undergone any anthropogenic conversions or transformations.

## Project-Based Emission Reductions

Emission reductions that occur from projects pursuant to JI or CDM (as opposed to “emissions trading” or transfer of assigned amount units under Article 17 of the Kyoto Protocol).

## Pyrolysis

Transformation of a compound into smaller and simpler compounds, or compounds of higher molecular weight, under elevated temperatures usually in the range of 400°C to 800°C to as high as 1400°C. It differs from combustion in that it occurs in the absence of air and therefore no oxidation takes place.

## REDD

Originally ‘Reducing Emissions from Deforestation in Developing Countries’ but now broadened to be known as ‘Reducing Emissions from Deforestation and Degradation in Developing Countries’. A reasonably recent initiative to assist developing countries to institute programs that address the underlying drivers of emissions associated with deforestation and forest degradation that are estimated to account for up to twenty percent of global emissions.

## Reforestation

The process of increasing the capacity of the land to sequester carbon by replanting forest biomass in areas where forests have been previously harvested.

## Regeneration

Renewal of forest or tree crop by natural or artificial means.

## Relative Sea Level

Sea level measured by a tide gauge with respect to the land upon which it is situated. (Lenn)

## **Renewable Energy Target (RET) (Australia)**

The Government's RET scheme is designed to ensure that 20 per cent of Australia's electricity comes from renewable sources by 2020. The expanded RET increases the current RET by over four times, from 9,500 gigawatt-hours to 45,000 gigawatt-hours in 2020, driving significant investment and accelerating the deployment of a broad range of renewable energy technologies. In ten years time the amount of electricity coming from sources like solar, wind and geothermal will be about equal to all of Australia's current household electricity use.

## **Reservoir**

Component of the climate system other than the atmosphere that can store certain quantities of substances, such as greenhouse gases and precursors. Examples are oceans, soils, and forests. (Lenn)

## **Sequestration**

Refers to the capture of carbon dioxide in a manner that prevents it from being released into the atmosphere for a specified period of time.

## **Silviculture**

The word silviculture comes from Silva, the Latin word for wood. It refers to the establishment and management of trees for wood production.

## **Solar luminosity**

A measure of the brightness of (i.e. the amount of solar radiation (q.v.) being emitted by the Sun. (IPCC)

## **Sustainable Development**

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

## **Sustainable Yield**

In relation to wood products, the sustainable yield of a forest is the maximum level of harvest of commercial timber or project mix that can be maintained for a given area in perpetuity under a given management regime. The forested area must be sufficiently large to support a large number of stands at different stages in the projection cycle. The average yield over time must be equal to the average growth increment, in terms of product, of the area as a whole.

## **System Vulnerability**

The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. This is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.

## **Temporal Scale**

Climate may vary on a large range of temporal scales. Temporal scales may be seasonal to even geological, which goes up to hundreds of millions of years. (Lenn)

## **Terrestrial Biosphere**

A collective term for all living organisms on land. (IPCC)

## **The American Clean Energy and Security Act of 2009 (ACES)**

Is an energy bill in the 111th United States Congress that would establish a variant of a cap-and-trade plan for greenhouse gases to address climate change. The bill was approved by the House of Representatives on June 26, 2009 by a vote of 219-212, but has not yet been approved by the Senate.

This vote was the "first time either house of Congress had approved a bill meant to curb the heat-trapping gases scientists have linked to climate change."

The bill is also known as the Waxman-Markey Bill, after its authors, Representatives Henry A. Waxman of California and Edward J. Markey of Massachusetts, both Democrats. Waxman is the chairman of the Energy and Commerce Committee, and Markey is the chairman of that committee's Energy and Environment Subcommittee.

## **Thermal Expansion**

An decrease in water density of oceans that results from global warming. This leads to an expansion of the ocean volume and hence an increase in sea level.

## **Thermochemical**

Is a word borrowed from the pulp and paper industry to denote a process that uses a combination of heat, mechanical energy and chemical energy to add value to plant biomass by converting it into papermaking pulp. The definition can be usefully extended to any process that uses the same three forms of energy to convert biomass into a more valuable product, such as an energy-dense

liquid. In the biorefinery context, the term is useful in distinguishing processes that do not use microorganisms, or enzymes from processes that do.

## **The Sarbanes-Oxley Act of 2002**

Also known as the Public Company Accounting Reform and Investor Protection Act of 2002 and commonly called Sarbanes-Oxley, Sarbox or SOX, is a United States federal law enacted on July 30, 2002, as a reaction to a number of major corporate and accounting scandals. The legislation set new or enhanced standards for all U.S. public company boards, management and public accounting firms. It does not apply to privately held companies.

## **United Nations Framework Convention on Climate Change (UNFCCC)**

The international legal framework adopted in June 1992 at the Rio Earth Summit to address climate change. It commits the Parties to the UNFCCC to stabilize human induced greenhouse gas emissions at levels that would prevent dangerous manmade interference with the climate system.

## **Validation**

The assessment of a project's Project Design Document, which describes its design, including its baseline and monitoring plan, by an independent third party, before the implementation of the project against the requirements of the CDM.

## **Verified Emission Reductions (VERs)**

A unit of greenhouse gas emission reductions that has been verified by an independent auditor, but that has not yet undergone the procedures and may not yet have met the requirements for verification, certification and issuance of CERs (in the case of the CDM) or ERUs (in the case of JI) under the Kyoto Protocol. Buyers of VERs assume all carbon-specific policy and regulatory risks (i.e. the risk that the VERs are not ultimately registered as CERs or ERUs). Buyers therefore tend to pay a discounted price for VERs, which takes the inherent regulatory risks into account.

## **Verification Report**

A report prepared by an Operational Entity, or by another independent third party, pursuant to a Verification, which reports the findings of the Verification process, including the amount of reductions in emission of greenhouse gases that have been found to have been generated.

## **Volatile Organic Compounds (VOC)**

Any one of several organic compounds which are released to the atmosphere by plants or through vaporization of oil products, and which are chemically reactive and are involved in the chemistry of tropospheric ozone production. Methane, while strictly falling within the definition of a VOC, is usually considered separately. (IPCC)

## **Water Vapor**

The most abundant greenhouse gas, it is the water present in the atmosphere in gaseous form. Water vapor is an important part of the natural greenhouse effect. While humans are not significantly increasing its concentration, it contributes to the enhanced greenhouse effect because the warming influence of greenhouse gases leads to a positive water vapor feedback. In addition to its role as a natural greenhouse gas, water vapor plays an important role in regulating the temperature of the planet because clouds form when excess water vapor in the atmosphere condenses to form ice and water droplets and precipitation.

## **Weather**

Weather is the specific condition of the atmosphere at a particular place and time. It is measured in terms of such things as wind, temperature, humidity, atmospheric pressure, cloudiness, and precipitation. In most places, weather can change from hour-to-hour, day-to-day, and season-to-season. Climate is the average of weather over time and space. A simple way of remembering the difference is that 'climate' is what you expect (e.g. cold winters) and 'weather' is what you get (e.g. a blizzard).