

Glossary of Terms

[Arranged alphabetically]

A

Abiotic

Absence of living organisms.

Absorption of radiation

The uptake of radiation by a solid body, liquid or gas. The absorbed energy may be transferred or re-emitted.

Acid deposition

A complex chemical and atmospheric process whereby recombined emissions of sulphur and nitrogen compounds are re-deposited on earth in wet or dry form. See acid rain.

Acid rain

Rainwater that has acidity content greater than the postulated natural pH of about 5.6. It is formed when sulphur dioxides and nitrogen oxides, as gases or fine particles in the atmosphere, combine with water vapour and precipitate as sulphuric acid or nitric acid in rain, snow, or fog. The dry forms are acidic gases or particulates.

Acid Solution

Any water solution that has more hydrogen ions (H⁺) than hydroxide ions (OH⁻); any water solution with a pH less than 7.

Adiabatic Process

A thermodynamic change of state of a system such that no heat or mass is transferred across the boundaries of the system. In an adiabatic process, expansion always results in cooling, and compression in warming.

Additives

A substance added to something in small quantities to improve or preserve it

Aerobic

A life or process that occurs in and is dependent upon oxygen.

Aerosol

Particulate matter, solid or liquid, larger than a molecule but small enough to remain suspended in the atmosphere. Natural sources include salt particles from sea spray, dust and clay particles as a result of weathering of rocks, both of which

are carried upward by the wind. Aerosols can also originate as a result of human activities and are often considered pollutants. Aerosols are important in the atmosphere as nuclei for the condensation of water droplets and ice crystals, as participants in various chemical cycles, and as absorbers and scatters of solar radiation, thereby influencing the radiation budget of the Earth's climate system.

Afforestation

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

Agro-ecology

Agro-ecology often incorporates ideas about a more environmentally and socially sensitive approach to agriculture, one that focuses not only on production, but also on the ecological sustainability of the productive system. This implies a number of features about society and production that go well beyond the limits of the agricultural field.

Agro-biodiversity

A fundamental feature of farming systems around the world. It encompasses many types of biological resources tied to agriculture, including:

- genetic resources - the essential living materials of plants and animals;
- edible plants and crops, including traditional varieties, cultivars, hybrids, and other genetic material developed by breeders; and
- livestock (small and large, lineal breeds or thoroughbreds) and freshwater fish;
- soil organisms vital to soil fertility, structure, quality, and soil health;
- naturally occurring insects, bacteria, and fungi that control insect pests and diseases of domesticated plants and animals;
- agro-ecosystem components and types (polycultural/monocultural, small/large scale, rain-fed/irrigated, etc.) indispensable for nutrient cycling, stability, and productivity; and
- 'wild' resources (species and elements) of natural habitats and landscapes that can provide services (for example, pest control and

ecosystem stability) to agriculture.

Agri-environmental indicator

Measures change either in the state of environmental resources used or affected by agriculture, or in farming activities that affect the state of these resources. Examples of sustainable agriculture processes monitored by such indicators are soil quality, water quality, agro-ecosystem, biodiversity, climatic change, farm resource management, and production efficiency.

Air pollution

One or more chemicals or substances in high enough concentrations in the air to harm humans, other animals, vegetation, or materials. Such chemicals or physical conditions (such as excess heat or noise) are called air pollutants.

Albedo

The fraction of the total solar radiation incident on a body that is reflected by it. Albedo can be expressed as either a percentage or a fraction of 1. Snow covered areas have a high albedo (up to about 0.9 or 90%) due to their white color, while vegetation has a low albedo (generally about 0.1 or 10%) due to the dark color and light absorbed for photosynthesis. Clouds have an intermediate albedo and are the most important contributor to the Earth's albedo. The Earth's aggregate albedo is approximately 0.3.

Alliance of Small Island States (AOSIS)

The group of Pacific and Caribbean nations who call for relatively fast action by developed nations to reduce greenhouse gas emissions. The AOSIS countries are concerned by the effects of rising sea levels and increased storm activity predicted to accompany global warming. Its plan is to hold Annex I Parties to a 20 percent reduction in carbon dioxide emissions by the year 2005.

Alien Species

An alien species is a species introduced outside its normal distribution. Species occurring in ecosystems to which they are not indigenous. The terms used include, 'exotic', 'foreign', 'non-indigenous', 'non-native', 'alien' etc. IUCN - the World Conservation Union uses the term 'alien' consistently to encompass all the above terms. CBD Subsidiary Body on Scientific, Technical and Technological Advice defines alien species as a species occurring outside its normal distribution.

Alkalinity

Having the properties of a base with a pH of more than 7. A common alkaline is baking soda.

Alternative energy

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

Anaerobic

A life or process that occurs in, or is not destroyed by, the absence of oxygen.

Anaerobic decomposition

The breakdown of molecules into simpler molecules or atoms by microorganisms that can survive in the partial or complete absence of oxygen.

Anaerobic lagoon

A liquid-based manure management system, characterized by waste residing in water to a depth of at least six feet for a period ranging between 30 and 200 days. Bacteria produce methane in the absence of oxygen while breaking down waste.

Anaerobic organism

An organism that does not need oxygen to stay alive. See anaerobic.

Animal Carcasses

The remains of a dead animal that's been slaughtered for food and other purposes.

Annex I Parties

Industrialized countries that, as parties to the Framework Convention on Climate Change, have pledged to reduce their greenhouse gas emissions by the year 2000 to 1990 levels. Annex I Parties consist of countries belonging to the Organization for Economic Cooperation and Development (OECD) and countries designated as Economies-in-Transition.

Antarctic "Ozone Hole"

Refers to the seasonal depletion of stratospheric ozone in a large area over Antarctica.

Anthracite

A hard, black, lustrous coal containing a high percentage of fixed carbon and a low percentage of volatile matter. Often referred to as hard coal. See coal.

Anthropogenic

Human made. In the context of greenhouse gases, emissions that are produced as the result of human activities.

Antibiotic Resistance

The ability of bacteria and other microorganisms

to reduce the effectiveness of an antibiotic which they were once sensitive to. Antibiotic resistance is a major concern of overuse of antibiotics. Antibiotic resistance is also known as drug resistance.

Arable land

Land that can be cultivated to grow crops.

Area search

The Area Search is a quantitative, habitat specific survey method that is widely applicable in most habitats. The method involves a time-constrained survey of a defined area, during which the observer records all seen or heard species, differentiating those detected inside, outside, and flying over the search area.

Aromatic

Applied to a group of hydrocarbons and their derivatives characterized by the presence of the benzene ring.

Ash

The mineral content of a product remaining after complete combustion.

Asphalt

A dark-brown-to-black cement-like material containing bitumen as the predominant constituent. It is obtained by petroleum processing. The definition includes crude asphalt as well as the following finished products: cements, fluxes, the asphalt content of emulsions (exclusive of water), and petroleum distillates blended with asphalt to make cutback asphalt.

Atmosphere

The mixture of gases surrounding the Earth. The Earth's atmosphere consists of about 79.1% nitrogen (by volume), 20.9% oxygen, 0.036% carbon dioxide and trace amounts of other gases. The atmosphere can be divided into a number of layers according to its mixing or chemical characteristics, generally determined by its thermal properties (temperature). The layer nearest the Earth is the troposphere, which reaches up to an altitude of about 8 km (about 5 miles) in the polar regions and up to 17 km (nearly 11 miles) above the equator. The stratosphere, which reaches to an altitude of about 50 km (31 miles) lies atop the troposphere. The mesosphere which extends up to 80-90 km is atop the stratosphere, and finally, the thermosphere, or ionosphere, gradually diminishes and forms a fuzzy border with outer space. There is relatively

little mixing of gases between layers.

Atomic weight

The average weight (or mass) of all the isotopes of an element, as determined from the proportions in which they are present in a given element, compared with the mass of the 12 isotope of carbon (taken as precisely 12.000), that is the official international standard; measured in daltons.

Atoms

Minute particles that are the basic building blocks of all chemical elements and thus all matter.

B

Bacteria

One-celled organisms. Many act as decomposers that break down dead organic matter into substances that dissolve in water and are used as nutrients by plants.

Bacteriological

Relating to bacteriology or bacteria where Bacteriology refers to a branch of microbiology dealing with the identification, study, and cultivation of bacteria and with their applications in medicine, agriculture, industry, and biotechnology.

Bacillus thuringiensis(Abbreviation: Bt)

A bacterium that produces a toxin against certain insects, particularly Coleoptera and Lepidoptera; a major means of insecticide for organic farming. Some of the toxin genes are important for transgenic approaches to crop protection.

Barrel

A liquid-volume measure equal to 42 United States gallons at 60 degrees Fahrenheit; used in expressing quantities of petroleum-based products.

Baseline Emissions

The 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 (often called mitigation strategies).

Basic solution

Water solution with more hydroxide ions (OH⁻) than hydrogen ions (H⁺); water solutions with pH greater than 7.

Beach Erosion

Coastal erosion is the wearing away of land and

the removal of beach or sand dunes sediments by wave action, tidal currents, wave currents, drainage or high winds

Berlin Mandate

A ruling negotiated at the first Conference of the Parties (COP 1), which took place in March, 1995, concluding that the present commitments under the United Nations Framework Convention on Climate Change are not adequate. Under the Framework Convention, developed countries pledged to take measures aimed at returning their greenhouse gas emissions to 1990 levels by the year 2000. The Berlin Mandate establishes a process that would enable the Parties to take appropriate action for the period beyond 2000, including a strengthening of developed country commitments, through the adoption of a protocol or other legal instruments.

Bioaccumulation

A problem that can arise when a stable chemical such as a heavy metal or DDT is introduced into a natural environment. Where there are no agents present able to biodegrade it, its concentration can increase as it passes up the food chain and higher organisms may suffer toxic effects. This phenomenon may be employed beneficially for the removal of toxic metals from wastewater, and for bioremediation. See: biosorbents.

Bioassay

The assessment of a substance's activity on living cells or on organisms. Animals have been used extensively in drug research in bio-assays in the pharmaceutical and cosmetics industries. Current trends are to develop bio-assays using bacteria or animal or plant cells, as these are easier to handle than whole animals or plants, are cheaper to make and keep, and avoid the ethical problems associated with testing of animals. 2. An indirect method to detect sub-measurable amounts of a specific substance by observing a sample's influence on the growth of live material.

Bio-augmentation

Increasing the activity of bacteria that decompose pollutants; a technique used in bioremediation.

Bio-control

Pest control by biological means. Any process using deliberately introduced living organisms to restrain the growth and development of other organisms, such as the introduction of predatory insects to control an insect pest. Synonym: biological control.

Bioconversion

Conversion of one chemical into another by living organisms, as opposed to their conversion by isolated enzymes or fixed cells, or by chemical processes. Particularly useful for introducing chemical changes at specific points in large and complex molecules.

Biodegradable

Material that can be broken down into simpler substances (elements and compounds) by bacteria or other decomposers. Paper and most organic wastes such as animal manure are biodegradable.

Bio-degradation

Disintegration of materials by bacteria, fungi, or other biological methods.

Biodiversity

The variability among living organisms from all sources, including, inter alia, terrestrial, marine and other ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. Synonyms: biological diversity, ecological diversity.

Bioenergetics

The study of the flow and the transformation of energy that occur in living organisms.

Biofiltration

Biofiltration is a pollution control technique using a bioreactor containing living material to capture and biologically degrade pollutants. Common uses include processing waste water, capturing harmful chemicals or silt from surface runoff, and microbotic oxidation of contaminants in air.

Biofuel

Gas or liquid fuel made from plant material (biomass). Includes 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.

Biogeochemical Cycle

Natural processes that recycle nutrients in various chemical forms from the environment, to organisms, and then back to the environment. Examples are the carbon, oxygen, nitrogen, phosphorus, and hydrologic cycles.

Biological Control/Bio-control

Biological control is, generally, human's use of a specially chosen living organism to control a particular pest. This chosen organism might be a predator, parasite, or disease which will attack the harmful insect. It is a form of manipulating nature to increase a desired effect. A complete Biological Control program may range from choosing a pesticide which will be least harmful to beneficial insects, to raising and releasing one insect to have it attack another, almost like a 'living insecticide.

Biological oxygen demand

Amount of dissolved oxygen needed by aerobic decomposers to break down the organic materials in a given volume of water at a certain temperature over a specified time period.

Biomass

Total dry weight of all living organisms that can be supported at each trophic level in a food chain. Also, materials that are biological in origin, including organic material (both living and dead) from above and below ground, for example, trees, crops, grasses, tree litter, roots, and animals and animal waste.

Biomass energy

Energy produced by combusting biomass materials such as wood. The carbon dioxide emitted from burning biomass will not increase total atmospheric carbon dioxide if this consumption is done on a sustainable basis (i.e., if in a given period of time, regrowth of biomass takes up as much carbon dioxide as is released from biomass combustion). Biomass energy is often suggested as a replacement for fossil fuel combustion.

Bio-Methanation

Methanogenesis or biomethanation is the formation of methane by microbes known as methanogens.

Biosphere

The living and dead organisms found near the earth's surface in parts of the lithosphere, atmosphere, and hydrosphere. The part of the global carbon cycle that includes living organisms and biogenic organic matter.

Bioremediation

The use of either naturally occurring or deliberately introduced microorganisms to consume and break down environmental pollutants, in order to clean a polluted site.

Biosequestration

Biosequestration is the capture and storage of dead biota by biological/physical processes.

Biotic

Living. Living organisms make up the biotic parts of ecosystems.

Biowaste

These are the wastes (such as manure, sawdust, or food scraps) that are majorly composed of organic matter.

Bitumen

Goosey, black, high-sulfur, heavy oil extracted from tar sand and then upgraded to synthetic fuel oil.

Bituminous coal

A dense, black, soft coal, often with well-defined bands of bright and dull material. The most common coal, with moisture content usually less than 20 percent. Used for generating electricity, making coke, and space heating. See coal.

BOD (Biochemical Oxygen Demand)

The biochemical oxygen demand of wastewater during decomposition occurring over a 5-day period. A measure of the organic content of wastewater.

Boreal

Of or relating to the forest areas of the northern North Temperate Zone, dominated by coniferous trees such as spruce, fir, and pine.

Borehole

Any exploratory hole drilled into the Earth or ice to gather geophysical data. Climate researchers often take ice core samples, a type of borehole, to predict atmospheric composition in earlier years.

British thermal unit

The quantity of heat required to raise the temperature of one pound of water one degree of Fahrenheit at or near 39.2 degrees Fahrenheit.

Bunker fuel

Fuel supplied to ships and aircraft for international transportation, irrespective of the flag of the carrier, consisting primarily of residual and distillate fuel oil for ships and jet fuel for aircraft.

Bus

A rubber-tired, self-propelled, manually steered vehicle that is generally designed to transport 30 individuals or more. Bus types include intercity, school and transit.

C

Cadastral map

A cadastral map is a map defining land ownership. The land register cadastral map is further defined by the Act as a map showing all registered geospatial data relating to registered plots. The cadastral map consists of cadastral units, each of which represents a single registered plot of land.

Carbon black

An amorphous form of carbon, produced commercially by thermal or oxidative decomposition of hydrocarbons and used principally in rubber goods, pigments, and printer's ink.

Carbon cycle

All carbon reservoirs and exchanges of carbon from reservoir to reservoir by various chemical, physical, geological, and biological processes. Usually thought of as a series of the four main reservoirs of carbon interconnected by pathways of exchange. The four reservoirs, regions of the Earth in which carbon behaves in a systematic manner, are the atmosphere, terrestrial biosphere (usually includes freshwater systems), oceans, and sediments (includes fossil fuels). Each of these global reservoirs may be subdivided into smaller pools, ranging in size from individual communities or ecosystems to the total of all living organisms (biota).

Carbon dioxide

A colourless, odourless, non-poisonous gas that is a normal part of the ambient air. Carbon dioxide is a product of fossil fuel combustion. Although carbon dioxide does not directly impair human health, it is a greenhouse gas that traps terrestrial (i.e., infrared) radiation and contributes to the potential for global warming.

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.

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

Carbon Equivalent

A metric measure used to compare the emissions

of different greenhouse gases based upon their global warming potential (GWP). Greenhouse gas emissions in the U.S. are most commonly expressed as "million metric tons of carbon equivalents" (MMTCE). Global warming potentials are used to convert greenhouse gases to carbon dioxide equivalents - they can be converted to carbon equivalents by multiplying by 12/44 (the ratio of the molecular weight of carbon to carbon dioxide). The formula for carbon equivalents is:

$MMTCE = (\text{million metric tons of a gas}) * (\text{GWP of the gas}) * (12/44)$

Carbon footprint

the amount of carbon dioxide released into the atmosphere as a result of the activities of a particular individual, organization, or community.

Carbon intensity

The relative amount of carbon emitted per unit of energy or fuels consumed.

Carbon pool

The reservoir containing carbon as a principal element in the geochemical cycle.

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. It has been proposed as a way to capture and slow the atmospheric and marine accumulation of Carbon dioxide through biological, chemical or physical processes.

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.

Carbon tetrachloride

A compound consisting of one carbon atom and four chlorine atoms. It is an ozone depleting substance. Carbon tetrachloride was widely used as a raw material in many industrial applications, including the production of chlorofluorocarbons, and as a solvent. Solvent use was ended in the United States when it was discovered to be carcinogenic.

Catastrophic

Involving or causing sudden great damage or suffering.

Chemical reaction

Interaction between chemicals in which there is a change in the chemical composition of the elements or compounds involved.

Chlorofluorocarbons

Organic compounds made up of atoms of carbon, chlorine, and fluorine. An example is CFC-12 (CCl_2F_2), used as a refrigerant in refrigerators and air conditioners and as a foam blowing agent. Gaseous CFCs can deplete the ozone layer when they slowly rise into the stratosphere, are broken down by strong ultraviolet radiation, release chlorine atoms, and then react with ozone molecules.

Climate

The average weather, usually taken over a 30 year time period, for a particular region and time period. Climate is not the same as weather, but rather, 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

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.

Climate feedback

An atmospheric, oceanic, terrestrial, or other process that is activated by 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 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.

Climate model

A quantitative way of representing the interactions of the atmosphere, oceans, land surface, and ice. Models can range from relatively simple to quite comprehensive.

Climate modelling

The simulation of the climate using computer-based models.

Climate sensitivity

The equilibrium response of the climate to a change in radiative forcing, for example, a doubling of the carbon dioxide concentration.

Climate system (or Earth system)

The atmosphere, the oceans, the biosphere, the cryosphere, and the geosphere, together make up the climate system.

Coal

A black or brownish black solid, combustible substance formed by the partial decomposition of vegetable matter without access to air. The rank of coal, which includes anthracite, bituminous coal, sub bituminous coal, and lignite, is based on fixed carbon, volatile matter, and heating value. Coal rank indicates the progressive alteration, or coalification, from lignite to anthracite.

Coal coke

A hard, porous product made from baking bituminous coal in ovens at temperatures as high as 2,000 degrees Fahrenheit. It is used both as a fuel and as a reducing agent in smelting iron ore in a blast furnace.

Coal gasification

Conversion of solid coal to synthetic natural gas (SNG) or a gaseous mixture that can be burned as a fuel.

Coal liquefaction

Conversion of solid coal to a liquid fuel such as synthetic crude oil or methanol.

Coal bed methane

Methane that is produced from coalbeds in the same manner as natural gas produced from other strata. Methane is the principal component of natural gas.

Co-control benefit

The additional benefit derived from an environmental policy that is designed to control one type of pollution, while reducing the emissions

of other pollutants as well. 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 sulphur dioxide. The benefits associated with reductions in emissions of particulates and sulphur dioxide are the co-control benefits of reductions in carbon dioxide.

Cogeneration

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.

Cognitive

Mental processes of perception, memory, judgment, and reasoning, as contrasted with emotional and volitional processes.

Combustion

Chemical oxidation accompanied by the generation of light and heat.

Commercial sector

An area consisting of non-housing units such as non-manufacturing business establishments (e.g., wholesale and retail businesses), health and educational institutions, and government offices.

Compost

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

Composting

Partial breakdown of organic plant and animal matter by aerobic bacteria to produce a material that can be used as a soil conditioner or fertilizer.

Compound

Combination of two or more different chemical elements held together by chemical bonds.

Concentration

Amount of a chemical in a particular volume or weight of air, water, soil, or other medium. See parts per billion, parts per million.

Conference of the Parties

The supreme body of the United Nations Framework Convention on Climate Change (UNFCCC). It comprises more than 170 nations that have ratified the Convention. Its first session was held in Berlin, Germany, in 1995 and it is

expected to continue meeting on a yearly basis. The COP's role is to promote and review the implementation of the Convention. It will periodically review existing commitments in light of the Convention's objective, new scientific findings, and the effectiveness of national climate change programs.

Coniferous trees

Cone-bearing trees, mostly evergreens, that have needle-shaped or scale-like leaves. They produce wood known commercially as softwood.

Conservation Tillage

Conservation Tillage is a term that covers a broad range of soil tillage systems that leave residue cover on the soil surface, substantially reducing the effects of soil erosion from wind and water. These practices minimize nutrient loss, decreased water storage capacity, crop damage, and decreased farmability. The soil is left undisturbed from harvest to planting except for nutrient amendment. Weed control is accomplished primarily with herbicides, limited cultivation, and with cover crops. Some specific types of conservation tillage are Minimum Tillage, Zone Tillage, No-till, Ridge-till, Mulch-till, Reduced-till, Strip-till, Rotational Tillage and Crop Residue Management.

Criteria pollutant

A pollutant determined to be hazardous to human health and regulated under EPA's National Ambient Air Quality Standards. The 1970 amendments to the Clean Air Act require EPA to describe the health and welfare impacts of a pollutant as the "criteria" for inclusion in the regulatory regime. Emissions of the criteria pollutants CO, NO_x, NMVOCs, and SO₂.

Crop residue

Organic residue remaining after the harvesting and processing of a crop.

Crop rotation

Planting the same field or areas of fields with different crops from year to year to reduce depletion of soil nutrients. A plant such as corn, tobacco, or cotton, which remove large amounts of nitrogen from the soil, is planted one year. The next year a legume such as soybeans, which add nitrogen to the soil, is planted.

Crude oil

A mixture of hydrocarbons that exist in liquid phase in underground reservoirs and remain liquid at atmospheric pressure after passing through surface separating facilities.

Cryosphere

The frozen part of the Earth's surface. The cryosphere includes the polar ice caps, continental ice sheets, mountain glaciers, sea ice, snow cover, lake and river ice, and permafrost.

D**Deciduous trees**

Trees such as oaks and maples that lose their leaves during part of the year.

Decomposition

The breakdown of matter by bacteria and fungi. It changes the chemical composition and physical appearance of the materials.

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.

Demographics

Statistical data relating to the population and particular groups within it

Depolymerisation

Depolymerization (or depolymerisation) is the process of converting a polymer into a monomer or a mixture of monomers. All polymers depolymerize at high temperatures, a process driven by an increase in entropy.

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.

Detergent

Substance which lowers the surface tension of a solution, improving its cleaning properties.

Distillate fuel oil

A general classification for the petroleum fractions produced in conventional distillation operations. Used primarily for space heating, on and off-highway diesel engine fuel (including railroad engine fuel and fuel for agricultural machinery), and electric power generation.

E**Ecological characterization**

Ecological characterization is a structured approach to the synthesis of human, physical, and ecological information for management purposes

Ecological Footprint (EFT)

The term introduced by William Rees in 1992. It is a measure of how much land and water is needed to produce the resources we consume and to dispose of the waste we produce. A calculation that estimates the area of Earth's productive land and water required to supply the resources that an individual or group demands, as well as to absorb the wastes that the individual or group produces.

Ecological niche

An ecological niche is the role and position a species has in its environment; how it meets its needs for food and shelter, how it survives, and how it reproduces. A species' niche includes all of its interactions with the biotic and abiotic factors of its environment.

Eco-rehabilitation

Restoration of damaged aquatic and terrestrial ecosystems, as a way to reduce further ecological deficits and economic losses

Economy

System of production, distribution, and consumption of goods.

Ecorestoration

Ecosystem Restoration is the "process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed" (SER Primer, 2004)

Ecosystem

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

ecological unit. Ecosystems have no fixed boundaries; instead their parameters are set to the scientific, management, or policy question being examined. Depending upon the purpose of analysis, a single lake, a watershed, or an entire region could be considered an ecosystem.

Ecotones

An ecotone is a transition area between two biomes. It is where two communities meet and integrate. It may be narrow or wide, and it may be local (the zone between a field and forest) or regional (the transition between forest and grassland ecosystems).

Electrons

Tiny particle moving around outside the nucleus of an atom. Each electron has one unit of negative charge (-) and almost no mass.

Electrostatic Precipitator

A Device that removes suspended dust particles from a gas or exhaust by applying a high-voltage electrostatic charge and collecting the particles on charged plates

Element

Chemicals such as hydrogen (H), iron (Fe), sodium (Na), carbon (C), nitrogen (N), or oxygen (O), whose distinctly different atoms serve as the basic building blocks of all matter. There are 92 naturally occurring elements. Another 15 have been made in laboratories. Two or more elements combine to form compounds that make up most of the world's matter.

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.

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

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

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).

Endemic

Species characteristic of or prevalent in a particular or restricted locality or region.

Energy conservation

Reduction or elimination of unnecessary energy use and waste.

Energy intensity

Ratio between the consumption of energy to a given quantity of output; usually refers to the amount of primary or final energy consumed per unit of gross domestic product.

Energy quality

Ability of a form of energy to do useful work. High-temperature heat and the chemical energy in fossil fuels and nuclear fuels are concentrated high quality energy. Low-quality energy such as low-temperature heat is dispersed or diluted and cannot do much useful work.

Energy

The capacity for doing work as measured by the capability of doing work (potential energy) or the conversion of this capability to motion (kinetic energy). Energy has several forms, some of which are easily convertible and can be changed to another form useful for work. Most of the world's convertible energy comes from fossil fuels that are burned to produce heat that is then used as a transfer medium to mechanical or other means in order to accomplish tasks. In the United States, electrical energy is often measured in kilowatt-

hours (kWh), while heat energy is often measured in British thermal units (BTU).

Energy-efficiency

The ratio of the useful output of services from an article of industrial equipment to the energy use by such an article; for example, vehicle miles travelled per gallon of fuel (mpg).

Enhanced greenhouse effect

The concept that the natural greenhouse effect has been enhanced by anthropogenic emissions of greenhouse gases. Increased concentrations of carbon dioxide, methane, and nitrous oxide, CFCs, HFCs, PFCs, SF₆, NF₃ and other photochemically important gases caused by human activities such as fossil fuel consumption, trap more infra-red radiation, thereby exerting a warming influence on the climate.

Enhanced oil recovery

Removal of some of the heavy oil left in an oil well after primary and secondary recovery.

Enteric fermentation

A digestive process by which carbohydrates are broken down by microorganisms into simple molecules for absorption into the bloodstream of an animal.

Environment

All external conditions that affect an organism or other specified system during its lifetime.

Environmental risks

Actual or potential threat of adverse effects on living organisms and environment by effluents, emissions, wastes, resource depletion, etc., arising out of human activities.

Ethanol (C₂H₅OH)

Otherwise known as ethyl alcohol, alcohol, or grain spirit. A clear, colorless, flammable oxygenated hydrocarbon with a boiling point of 78.5 degrees Celsius in the anhydrous state. In transportation, ethanol is used as a vehicle fuel by itself (E100), blended with gasoline (E85), or as a gasoline octane enhancer and oxygenate (10 percent concentration).

Ethnobotanical

Ethnobotany is the study of a region's plants and their practical uses through the traditional knowledge of a local culture and people

Ethnozoological

Ethnozoology is the study of the past and present interrelationships between human cultures and the animals in their environment. It includes classification and naming of zoological forms, cultural knowledge and use of wild and domestic animals

Evapotranspiration

The loss of water from the soil by evaporation and by transpiration from the plants growing in the soil, which rises with air temperature.

Exponential growth

Growth in which some quantity, such as population size, increases by a constant percentage of the whole during each year or other time period; when the increase in quantity over time is plotted, this type of growth yields a curve shaped like the letter J.

E-Waste

Discarded broken or obsolete electronic components and appliances such as mobile phones, computers, televisions, motherboards etc.

F

Feedback Mechanisms

A mechanism that connects one aspect of a system to another. The connection can be either amplifying (positive feedback) or moderating (negative feedback).

Feedlot

Confined outdoor or indoor space used to raise hundreds to thousands of domesticated livestock.

Fertile

Capable of breeding and reproduction.

Fertilization

A term used to denote efforts to enhance plant growth by increased application of nitrogen-based fertilizer or increased deposition of nitrates in precipitation.

Fertilization, Carbon Dioxide

An expression (sometimes reduced to fertilization) used to denote increased plant growth due to a higher carbon dioxide concentration.

Fertilizer

Any substance that is added to soil in order to

increase its productivity. Fertilizers can be of biological origin (e.g. composts), or they can be synthetic (artificial fertilizer). Substance that adds inorganic or organic plant nutrients to soil and improves its ability to grow crops, trees, or other vegetation.

Flaring

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

Flue Gas

Mixture of gases produced by the burning of fuel or other materials in power stations and industrial plants and extracted via ducts

Fluidized Bed Combustion (FBC)

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.

Fluorocarbons

Carbon-fluorine compounds that often contain other elements such as hydrogen, chlorine, or bromine. Common fluorocarbons include chlorofluorocarbons (CFCs), hydrochlorofluorocarbons (HCFCs), hydro-fluorocarbons (HFCs), and per-fluorocarbons (PFCs).

Fog

Fine particles of liquid suspended in the air, such as of water in a fog chamber used for acclimatizing recent ex vitro transplants. See: mist propagation.

Food Circle

A dynamic, community-based and regionally-integrated food systems concept/model. In effect, it is a systems ecology. In contrast to current linear production-consumption systems, the food circle is a production-consumption-recycle model. A celebration of cycles, this model mirrors all natural systems and is based on the fact that all stable, biological and other systems function as closed cycles or circles, carefully preserving energy, nutrients, resources and the integrity of the whole.

Forcing Mechanism

A process that alters the energy balance of the climate system, i.e. changes the relative balance between incoming solar radiation and outgoing infrared radiation from Earth. Such mechanisms include changes in solar irradiance, volcanic eruptions, and enhancement of the natural

greenhouse effect by emission of carbon dioxide.

Forest

Terrestrial ecosystem (biome) with enough average annual precipitation (at least 76 centimetres or 30 inches) to support growth of various species of trees and smaller forms of vegetation.

Fossil

The remains or impression of a prehistoric plant or animal embedded in rock and preserved in petrified form

Fossil fuel

A general term for buried combustible geologic deposits of organic materials, formed from decayed plants and animals that have been converted to crude oil, coal, natural gas, or heavy oils by exposure to heat and pressure in the earth's crust over hundreds of millions of years.

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 by 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.

Fugitive emissions

Unintended gas leaks from the processing, transmission, and/or transportation of fossil fuels, CFCs from refrigeration leaks, SF6 from electrical power distributor, etc.

G

Gasohol

Vehicle fuel consisting of a mixture of gasoline and ethyl or methyl alcohol; typically 10 to 23 percent ethanol by volume.

Gasification

Gasification is a process that converts organic- or fossil fuel-based carbonaceous materials into carbon monoxide, hydrogen and carbon dioxide

General Aviation

That portion of civil aviation, which encompasses all facets of aviation except air carriers. It includes any air taxis, commuter air carriers, and air travel clubs, which do not hold Certificates of Public

Convenience and Necessity.

General Circulation Model (GCM)

A global, three-dimensional computer model of the climate system which can be used to simulate human-induced climate change. GCMs are highly complex and they represent the effects of such factors as reflective and absorptive properties of atmospheric water vapor, greenhouse gas concentrations, clouds, annual and daily solar heating, ocean temperatures and ice boundaries. The most recent GCMs include global representations of the atmosphere, oceans, and land surface.

Genome

1. The entire complement of genetic material (genes plus non-coding sequences) present in each cell of an organism, virus or organelle.
2. The complete set of chromosomes (hence of genes) inherited as a unit from one parent.

Genus (pl.: Genera)

A group of closely related species, whose perceived relationship is typically based on physical resemblance, now often supplemented with DNA sequence data.

Geographical Information System (GIS)

A Computer software designed to store, retrieve, manage, display, and analyze all types of geographic and spatial data

Geology

The science which deals with the physical structure and substance of the earth, their history, and the processes which act on them

Geospatial

Pertaining to the geographic location and characteristics of natural or constructed features and boundaries on, above or below the earth's surface; especially referring to data that is geographic and spatial in nature

Geo-sphere

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

Geothermal energy

Heat transferred from the earth's molten core to under-ground deposits of dry steam (steam with no water droplets), wet steam (a mixture of steam and water droplets), hot water, or rocks lying fairly

close to the earth's surface.

Global Positioning System (GPS)

A system of Earth orbiting satellites, transmitting signals towards the Earth that enables the position of a receiving device on or near the Earth's surface. The receiving device is a hand-held instrument, which gives information of global position of itself based on satellite signals, in the form of X (Latitude), Y (Longitude) and Z (Altitude). It also shows direction, time and speed in real time frame through receiving signals of minimum four satellites.

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. 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.

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). The chart below shows the original GWPs (assigned in 1990) and the most recent GWPs (assigned in 1996) for the most important greenhouse gases.

GAS	GWP 1990	GWP 1996
Carbon Dioxide	1	1
Methane	22	21
Nitrous Oxide	270	310
HFC-134a	1,200	1,300
HFC-23	10,000	11,700
HFC-152a	150	140
HCF-125	NA*	2,800
PFCs**	5,400	7,850
SF6	NA*	23,900

* Not Applicable. GWP was not yet estimated for this gas.

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

Grassland

Terrestrial ecosystem (biome) found in regions where moderate annual average precipitation (25 to 76 centimetres or 10 to 30 inches) is enough to support the growth of grass and small plants but not enough to support large stands of trees.

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

Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include water vapour, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), halogenated fluorocarbons (HCFCs), ozone (O₃), per-fluorinated carbons (PFCs), and hydrofluorocarbons (HFCs).

H

Habitat

The natural home or environment of an animal, plant, or other organism. A habitat is made up of physical factors such as soil, moisture, range of temperature, and availability of light as well as biotic factors such as the availability of food and the presence of predators

Halocarbons

Chemicals consisting of carbon, sometimes hydrogen, and either chlorine, fluorine bromine or iodine.

Halons

Compounds, also known as bromo-fluorocarbons, that contain bromine, fluorine, and carbon. They are generally used as fire extinguishing agents and cause ozone depletion. Bromine is many times more effective at destroying stratospheric ozone than chlorine.

Hazardous

Dangerous

Heat

Form of kinetic energy that flows from one body to another when there is a temperature difference between the two bodies. Heat always flows

spontaneously from a hot sample of matter to a colder sample of matter. This is one way to state the second law of thermodynamics.

Heat content

The amount of heat per unit mass released upon complete combustion.

Higher heating value

Quantity of heat liberated by the complete combustion of a unit volume or weight of a fuel assuming that the produced water vapour is completely condensed and the heat is recovered; also known as gross calorific value.

Histosol

Wet organic soils, such as peats and mucks.

Holistic

Characterized by the belief that the parts of something are intimately interconnected and explicable only by reference to the whole

Hydrocarbons

Substances containing only hydrogen and carbon. Fossil fuels are made up of hydrocarbons. Some hydrocarbon compounds are major air pollutants.

Hydro-chlorofluorocarbons (HCFCs)

Compounds containing hydrogen, fluorine, chlorine, and carbon atoms. Although ozone depleting substances, they are less potent at destroying stratospheric ozone than chlorofluorocarbons (CFCs). They have been introduced as temporary replacements for CFCs and are also greenhouse gases.

Hydroelectric power plant

Structure in which the energy of fading or flowing water spins a turbine generator to produce electricity.

Hydrofluorocarbons (HFCs)

Compounds containing only hydrogen, fluorine, and carbon atoms. They were introduced as alternatives to ozone depleting substances in serving many industrial, commercial, and personal needs. HFCs are emitted as by-products of industrial processes and are also used in manufacturing. They do not significantly deplete the stratospheric ozone layer, but they are powerful greenhouse gases with global warming potentials ranging from 140 (HFC-152a) to 11,700 (HFC-23).

Hydrological

The scientific study of the properties, distribution,

and effects of water as a liquid, solid, or gas on the Earth's surface, in the soil and underlying rocks, and in the atmosphere

Hydrologic cycle

The process of evaporation, vertical and horizontal transport of vapor, condensation, precipitation, and the flow of water from continents to oceans. It is a major factor in determining climate through its influence on surface vegetation, the clouds, snow and ice, and soil moisture. The hydrologic cycle is responsible for 25 to 30 percent of the mid-latitudes' heat transport from the equatorial to polar regions.

Hydrology

The branch of science concerned with the properties of the earth's water, and especially its movement in relation to land.

Hydropower

Electrical energy produced by falling or flowing water.

Hydrosphere

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

I

Ice core

A cylindrical section of ice removed from a glacier or an ice sheet in order to study climate patterns of the past. By performing chemical analyses on the air trapped in the ice, scientists can estimate the percentage of carbon dioxide and other trace gases in the atmosphere at that time.

Implications

The conclusion that can be drawn from something although it is not explicitly stated.

Incineration

A waste treatment process that involves the combustion of organic substances contained in waste materials.

Inclement Weather

Inclement usually refers to severe or harsh weather that is cold and wet. When packing for a trip to the Caribbean bring tank tops and shorts, but don't forget a raincoat in case of inclement weather.

Indigenous

Native and originating or occurring naturally in a

particular place.

Industrialization

Development of industries in a country or region on a wide scale. It is a process that happens in a country or region when people start using machines to do works that was once done manually.

Industrial sector

Construction, manufacturing, agricultural and mining establishments.

Infestation

Presence of an unusually large number of insects or animals in a place that can typically cause damage or disease

Infrared radiation

The heat energy that is emitted from all solids, liquids, and gases. In the context of the greenhouse issue, the term refers to the heat energy emitted by the Earth's surface and its atmosphere. Greenhouse gases strongly absorb this radiation in the Earth's atmosphere, and radiate some back towards the surface, creating the greenhouse effect.

Inorganic compound

Combination of two or more elements other than those used to form organic compounds.

Intergovernmental Panel on Climate Change (IPCC)

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.

Irreversibilities

Changes that, once set in motion, cannot be reversed, at least on human time scales.

J

Jet fuel

Includes both naphtha-type and kerosene-type fuels meeting standards for use in aircraft turbine engines. Although most jet fuel is used in aircraft, some is used for other purposes such as generating electricity.

Joint implementation

Agreements made between two or more nations under the auspices of the United Nations Framework Convention on Climate Change to help reduce greenhouse gas emissions.

Joule

The energy required to push with a force of one Newton for one meter.

K

Kerogen

Solid, waxy mixture of rock is heated to high temperatures, the kerogen is vaporized. The vapor is condensed and then sent to a refinery to produce gasoline, heating oil, and other products.

Kerosene

A petroleum distillate that has a maximum distillation temperature of 401 degrees Fahrenheit at the 10 percent recovery point, a final boiling point of 572 degrees Fahrenheit, and a minimum flash point of 100 degrees Fahrenheit. Used in space heaters, cook-stoves, and water heaters, and suitable for use as an illuminant when burned in wick lamps.

Kyoto Protocol

This is an international agreement struck by 159 nations attending the Third Conference of Parties (COP) to the United Nations Framework Convention on Climate Change (held in December of 1997 in Kyoto Japan) to reduce worldwide emissions of greenhouse gases. If ratified and put into force, individual countries have committed to reduce their greenhouse gas emissions by a specified amount.

L

Landfill

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

Leachate

Water that has percolated through a solid and leached out some of the constituents

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).

Light-duty vehicles

Automobiles and light trucks combined.

Lignite

A brownish-black coal of low rank with high inherent moisture and volatile matter content, used almost exclusively for electric power generation.

Linear Economy

Economy where the raw materials are used to make a product, and after its use any waste (e.g. packaging) is thrown away.

Liquefied Natural Gas (LNG)

Natural gas converted to liquid form by cooling to a very low temperature.

Liquefied Petroleum Gas (LPG)

Ethane, ethylene, propane, propylene, normal butane, butylene, and isobutane produced at refineries or natural gas processing plants, including plants that fractionate new natural gas plant liquids.

Litter

Un-decomposed plant residues on the soil surface.

Long Wave Radiation

The radiation emitted in the spectral wavelength greater than 4 micrometers corresponding to the radiation emitted from the Earth and atmosphere. It is sometimes referred to as terrestrial radiation or infrared radiation, although somewhat imprecisely.

Low Emission Vehicle (LEV)

A vehicle meeting the low-emission vehicle standards.

Lower Heating Value

Quantity of heat liberated by the complete combustion of a unit volume or weight of a fuel assuming that the produced water remains as a vapor and the heat of the vapor is not recovered; also known as net calorific value.

Lubricant

A substance used to reduce friction between bearing surfaces or as a process material, either incorporated into other materials used as aids in manufacturing processes or as carriers of other materials. Petroleum lubricants may be produced either from distillates or residues. Other substances may be added to impart or improve useful properties. Does not include by-products of lubricating oil from solvent extraction or tars derived from de-asphalting. Lubricants include all grades of lubricating oils from spindle oil to cylinder oil and those used in greases. Lubricant categories are paraffinic and naphthenic.

M

Macroanimals

A large and usually polymorphic biological species markedly discontinuous from its congeners

Macroorganisms

Macroorganisms are large enough to be seen by an unaided eye. No optical instruments such as microscopes and lens are necessary to see them. For instance, macrobenthos such as crustaceans and mollusks in the sea floor and millipedes, snails and mites in soil

Malnutrition

Lack of proper nutrition, caused by not having enough to eat, not eating enough of the right things, or being unable to use the food that one does eat.

Manure

Dung and urine of animals that can be used as a

form of organic fertilizer.

Mass balance

The application of the principle of the conservation of matter.

Mauna Loa

An intermittently active volcano (elevation: 13,680 feet; 4,170 meters) on the island of Hawaii.

Menstrual Hygiene

Menstrual Hygiene refers to the state of a women and adolescent girl's body when she can avail a clean menstrual management material to absorb or collect blood that can be changed in privacy as often as necessary for the duration of the menstruation period, using soap and water for washing the body as required, and having access to facilities to dispose of used menstrual management materials.

Methane (CH₄)

A hydrocarbon that is a greenhouse gas with a global warming potential most recently estimated at 21. Methane is produced through anaerobic (without oxygen) decomposition of waste in landfills, animal digestion, decomposition of animal wastes, production and distribution of natural gas and petroleum, coal production, and incomplete fossil fuel combustion. The atmospheric concentration of methane as been shown to be increasing at a rate of about 0.6 percent per year and the concentration of about 1.7 per million by volume (ppmv) is more than twice its pre-industrial value. However, the rate of increase of methane in the atmosphere may be stabilizing.

Methanol (CH₃OH)

A colorless poisonous liquid with essentially no odor and little taste. It is the simplest alcohol with a boiling point of 64.7 degrees Celsius. In transportation, methanol is used as a vehicle fuel by itself (M100), or blended with gasoline (M85).

Methanotrophic

Having the biological capacity to oxidize methane to CO₂ and water by metabolism under aerobic conditions.

Methyl bromide (CH₃Br)

An effective pesticide; used to fumigate soil and many agricultural products. Because it contains

bromine, it depletes stratospheric ozone when released to the atmosphere.

Meteorology

The science of weather-related phenomena.

Metric Ton

Common international measurement for the quantity of greenhouse gas emissions. A metric ton is equal to 2205 lbs or 1.1 short tons.

Microclimate

The climate of a very small or restricted area, especially when this differs from the climate of the surrounding area.

Microenterprise

A microenterprise is a small business that employs a small number of employees that usually operates with fewer than 10 people and small amount of capital.

Microfibers

Fine variety of synthetic yarn

Mineral

Any naturally occurring inorganic substance found in the earth's crust as a crystalline solid.

Mitigation

The action of reducing the severity, seriousness, or painfulness of something.

Model year

Refers to the "sales" model year; for example, vehicles sold during the period from October 1 to the next September 31 is considered one model year.

Molecule

Chemical combination of two or more atoms of the same chemical element (such as O₂) or different chemical elements (such as H₂O).

Monitoring

Act of Observing and checking the progress or quality of (something) over a period of time; keep under systematic review.

Montreal Protocol on Substances that Deplete the Ozone Layer

The Montreal Protocol and its amendments control the phase-out of ozone depleting substances production and use. Under the Protocol, several international organizations report on the science of ozone depletion, implement projects to help

move away from ozone depleting substances, and provide a forum for policy discussions. In the United States, the Protocol is implemented under the Clean Air Act Amendments of 1990.

Mortality

The state of being subject to death.

Motor gasoline

A complex mixture of relatively volatile hydrocarbons, with or without small quantities of additives, obtained by blending appropriate refinery streams to form a fuel suitable for use in spark-ignition engines. Motor gasoline includes both leaded and unleaded grades of finished gasoline, blending components, and gasohol.

Mount Pinatubo

A volcano in the Philippine Islands that erupted in 1991. The eruption of Mount Pinatubo ejected enough particulate and sulfate aerosol matter into the atmosphere to block some of the incoming solar radiation from reaching Earth's atmosphere. This effectively cooled the planet from 1992 to 1994, masking the warming that had been occurring for most of the 1980s and 1990s.

Mulch

A protective covering, as of bark chips, straw, or plastic sheeting, placed on the ground around plants to suppress weed growth, retain soil moisture, or prevent freezing of roots.

Municipal solid waste (MSW)

Residential solid waste and some non-hazardous commercial, institutional, and industrial wastes. This material is generally sent to municipal landfills for disposal.

N

Naphtha

A generic term applied to a petroleum fraction with an approximate boiling range between 122 and 400 degrees Fahrenheit.

Natural gas

Underground deposits of gases consisting of 50 to 90 percent methane (CH₄) and small amounts of heavier gaseous hydrocarbon compounds such as propane (C₃H₈) and butane (C₄H₁₀).

Natural gas liquids (NGLs)

Those hydrocarbons in natural gas that are separated as liquids from the gas. Includes

natural gas plant liquids and lease condensate.

Neurological

Related to the anatomy, functions, and organic disorders of nerves and the nervous system.

Niche

The function or position of a species within an ecological community. A species's niche includes the physical environment to which it has become adapted as well as its role as producer and consumer of food resources. In simple words it is the local address of a species's home in an ecosystem where it breeds, rests and perform lifecycle activities

Nitrogen cycle

Cyclic movement of nitrogen in different chemical forms from the environment, to organisms, and then back to the environment.

Nitrogen fixation

Conversion of atmospheric nitrogen gas into forms useful to plants and other organisms by lightning, bacteria, and blue-green algae; it is part of the nitrogen cycle.

Nitrogen Oxides (NO_x)

Gases consisting of one molecule of nitrogen and varying numbers of oxygen molecules. Nitrogen oxides are produced, for example, by the combustion of fossil fuels in vehicles and electric power plants. In the atmosphere, nitrogen oxides can contribute to formation of photochemical ozone (smog), impair visibility, and have health consequences; they are considered pollutants.

Nitrous Oxide (N₂O)

A powerful greenhouse gas with a global warming potential most recently evaluated at 310. 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.

Non-biodegradable

Substance that cannot be broken down in the environment by natural processes.

Nonlinearities

Occur when changes in one variable cause a more than proportionate impact on another variable.

Non-methane Volatile Organic Compounds (NMVOCs)

Organic compounds, other than methane, that participate in atmospheric photochemical

reactions.

Non-point Source

Large land area such as crop fields and urban areas that discharge pollutant into surface and underground water over a large area.

Nuclear Electric Power

Electricity generated by an electric power plant whose turbines are driven by steam generated in a reactor by heat from the fissioning of nuclear fuel.

Nuclear energy

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

O

Oil shale

Underground formation of a fine-grained sedimentary rock containing varying amounts of kerogen, a solid, waxy mixture of hydrocarbon compounds. Heating the rock to high temperatures converts the kerogen to a vapor, which can be condensed to form a slow flowing heavy oil called shale oil.

Ore

Mineral deposit containing a high enough concentration of at least one metallic element to permit the metal to be extracted and sold at a profit.

Organic

Production of crops, fruits and vegetables without the use of chemical fertilizers, pesticides, or other artificial chemicals

Organic compound

Molecule that contains atoms of the element carbon, usually combined with itself and with atoms of one or more other element such as hydrogen, oxygen, nitrogen, sulfur, phosphorus, chlorine, or fluorine.

Organic Farming

The term 'organic farming' was first used by Lord Northbourne in the book, Look to the Land in 1940. Lord Northbourne, who embraced the teachings of Rudolph Steiner and biodynamic farming, had a "vision of the farm as a sustainable, ecologically stable, self-contained unit, biologically complete and balanced--a dynamic living organic

whole. The term thus did not refer solely to the use of living materials (organic manures, etc) in agriculture although obviously it included them, but with its emphasis on 'wholeness' is encompassed best by the definition 'of, pertaining to, or characterized by systematic connection or coordination of parts of the one whole.

Organic fertilizer

Organic material such as manure or compost, applied to cropland as a source of plant nutrients.

Oxidize

To chemically transform a substance by combining it with oxygen.

Oxygen cycle

Cyclic movement of oxygen in different chemical forms from the environment, to organisms, and then back to the environment.

Ozone (O₃)

A colourless gas with a pungent odour, having the molecular form of O₃, found in two layers of the atmosphere, the stratosphere (about 90% of the total atmospheric loading) and the troposphere (about 10%). Ozone is a form of oxygen found naturally in the stratosphere that provides a protective layer shielding the Earth from ultraviolet radiation's harmful health effects on humans and the environment. In the troposphere, ozone is a chemical oxidant and major component of photochemical smog. Ozone can seriously affect the human respiratory system.

Ozone depleting substance (ODS)

A family of man-made compounds that includes, but are not limited to, chlorofluorocarbons (CFCs), bromo-fluorocarbons (halons), methyl chloroform, carbon tetrachloride, methyl bromide, and hydrochlorofluorocarbons (HCFCs). These compounds have been shown to deplete stratospheric ozone, and therefore are typically referred to as ODSs.

Ozone layer

The layer of gaseous ozone (O₃) in the stratosphere that protects life on earth by filtering out harmful ultraviolet radiation from the sun.

Ozone precursors

Chemical compounds, such as carbon monoxide, methane, non-methane hydrocarbons, and nitrogen oxides, which in the presence of solar radiation react with other chemical compounds to form ozone, mainly in the troposphere.

P

Particulate matter (PM)

Solid particles or liquid droplets suspended or carried in the air (e.g., soot, dust, fumes, mist).

Parts per billion (ppb)

Number of parts of a chemical found in one billion parts of a particular gas, liquid, or solid mixture.

Parts per million (ppm)

Number of parts of a chemical found in one million parts of a particular gas, liquid, or solid.

Pentanes plus

A mixture of hydrocarbons, mostly pentanes and heavier fractions, extracted from natural gas.

Per- fluorocarbons (PFCs)

A group of human-made chemicals composed of carbon and fluorine only. These chemicals were introduced as alternatives, along with hydrofluorocarbons, to the ozone depleting substances. In addition, PFCs are emitted as by-products of industrial processes and are also used in manufacturing. PFCs do not harm the stratospheric ozone layer, but they are powerful greenhouse gases.

Petrochemical feedstock

Feedstock derived from petroleum, used principally for the manufacture of chemicals, synthetic rubber, and a variety of plastics. The categories reported are naphtha (endpoint less than 401 degrees Fahrenheit) and other oils (endpoint equal to or greater than 401 degrees Fahrenheit).

Petrochemicals

Chemicals obtained by refining (i.e., distilling) crude oil. They are used as raw materials in the manufacture of most industrial chemicals, fertilizers, pesticides, plastics, synthetic fibers, paints, medicines, and many other products.

Petroleum

A generic term applied to oil and oil products in all forms, such as crude oil, lease condensate, unfinished oils, petroleum products, natural gas plant liquids, and non-hydrocarbon compounds blended into finished petroleum products.

Petroleum coke

A residue that is the final product of the condensation process in cracking.

Photosynthesis

Complex process that takes place in living green

plant cells. Radiant energy from the sun is used to combine carbon dioxide (CO₂) and water (H₂O) to produce oxygen (O₂) and simple nutrient molecules, such as glucose (C₆H₁₂O₆).

Photovoltaic and solar thermal energy

Energy radiated by the sun as electromagnetic waves (electromagnetic radiation) that is converted into electricity by means of solar (i.e., photovoltaic) cells or useable heat by concentrating (i.e., focusing) collectors.

Plasma

An ionized gas consisting of positive ions and free electrons in proportions resulting in more or less no overall electric charge, typically at low pressures (as in the upper atmosphere and in fluorescent lamps) or at very high temperatures (as in stars and nuclear fusion reactors).

Plasma Arc

Plasma arc is formed between an electrode (which is usually but not always made of sintered tungsten) and the workpiece.

Point count

An ecological study method in which visual or auditory detection of the species is done within a fixed or unlimited radius plots

Point source

A single identifiable source that discharges pollutants into the environment. Examples are smokestack, sewer, ditch, or pipe.

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 humans in an unwanted way. Some expand the term to include harmful effects on all forms of life.

Polyloom

Weaving with strips of plastics

Polyvinyl chloride (PVC)

A polymer of vinyl chloride. It is tasteless, odorless and insoluble in most organic solvents. A member of the family vinyl resin, used in soft flexible films for food packaging and in molded rigid products, such as pipes, fibers, upholstery, and bristles.

Population

Group of individual organisms of the same species living within a defined area.

Post-Partum

Condition following child birth or the birth of young.

Precession

The tendency of the Earth's axis to wobble in space over a period of 23,000 years. The Earth's precession is one of the factors that results in the planet receiving different amounts of solar energy over extended periods of time.

Precipitation

Precipitation is water released from clouds in the form of rain, freezing rain, sleet, snow, or hail. It is the primary connection in the water cycle that provides for the delivery of atmospheric water to the Earth.

Prescribed burning

Deliberate setting and careful control of surface fires in forests to help prevent more destructive fires and to kill off unwanted plants that compete with commercial species for plant nutrients; may also be used on grasslands.

Primary oil recovery

Pumping out the crude oil that flows by gravity into the bottom of an oil well.

Psychological

Related to the mental and emotional state of a person.

Q

Quad

Quad stands for quadrillion, which is, 10¹⁵.

Quadrat

A sample plot of a specific size used in ecology and geography to isolate a standard unit of area for study of the distribution of an item over a large area. The shape of quadrat may be circular or square, depending upon the study needs

R

Radioactive

Emitting or relating to the emission of ionizing radiation or particles.

Radiation

Energy emitted in the form of electromagnetic waves. Radiation has differing characteristics depending upon the wavelength. Because the radiation from the Sun is relatively energetic, it has a short wavelength (ultra-violet, visible, and near infrared) while energy radiated from the Earth's surface and the atmosphere has a longer wavelength (e.g., infrared radiation) because the Earth is cooler than the Sun.

Radioactive Forcing

A change in the balance between incoming solar radiation and outgoing infrared radiation. Without any radioactive forcing, solar radiation coming to the Earth would continue to be approximately equal to the infrared radiation emitted from the Earth. The addition of greenhouse gases traps an increased fraction of the infrared radiation, radiating it back toward the surface and creating a warming influence (i.e., positive radioactive forcing because incoming solar radiation will exceed outgoing infrared radiation).

Rail

Includes "heavy" and "light" transit rail. Heavy transit rail is characterized by exclusive rights-of-way, multi-car trains, high speed rapid acceleration, sophisticated signalling, and high platform loading. Also known as subway, elevated railway, or metropolitan railway (metro). Light transit rail may be on exclusive or shared rights of way, high or low platform, multi-car trains or single cars, automated or manually operated. In generic usage, light rail includes streetcars, trolley cars, and tramways.

Rangeland

Land, mostly grasslands, whose plants can provide food (i.e., forage) for grazing or browsing animals.

Reconnaissance

Reconnaissance is a mission to obtain information by visual observation or other detection methods, about the activities and resources of an enemy or potential enemy, or about the meteorologic, hydrographic, or geographic characteristics of a particular area.

Recyclable

Substance or object that can be recycled. (Recycle: It is the process of converting waste materials into new materials suitable for reuse)

Recycling

Collecting and reprocessing a resource so it can be used again. An example is collecting aluminium cans, melting them down, and using the aluminium to make new cans or other aluminium products.

Reforestation

Replanting of forests on lands that have recently been harvested.

Remnant patches

Remnant patches can be defined as the vegetation or bushland of native trees, shrubs and grasses that are still remaining

Remote Sensing

The scanning of the earth by satellite or high-flying aircraft in order to obtain information about it.

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.

Residence Time

The average time spent in a reservoir by an individual atom or molecule. With respect to greenhouse gases, residence time usually refers to how long a particular molecule remains in the atmosphere.

Residential sector

An area or portion consisting only of housing units.

Residual fuel oil

The heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are distilled away in refinery operations and is used for commercial and industrial heating, electricity generation, and to power ships. Imports of residual fuel oil include imported crude oil burned as fuel.

Resilient

Ability to withstand or recover quickly from difficult conditions.

Respiration

The process by which animals use up stored foods (by combustion with oxygen) to produce energy.

S**Secondary oil recovery**

Injection of water into an oil well after primary oil recovery to force out some of the remaining thicker crude oil.

Scrubbing Technology

Technology that employs a diverse group of air pollution control devices that can be used to remove some particulates and/or gases from industrial exhaust streams.

Sector

Division, most commonly used to denote type of

energy consumer (e.g., residential) or according to the Intergovernmental Panel on Climate Change, the type of greenhouse gas emitter (e.g. industrial process).

Septic tank

Underground tank for treatment of wastewater from a home in rural and suburban areas. Bacteria in the tank decompose organic wastes and the sludge settles to the bottom of the tank. The effluent flows out of the tank into the ground through a field of drainpipes.

Sewage treatment (primary)

Mechanical treatment of sewage in which large solids are filtered out by screens and suspended solids settle out as sludge in a sedimentation tank.

Shale oil

Slow-flowing, dark brown, heavy oil obtained when kerosene in oil shale is vaporized at high temperatures and then condensed. Shale oil can be refined to yield gasoline, heating oil, and other petroleum products.

Short Ton

Common measurement for a ton in the United States. A short ton is equal to 2,000 lbs or 0.907 metric tons.

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.

Sludge

Goey solid mixture of bacteria and virus laden organic matter, toxic metals, synthetic organic chemicals, and solid chemicals removed from wastewater at a sewage treatment plant.

Soil

Complex mixture of inorganic minerals (i.e., mostly clay, silt, and sand), decaying organic matter, water, air, and living organisms.

Soil amelioration

The improvement of poor soils. Includes the fungal and bacterial break down of plant organic matter, to form humus; the release of minerals - such as phosphates - to the soil, making them available to plants; the fixation of nitrogen. Can sometimes include an element of bioremediation

Soil carbon

A major component of the terrestrial biosphere

pool in the carbon cycle. The amount of carbon in the soil is a function of the historical vegetative cover and productivity, which in turn is dependent in part upon climatic variables.

Soil-less culture

Growing plants in nutrient solution without soil. Synonym: hydroponics.

Solar energy

Direct radiant energy from the sun. It also includes indirect forms of energy such as wind, falling or flowing water (hydropower), ocean thermal gradients, and biomass, which are produced when direct solar energy interact with the earth.

Solar Radiation

Energy from the Sun. Also referred to as short-wave radiation. Of importance to the climate system, solar radiation includes ultraviolet radiation, visible radiation, and infrared radiation.

Source

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

Special naphtha

All finished products within the naphtha boiling range that are used as paint thinners, cleaners, or solvents. Those products are refined to a specified flash point.

Stagnant

Water having no current or flow and often having an unpleasant smell as a consequence.

Still gas

Any form or mixture of gases produced in refineries by distillation, cracking, reforming, and other processes. Principal constituents are methane, ethane, ethylene, normal butane, butylenes, propane, propylene, etc. Used as a refinery fuel and as a petrochemical feedstock.

Stratosphere

Second layer of the atmosphere, extending from about 19 to 48 kilometres (12 to 30 miles) above the earth's surface. It contains small amounts of gaseous ozone (O₃), which filters out about 99 percent of the incoming harmful ultraviolet (UV) radiation. Most commercial airline flights operate at a cruising altitude in the lower stratosphere.

Strip mining

Cutting deep trenches to remove minerals such as coal and phosphate found near the earth's surface in flat or rolling terrain.

Sub bituminous coal

A dull, black coal of rank intermediate between lignite and bituminous coal.

Sulphate aerosols

Particulate matter that consists of compounds of sulphur formed by the interaction of sulphur dioxide and sulphur trioxide with other compounds in the atmosphere. Sulphate aerosols are injected into the atmosphere from the combustion of fossil fuels and the eruption of volcanoes like Mt. Pinatubo. Recent theory suggests that sulphate aerosols may lower the earth's temperature by reflecting away solar radiation (negative radioactive forcing). General Circulation Models which incorporate the effects of sulphate aerosols more accurately predict global temperature variations.

Sulphur cycle

Cyclic movement of sulphur in different chemical forms from the environment, to organisms, and then back to the environment.

Sulphur dioxide (SO₂)

A compound composed of one sulfur and two oxygen molecules. Sulfur dioxide emitted into the atmosphere through natural and anthropogenic processes is changed in a complex series of chemical reactions in the atmosphere to sulfate aerosols. These aerosols are believed to result in negative radiative forcing (i.e., tending to cool the Earth's surface) and do result in acid deposition (e.g., acid rain).

Sulphur Hexafluoride (SF₆)

A colourless gas soluble in alcohol and ether, slightly soluble in water. A very powerful greenhouse gas used primarily in electrical transmission and distribution systems and as a dielectric in electronics. The global warming potential of SF₆ is 23,900.

Surface mining

Removal of soil, sub-soil, and other strata and then extracting a mineral deposit found fairly close to the earth's surface.

Sustainability

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland Report, 1987)

Symbiotic

Denoting a mutually beneficial relationship

between different people or groups.

Synergy

The interaction or cooperation of two or more organizations, substances, or other agents to produce a combined effect greater than the sum of their separate effects.

Synthetic fertilizer

Commercially prepared mixtures of plant nutrients such as nitrates, phosphates, and potassium applied to the soil to restore fertility and increase crop yields.

Synthetic natural gas (SNG)

A manufactured product chemically similar in most respects to natural gas, resulting from the conversion or reforming of petroleum hydrocarbons. It may easily be substituted for, or interchanged with, pipeline quality natural gas.

T**Tailings**

Rock and other waste materials removed as impurities when minerals are mined and mineral deposits are processed. These materials are usually dumped on the ground or into ponds.

Tar sand

Swamp-like deposit of a mixture of fine clay, sand, water, and variable amounts of tar-like heavy oil known as bitumen. Bitumen can be extracted from tar sand by heating. It can then be purified and upgraded to synthetic crude oil.

Temperature

Measure of the average speed of motion of the atoms or molecules in a substance or combination of substances at a given moment.

Terrestrial

Pertaining to land.

Terrestrial radiation

The total infrared radiation emitted by the Earth and its atmosphere in the temperature range of approximately 200 to 300 Kelvin. Terrestrial radiation provides a major part of the potential energy changes necessary to drive the atmospheric wind system and is responsible for maintaining the surface air temperature within limits of liveability.

Threatened Species

The IUCN has developed a set of peer-reviewed categories and criteria to assign the status to a

species in one of nine categories (Not Evaluated, Data Deficient, Least Concern, Near Threatened, Vulnerable, Endangered, Critically Endangered, Extinct in the Wild, or Extinct) of the threat. The threat category to which a species is assigned is based on a rigorous evaluation of a set of four broad criteria. These include an estimate of current population size, geographic range, reductions in population size, and the probability of extinction in the wild.

Topographical map

In modern mapping, a topographic map is a type of map characterized by large-scale detail and quantitative representation of relief, usually using contour lines, but historically using a variety of methods. Traditional definitions require a topographic map to show both natural and man-made features

Toxic Fumes

A fume or fumes refers to vapors (gases), dusts and/or smoke given off by a substance as a result of a chemical transformation such as reaction, heating, explosion or detonation. "Fumes" generally conveys the idea that the cloud is an irritating, hazardous and/or toxic substance

Toxic Waste

Chemical compounds produced by industry which, if they are ingested or breathed in by humans, can cause physiological damage

Trace Gas

Any one of the less common gases found in the Earth's atmosphere. Nitrogen, oxygen, and argon make up more than 99 percent of the Earth's atmosphere. Other gases, such as carbon dioxide, water vapour, methane, oxides of nitrogen, ozone, and ammonia, are considered trace gases. Although relatively unimportant in terms of their absolute volume, they have significant effects on the Earth's weather and climate.

Transboundary Migration

Wildlife habitats in two or more countries that are necessary to sustain populations of migratory species and involve some form of cooperation.

Transect

A transect is a path along which one counts and records occurrences of the species of study. It requires an observer to move along a fixed path and to count occurrences along the path and, at

the same time (in some procedures), obtain the distance of the object from the path. This results in an estimate of the area covered and an estimate of the way in which detectability increases from probability 0 (far from the path) towards 1 (near the path). Using the raw count and this probability function, one can arrive at an estimate of the actual density of objects. In this method the observer cannot wander off the transect. Transects are often marked with colour flagging tape, or they may be along a compass bearing.

Transportation sector

Consists of private and public passenger and freight transportation, as well as government transportation, including military operations.

Troposphere

The lowest layer of the atmosphere and contains about 95 percent of the mass of air in the Earth's atmosphere. The troposphere extends from the Earth's surface up to about 10 to 15 kilometers. All weather processes take place in the troposphere. Ozone that is formed in the troposphere plays a significant role in both the greenhouse gas effect and urban smog.

U

Ultraviolet radiation (UV)

A portion of the electromagnetic spectrum with wavelengths shorter than visible light. The sun produces UV, which is commonly split into three bands of decreasing wavelength. Shorter wavelength radiation has a greater potential to cause biological damage on living organisms. The longer wavelength ultraviolet band, UVA, is not absorbed by ozone in the atmosphere. UVB is mostly absorbed by ozone, although some reaches the Earth. The shortest wavelength band, UVC, is completely absorbed by ozone and normal oxygen in the atmosphere.

Undernourishment

Supplied with less than the minimum amount of the nutritional foods essential for sound health and growth.

Unfinished oils

All oils requiring further refinery processing, except those requiring only mechanical blending. Includes naphtha and lighter oils, kerosene and light gas oils, heavy gas oils, and residuum.

United Nations Framework Convention on

Climate Change (UNFCCC)

The international treaty unveiled at the United Nations Conference on Environment and Development (UNCED) in June 1992. The UNFCCC commits signatory countries to stabilize anthropogenic (i.e. human-induced) greenhouse gas emissions to "levels that would prevent dangerous anthropogenic interference with the climate system." The UNFCCC also requires that all signatory parties develop and update national inventories of anthropogenic emissions of all greenhouse gases not otherwise controlled by the Montreal Protocol. Out of 155 countries that have ratified this accord, the United States was the first industrialized nation to do so.

Unobtrusive

Not attracting attention.

Unprecedented

Never done or known before.

Urban

Relating to, or characteristic of a town or city. The urban biodiversity is explained as "the variety and richness of living organisms (including genetic variation and habitat diversity found in and on the edge of human (settlements" Muller et al. (2010)

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V

Vehicle miles traveled (VMT)

One vehicle traveling the distance of one mile. Thus, total vehicle miles is the total mileage traveled by all vehicles.

Vitrification

Vitrification (from Latin vitreum, "glass" via French vitrifier) is the transformation of a substance into a glass, that is to say a non-crystalline amorphous solid. In the production of ceramics, vitrification is responsible for its impermeability to water

Volatile organic compounds (VOCs)

Organic compounds that evaporate readily into the atmosphere at normal temperatures. VOCs contribute significantly to photochemical smog production and certain health problems.

W

Wastewater

Water that has been used and contains dissolved or suspended waste materials.

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 vapour feedback. In addition to its role as a natural greenhouse gas, water vapour 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.

Waxes

Solid or semisolid materials derived from petroleum distillates or residues. Light-colored, more or less translucent crystalline masses, slightly greasy to the touch, consisting of a mixture of solid hydrocarbons in which the paraffin series predominates. Included are all marketable waxes, whether crude scale or fully refined. Used primarily as industrial coating for surface protection.

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).

Weighing Balance

Spring balances or spring scales calculate mass by first measuring weight by balancing the force due to gravity against the force on a spring, whereas a balance or pair of scales using a balance beam compares masses by balancing the weight due to the mass of an object against the weight of one or more known masses.

Wetland

Land that stays flooded all or part of the year with fresh or salt water, such that it takes on the characteristics of a distinct ecosystem

Wetlands

Areas regularly saturated by surface or groundwater and subsequently characterized by a prevalence of vegetation adapted for life in saturated-soil conditions.

Wood energy

Wood and wood products used as fuel, including roundwood (i.e., cordwood), limbwood, wood chips, bark, sawdust, forest residues, and charcoal.

Z**Zoonotic**

Pertaining to a zoonosis: a disease that can be transmitted from animals to people or, more specifically, a disease that normally exists in animals but that can infect humans. There are multitudes of zoonotic diseases. Some examples include: anthrax

Zooplankton

Plankton consisting of small animals and the immature stages of larger animals. Plankton are organisms drifting in oceans, seas, and bodies of fresh water. The word "zooplankton" is derived from the Greek zoon meaning "animal", and planktons meaning "wanderer" or "drifter".