

## GLOSSARY

### A

#### Adaptation

Adjustment or preparation of natural or human systems to a new or changing environment which moderates harm or exploits beneficial opportunities.

#### Adaptive Capacity

Ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.

#### Aerosols

Small particles or liquid droplets in the atmosphere that can absorb or reflect sunlight depending on their composition.

#### Afforestation

Planting of new forests on lands that historically have not contained forests.

#### Airborne diseases and conditions

Diseases and conditions associated with the environment are caused or worsened by exposure to unhealthy levels of pollutants (such as PM, SO<sub>2</sub> or O<sub>3</sub>), usually found in urban settlements and, in particular, in cities with weaker air quality regulations and/or enforcement capabilities.

#### Alternative Energy

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

#### Annex I Countries/Parties

Group of countries included in Annex I (as amended in 1998) to the United Nations Framework Convention on Climate Change comprising of all the developed countries in the Organization of Economic Co-operation and Development (OECD) and economies in transition. By default, the other countries are referred to as Non-Annex I countries.

#### Angiosperms

Seed-bearing vascular plants.

#### Annex II Countries

Subset of the Annex I Countries which have a special obligation to help developing countries with financial and technological resources. They include the 24 original OECD members and the European Union.

#### Anthropogenic

Made by people or resulting from human activities. Usually used in the context of emissions that are produced as a result of human activities.

#### Aquaculture

Farming of aquatic organisms, including fish, molluscs, crustaceans and aquatic plants. Farming implies some form of intervention in the rearing process to enhance production, such as regular stocking, feeding, protection from predators, etc.

#### Aquaculture ponds

Water bodies used for aquaculture.

#### Aquatic Vegetation

Plants that grow partly or wholly in water whether rooted in the mud, as a lotus, or floating without anchorage, as the water hyacinth.

#### Aquatic resources

Comprise fish, crustaceans, molluscs, shellfish, aquatic mammals and other aquatic organisms that are considered to live within the boundaries of the Exclusive Economic Zone (EEZ) of a country throughout their lifecycles, including both coastal and inland fisheries.

[Area under miscellaneous tree crops, groves, etc.](#)

All culturable land not included under 'net area sown' but is put to some other agricultural use, such as land under casuarina trees, thatching grasses, bamboo bushes and other groves for fuel, etc.

[Atmosphere](#)

The gaseous envelope surrounding the Earth. The dry atmosphere consists almost entirely of nitrogen (78.1% volume mixing ratio) and oxygen (20.9% volume mixing ratio), together with a number of trace gases, such as argon (0.93% volume mixing ratio), helium, radiatively active greenhouse gases such as carbon dioxide (0.035% volume mixing ratio) and ozone. In addition the atmosphere contains water vapour, whose amount is highly variable but typically 1% volume mixing ratio. The atmosphere also contains clouds and aerosols.

[Atmospheric Lifetime](#)

Average time that a molecule resides in the atmosphere before it is removed by chemical reaction or deposition. This can also be thought of as the time that it takes after the human-caused emission of a gas for the concentrations of that gas in the atmosphere to return to natural levels. Greenhouse gas lifetimes can range from a few years to a few thousand years.

## **B**

[Barren and unculturable land](#)

Land which cannot be brought under cultivation unless at high cost, irrespective of whether such land is in isolated blocks or within cultivated holdings.

[Biodiversity](#)

Variability among living organisms from all sources including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part, including diversity within species, between species and of ecosystems. It is also a measure of ecosystem health.

[Biofuels](#)

Gas or liquid fuel made from plant material (biomass). Includes wood, wood waste, wood liquors, peat, railroad ties, wood sludge, 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.

[Biological resources](#)

Renewable resources that are capable of regeneration through natural (non-managed or managed) processes. Include timber and aquatic resources and a range of other animal and plant resources (such as livestock, orchards, crops and wild animals), fungi and bacteria.

[Biomass](#)

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.

[Biome](#)

A distinct community of plants, animals or fungi that occupy a distinct region. It is often referred to as an ecosystem.

[Biosphere](#)

Part of the Earth system comprising all ecosystems and living organisms, in the atmosphere, on

land (terrestrial biosphere) or in the oceans (marine biosphere), including derived dead organic matter, such as litter, soil organic matter and oceanic detritus.

### Biota

All animal and plant life of a particular region or time. Biotic (living) factors function with the abiotic (non-living) factors to form a complex unit such as an ecosystem.

### BOD

Biochemical oxygen demand (BOD, also called biological oxygen demand) is the amount of dissolved oxygen needed (i.e. demanded) by aerobic biological organisms to break down organic material present in a given water sample at certain temperature over a specific time period. The BOD value is most commonly expressed in milligrams of oxygen consumed per litre of sample during 5 days of incubation at 20 °C and is often used as a surrogate of the degree of organic pollution of water.

### BPL families

BPL or Below Poverty Line is an economic benchmark used by the Government in India to indicate economic disadvantage and to identify individuals and households in need of government assistance and aid. It is determined using various parameters which vary from state to state and within states.

## C

### Carbon Capture and Sequestration

Set of technologies that can greatly reduce carbon dioxide emissions from new and existing coal and gas-fired power plants, industrial processes and other stationary sources of carbon dioxide. It is a three-step process that includes capture of carbon dioxide from power plants or industrial sources; transport of the captured and compressed carbon dioxide (usually in pipelines); and underground injection and geologic sequestration, or permanent storage, of that carbon dioxide in rock formations that contain tiny openings or pores that trap and hold the carbon dioxide.

### Carbon Cycle

All parts (reservoirs) and fluxes of carbon. The cycle is usually thought of as four main reservoirs of carbon interconnected by pathways of exchange. The reservoirs are the atmosphere, terrestrial biosphere (usually includes freshwater systems), oceans and sediments (includes fossil fuels). The annual movements of carbon, the carbon exchanges between reservoirs, occur because of various chemical, physical, geological and biological processes. The ocean contains the largest pool of carbon near the surface of the Earth, but most of that pool is not involved with rapid exchange with the atmosphere.

### Carbon Dioxide

A naturally occurring gas and also a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes. It is the principal human caused greenhouse gas that affects the Earth's radiative balance. It is the reference gas against which other greenhouse gases are measured.

### 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 (MMTCO<sub>2</sub>Eq)." The carbon dioxide equivalent for a gas is derived by multiplying the tons of the gas by the associated GWP.

$$\text{MMTCO}_2\text{Eq} = (\text{million metric tons of a gas}) * (\text{GWP of the gas})$$

### Carbon Dioxide Fertilization

The enhancement of the growth of plants as a result of increased atmospheric CO<sub>2</sub> concentration. Depending on their mechanism of photosynthesis, certain types of plants are more sensitive to changes in atmospheric CO<sub>2</sub> concentration.

#### Carbon Footprint

The total amount of greenhouse gases that are emitted into the atmosphere each year by a person, family, building, organization, or company. A person's carbon footprint includes greenhouse gas emissions from fuel that an individual burns directly, such as by heating a home or riding in a car. It also includes greenhouse gases that come from producing the goods or services that the individual uses, including emissions from power plants that make electricity, factories that make products and landfills where trash gets sent.

#### Carbon Sequestration

Terrestrial, or biologic, carbon sequestration is the process by which trees and plants absorb carbon dioxide, release the oxygen and store the carbon. Geologic sequestration is one step in the process of carbon capture and sequestration (CCS) and involves injecting carbon dioxide deep underground where it stays permanently.

#### Census houses

A building or part of a building having a separate main entrance from the road or common courtyard or staircase etc., used or recognised as a separate unit, it may be inhabited or vacant and may be used for residential or non-residential purposes.

#### Census household

A group of persons who commonly live together and would like to take their meals from a common kitchen unless some exigencies prevent any of them from doing so. These may be one member households or two member or multi-member households - for census purposes each of one of these types is regarded as a household.

#### Chlorofluorocarbons

Gases covered under the 1987 Montreal Protocol and used for refrigeration, air conditioning, packaging, insulation, solvents, or aerosol propellants. Since they are not destroyed in the lower atmosphere, CFCs drift into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are being replaced by other compounds: hydro-chlorofluorocarbons, an interim replacement for CFCs that are also covered under the Montreal Protocol and hydro-fluorocarbons, which are covered under the Kyoto Protocol. All these substances are also greenhouse gases.

#### Class-I cities

Towns with a population of 1,00,000 or more.

#### Class-II towns

Towns with population greater than 50,000 but less than 99,999.

#### Climate

Climate in a narrow sense is usually defined as the "average weather," or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands of years. The classical period is 3 decades, as defined by the World Meteorological Organization (WMO). These quantities are most often surface variables such as temperature, precipitation and wind. Climate in a wider sense is the state, including a statistical description, of the climate system.

#### Climate Change

Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among others, that occur over several decades or longer.

#### Climate change adaptation

Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

#### Climate change evidence

Different processes that substantiate the occurrence of changing climate patterns at the global, regional and local levels. The evidence of global warming and climate change is unequivocal, including global temperature rise, extreme events, sea level rise, shrinking ice sheets and glacial retreat.

#### Climate change mitigation

Efforts to reduce or prevent greenhouse gas emissions and may involve using new technologies, incorporating and increasing renewable energies, making older equipment more energy efficient and changing management practices or consumer behaviour. Protecting natural carbon sinks like forests and oceans, or creating new sinks through silviculture or green agriculture, are also elements of mitigation.

#### Climate change-related statistics

According to UNECE, refer to environmental, social and economic data that measure the human causes of climate change, the impacts of climate change on human and natural systems and the efforts by humans to avoid and adapt to these consequences.

#### Climate Feedback

A process that acts to amplify or reduce direct warming or cooling effects.

#### 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 occur gradually over time because the ocean takes a long time to warm up in response to a change in radiation.

#### Climate Model

A quantitative way of representing the interactions of the atmosphere, oceans, land surface and ice.

#### Climate Sensitivity

In Intergovernmental Panel on Climate Change (IPCC) reports, equilibrium climate sensitivity refers to the equilibrium change in global mean surface temperature following a doubling of the atmospheric (equivalent) CO<sub>2</sub> concentration. More generally, equilibrium climate sensitivity refers to the equilibrium change in surface air temperature following a unit change in radiative forcing (degrees Celsius, per watts per square meter). One method of evaluating the equilibrium climate sensitivity requires very long simulations with Coupled General Circulation Models (Climate model). The effective climate sensitivity is a related measure that circumvents this requirement. It is evaluated from model output for evolving non-equilibrium conditions. It is a measure of the strengths of the feedbacks at a particular time and may vary with forcing history and climate state.

#### Climate System (or Earth System)

The five physical components (atmosphere, hydrosphere, cryosphere, lithosphere and biosphere) that are responsible for the climate and its variations.

#### Co-Benefit

The benefits of policies that are implemented for various reasons at the same time including

climate change mitigation acknowledging that most policies designed to address greenhouse gas mitigation also have other, often at least equally important, rationales (e.g., related to objectives of development, sustainability and equity).

#### Coliform

Group of bacteria (most common being the *Escherichia coli* or *E. coli* which can grow at elevated temperatures) found in the intestinal tract (therefore in the faeces) of humans and other animals. These rod-shaped microorganisms aid in digestion and are largely harmless. If ingested through contaminated food or water, however, they may cause bacterial or viral gastroenteritis, Hepatitis A, typhoid fever and associated problems. Total coliform includes Faecal Coliform bacteria as well as other types of Coliform bacteria that are naturally found in the soil.

#### Concentration

Amount of a chemical in a particular volume or weight of air, water, soil or other medium.

#### Conductivity

Measure of water's capability to pass electrical flow. This ability is directly related to the concentration of ions in the water. These conductive ions come from dissolved salts and inorganic materials such as alkalis, chlorides, sulphides and carbonate compounds.

#### Conference of the Parties (COP)

The supreme body of the United Nations Framework Convention on Climate Change (UNFCCC). It comprises more than 180 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.

#### Coral Bleaching

The process in which a coral colony, under environmental stress, expels the microscopic algae (zooxanthellae) that live in symbiosis with their host organisms (polyps). The affected coral colony appears whitened.

#### Coral reefs

Consolidated living colonies of microscopic organisms found in warm tropical waters. The term coral reef or organic reef is applied to the rock-like reefs built-up of living things, principally corals. They consist of accumulations of calcareous deposits of corals and coralline algae with the intervening space connected with sand, which consists largely of shells of foraminifera. Present reefs are living associations growing on this accumulation of past.

#### Creek

A notable physiographic feature of salt marshes, especially low marshes, these creeks develop, like rivers, into definite channels.

#### Critical or Critically Endangered

A taxon is critical when it is facing an extremely high probability of extinction in the wild in immediate future.

#### Crops

Plants or agricultural produce grown for food or other economic purposes, such as for textiles or livestock fodder

#### Crown cover

The canopy formed by the crowns of all the trees in a forest or in an uneven aged forest by the crowns of all trees in a specified crowns class.

### Cryosphere

One of the interrelated components of the Earth's system, the cryosphere is frozen water in the form of snow, permanently frozen ground (permafrost), floating ice and glaciers. Fluctuations in the volume of the cryosphere cause changes in ocean sea level, which directly impact the atmosphere and biosphere.

### Cultivable waste

Land available for cultivation but not taken for cultivation or abandoned after a few years for one reason or the other. Such lands may be either fallow or covered with shrubs and jungles not put to any use. These may be assessed or unassessed and may lie in isolated blocks or within cultivated during the year and the last five or more consecutive years in succession, will be included in this category.

### Cultivated biological resources

Animal and tree, crop and plant resources yielding repeat products whose natural growth and regeneration are under the direct control, responsibility and management of an institutional unit.

### Current fallow

Cultivable area kept fallow during the current agricultural year. Any seedling area in the current agricultural year not cropped in the same year is also treated as current fallow.

## D

### Deforestation

Practices or processes that result in the conversion of forested lands for non-forest uses. The term specifically excludes areas where the trees have been removed as a result of harvesting or logging and where the forest is expected to regenerate naturally or with the aid of silvicultural measures.

### Dense Forest

Forests whose crown density is 40 percent or above.

### Depletion

In physical terms, it is the decrease in the quantity of the stock of a natural resource over an accounting period that is due to the extraction of the natural resource by economic units occurring at a level greater than that of regeneration.

### Derelict water

Water which is abundant or unused. Such water may be useful in aquaculture practices after treatment and settlement. Usually the stagnant waters of fresh water ponds and lakes which are inhabited with weeds come under this category.

### Desertification

Land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities. Further, the UNCCD (The United Nations Convention to Combat Desertification) defines land degradation as a reduction or loss, in arid, semi-arid and dry sub-humid areas, of the biological or economic productivity and complexity of rain-fed cropland, irrigated cropland, or range, pasture, forest and woodlands resulting from land uses or from a process or combination of processes, including processes arising from human activities and habitation patterns, such as: (i) soil erosion caused by wind and/or water; (ii) deterioration of the physical, chemical and biological or economic properties of soil; and (iii) long-term loss of natural vegetation. Conversion of forest to non-forest.

### Disasters

Unforeseen and often sudden events that cause great damage, destruction and human suffering. They often exceed local response capacities and require external assistance at the national or international level. Depending on their cause, disasters can be both natural and technological.

#### Dissipative losses

Material residues that are an indirect result of production and consumption activity.

#### Dissipative uses of products

Products that are deliberately released to the environment as part of production processes.

#### DO or Dissolved Oxygen

Amount of oxygen dissolved (and hence available to sustain marine life) in a body of water such as a lake, river, or stream. DO is the most important indicator of the health of a water body and its capacity to support a balanced aquatic ecosystem of plants and animals. Wastewater containing organic (oxygen consuming) pollutants depletes the dissolved oxygen and may lead to the death of marine organisms.

#### Driving Force-Pressure-State-Impact-Response (DPSIR) framework

An analytical framework that is based on the causal relationship between its D-P-S-I-R components. **Driving forces** are the socio-economic and socio-cultural forces driving human activities, which increase or mitigate pressures on the environment. **Pressures** are the stresses that human activities place on the environment. **State**, or state of the environment, is the condition of the environment. **Impacts** are the effects of environmental degradation. **Responses** refer to the responses by society to the environmental situation.

#### Dryland Farming

A technique that uses soil moisture conservation and seed selection to optimize production under dry conditions.

## E

#### Eccentricity

Extent to which the Earth's orbit around the Sun departs from a perfect circle.

#### Economic territory

Area under the effective control of a single government. It includes the land area of a country, including islands, airspace, territorial waters and territorial enclaves in the rest of the world. Economic territory excludes territorial enclaves of other countries and international organizations located in the reference country.

#### Ecosystem

A dynamic complex of plant, animal and microorganism communities and their non-living environment interacting as a functional unit.

#### Ecosystem services

Benefits supplied by the functions of ecosystems and received by humanity.

#### Emissions

Substances released to the environment by establishments and households as a result of production, consumption and accumulation processes. Emissions to air are those released to atmosphere, while those to water are released to water resources.

#### Emissions 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, or per pound of product produced)

#### Endangered

Species in danger of extinction and whose survival is unlikely if the casual factors continue operating. Included are species whose numbers have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

#### Energy Efficiency

Using less energy to provide the same service.

#### Energy production

Capture, extraction or manufacture of fuels or other energy products in forms which are ready for general consumption. Energy production includes the production of primary and secondary energy. Primary energy refers to energy sources as found in their natural state, as opposed to derived or secondary energy, which is the result of the transformation of primary sources.

#### Enhanced Greenhouse Effect

The concept that the natural greenhouse effect has been enhanced by increased atmospheric concentrations of greenhouse gases (such as CO<sub>2</sub> and methane) emitted as a result of human activities. These added greenhouse gases cause the earth to warm.

#### Enteric Fermentation

Livestock, especially cattle, produce methane as part of their digestion. This process is called enteric fermentation and it represents one third of the emissions from the agriculture sector.

#### Environmental awareness

The gradual understanding of environmental issues and the recognition of the connections among human actions, development, sustainability and human responsibility in these processes. Environmental awareness involves the realization that humans and ecosystems co-exist in a shared environment, which is ultimately the biosphere. Awareness fosters pro-environmental attitudes and predispositions for action and changed behaviour.

#### Environmental data

Large amounts of unprocessed observations and measurements about the environment and related processes.

#### Environmental education

The process of sharing and constructing environmental information and knowledge, as well as information on how humans interact with the environment. Environmental education may be curriculum- and classroom-based or experiential and may be provided on-site or in community settings by government agencies or NGOs.

#### Environmental engagement

The transformation of perceptions and attitudes into concrete, pro-environmental actions. Individual and social participation and engagement in environmental processes intended to improve and protect the local and global environment are a concrete manifestation of understanding, motivation and commitment to protecting and improving the environment, expressed through behaviour.

#### Environmental Goods and Services Sector (EGSS)

A heterogeneous set of producers of technologies, goods and services that: (i) measure, control, restore, prevent, treat, minimise, research and sensitise environmental damages to air, water and soil as well as problems related to waste, noise, biodiversity and landscapes. This includes “cleaner” technologies, goods and services that prevent or minimise pollution; and (ii) measure, control, restore, prevent, minimise, research and sensitise resource depletion. This results mainly in resource-efficient technologies, goods and services that minimise the use of natural resources.

#### Environmental health

Depiction of how environmental factors and processes impact and change human health. It can be defined as an interdisciplinary field that focuses on analysing the relationship between public health and the environment. From the health perspective, WHO states that “environmental health addresses all the physical, chemical and biological factors external to a person and all the related factors impacting behaviours. It encompasses the assessment and control of those environmental factors that can potentially affect health. It is targeted towards preventing disease and creating health-supportive environments [...]”.

#### Environmental indicators

Environment statistics that have been selected for their ability to depict important phenomena or dynamics. Environmental indicators are used to synthesize and present complex environment and other statistics in a simple, direct, clear and relevant way.

#### Environmental indices

Composite or more complex measures that combine and synthesize more than one environmental indicator or statistic and are weighted according to different methods.

#### Environmental information

Quantitative and qualitative facts describing the state of the environment and its changes as described in the different components of the FDES.

#### Environmental perception

Individuals’ and groups’ notions of, attitudes towards and evaluations of the environment, both as a whole or with respect to specific environmental issues. Individuals and communities make decisions and judgments and take actions based on subjective perceptions of environmental information and experiences. Values and attitudes thus “filter” information and transform it into perception in a culturally specific manner.

#### Environmental protection activities

Those activities whose primary purpose is the prevention, reduction and elimination of pollution and other forms of degradation of the environment. These activities include the protection of ambient air and climate, wastewater management, waste management, protection and remediation of soil, groundwater and surface water, noise and vibration abatement, protection of biodiversity and landscapes, protection against radiation, research and development for environmental protection and other environmental protection activities.

#### Environmental regulation and instruments

Policy responses to regulate and establish acceptable limits for protecting the environment and human health.

#### Environmental resources

Naturally occurring living and non-living components of the Earth, together constituting the biophysical environment, which may provide benefits to humanity. Environmental resources include natural resources (such as sub-soil resources (mineral and energy), soil resources, biological resources and water resources) and land. They may be naturally renewable (e.g., fish, timber or water) or non-renewable (e.g., minerals).

#### Environment statistics

Environmental data that have been structured, synthesized and aggregated according to statistical methods, standards and procedures. The scope of environment statistics covers biophysical aspects of the environment and those aspects of the socio-economic system that directly influence and interact with the environment.

#### Extinct

Species that are no longer known to exist in the wild after repeated searches of the type in localities and other known or likely places.

#### Extreme events

Events that are rare within their statistical reference distribution at a particular location. An extreme event is normally as rare as or rarer than the 10th or 90th percentile.

#### Evapotranspiration

The combined process of evaporation from the Earth's surface and transpiration from vegetation.

## F

#### Fauna

The animal life of a particular region or time

#### Flared (Natural Gas)

Excess gas combusted during the production of natural gas from oil and natural gas wells. Natural gas consists primarily of methane, but also contains other gases and some volatile organic compounds (VOCs). VOCs can combine with Nitrogen Oxides (NO<sub>x</sub>) under the right weather conditions to form ozone. For various operational, safety and environmental reasons, methane and VOCs, are combusted or flared.

#### Flora

The plant life of a particular region or time

#### Fluorinated Gases

Powerful synthetic greenhouse gases such as hydro-fluorocarbons, perfluorocarbons and sulphur hexafluoride that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for stratospheric ozone-depleting substances (e.g., chlorofluorocarbons, hydro-chlorofluorocarbons and halons) and are often used in coolants, foaming agents, fire extinguishers, solvents, pesticides and aerosol propellants.

#### Fluorocarbons

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

#### Flush system latrine

The type of latrine which is connected to underground sewerage system, from which human excreta and wastes are flushed out by water.

#### 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 emissions of greenhouse gases.

#### Forest

Includes all actually forested area on the lands so classed or administered as forests under any legal enactment dealing with forests, whether state-owned or private. It does not include land that is predominantly under agricultural or urban land use.

#### Forest Cover

Forest Cover refers to all lands more than one hectare in area, with a tree canopy density of more than 10 percent irrespective of ownership and legal status. Such lands may not necessarily be a recorded forest area. It also includes orchards, bamboo and palm. Tree cover comprises of tree

patches outside the recorded forest area exclusive of forest cover and less than the minimum mappable area (1 ha).

#### Fossil Fuel

A general term for 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.

#### Frost shattering

A type of land degradation/desertification typically seen in cold mountainous arid areas. In this, water enters cracks in rocks during the day and during the cold night it freezes. This exerts pressure on the rocks causing the cracks to widen and shattering the rocks into pieces. Frost shattering is a common occurrence in the mountainous regions of Uttarakhand, Jammu and Kashmir, Arunachal Pradesh and Himachal Pradesh.

#### Fuel Switching

Substituting one type of fuel for another. In the climate-change discussion, it is implicit that the substituted fuel produces lower carbon emissions per unit energy produced than the original fuel, e.g., natural gas for coal.

## G

#### Genetic resources

Genetic material of plants, animals or microorganisms containing functional units of heredity that are of actual or potential value as a resource for future generations of humanity.

#### 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 represent the effects of such factors as reflective and absorptive properties of atmospheric water vapour, greenhouse gas concentrations, clouds, annual and daily solar heating, ocean temperatures and ice boundaries.

#### Geographic Information System (GIS)

An integrating technology that helps to capture, manage, analyse, visualize and model a wide range of data with a spatial or locational component.

#### Geological map

Maps representing the distribution of different types of rock and surficial deposits, as well as locations of geologic structures such as faults and folds.

#### Geomorphological map

Maps depicting the features of the Earth's physical surface.

#### Geospatial Information

The location and characteristics of different attributes of the atmosphere, surface and sub-surface. It is used to describe, display and analyse data with discernible spatial aspects, such as land use, water resources and natural disasters. Geospatial information allows for the visual display of different statistics in a map-based layout, which can make it easier for users to work with and understand the data.

#### Geosphere

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

#### Glacier

A multi-year surplus accumulation of snowfall in excess of snowmelt on land and resulting in a mass of ice at least 0.1 km<sup>2</sup> in area that shows some evidence of movement in response to

gravity. A glacier may terminate on land or in water. Glacier ice is the largest reservoir of fresh water on Earth and second only to the oceans as the largest reservoir of total water.

#### Global Average Temperature

An estimate of Earth's mean surface air temperature averaged over the entire planet.

#### Global Warming

The recent and ongoing phenomenon of global average increase in temperature near the Earth's surface.

#### Global Warming Potential

Measure of the total energy that a gas absorbs over a particular period of time (usually 100 years), compared to carbon dioxide.

#### Government environmental protection and resource management expenditure

Includes government expenditure whose primary aim is to protect the environment and manage its resources

#### Greenhouse Effect

Trapping and build-up of heat in the atmosphere (troposphere) near the Earth's surface. Some of the heat flowing back toward space from the Earth's surface is absorbed by water vapour, carbon dioxide, ozone and several other gases in the atmosphere and then reradiated back toward the Earth's surface. If the atmospheric concentrations of these greenhouse gases rise, the average temperature of the lower atmosphere will gradually increase.

#### Greenhouse Gas (GHG)

Any gas that absorbs infrared radiation in the atmosphere. Greenhouse gases include, carbon dioxide, methane, nitrous oxide, ozone, chlorofluorocarbons, hydro-chlorofluorocarbons, hydro-fluorocarbons, perfluorocarbons, sulphur hexafluoride.

#### Gross area irrigated

An irrigated plot growing crop in more than one season, is counted as many times as it is cropped to arrive at gross area irrigated. In case of mixed crops, the area under component crops as reported by household is taken into account.

#### Grossly polluting industries

As defined by CPCB, MOEF&CC, industries discharging effluents into a water course and (a) Handling hazardous substances, or (b) Effluent having BOD Load of 100 Kg per day or more, or (c) A combination of (a) and (b).

#### Groundwater

Water that collects in porous layers of underground formations known as aquifers.

## H

#### Habitat

Site or environment which a plant or animal lives, such as forest.

#### Habitat Fragmentation

Process during which larger areas of habitat are broken into a number of smaller patches of smaller total area, isolated from each other by a matrix of habitats unlike the original habitat.

#### Halocarbons

Compounds containing either chlorine, bromine or fluorine and carbon. Such compounds can act as powerful greenhouse gases in the atmosphere. The chlorine and bromine containing halocarbons are also involved in the depletion of the ozone layer.

#### Halophyte

A plant adapted to living in salty soil, as along the seashore.

### Hazardous waste

Any waste which by reason of characteristics such as physical, chemical, biological, reactive, toxic, flammable, explosive or corrosive, causes danger or is likely to cause danger to health or environment, whether alone or in contact with other wastes or substances.

### Heat Waves

A prolonged period of excessive heat, often combined with excessive humidity.

### Hermatypic corals

Those corals which build reefs by depositing hard calcareous material for their skeletons, forming the stony framework of the reef. Corals that do not contribute to coral reef development are referred to as ahermatypic (non-reef-building) species.

### High Altitude lakes

Lakes occurring in the Himalayan region. All lakes above the contour line of 3000 m above mean sea level have been classified as high altitude lakes.

### Household

A household is a group of persons who commonly live together and would take their meal from common kitchen unless the exigencies of work prevented any of them from doing so. There may be a household of persons related by blood or a household of unrelated persons or having a mix of both. Examples of unrelated households are boarding houses, messes, hostels, residential hotels, rescue homes, jails, ashrams, etc. These are called “Institutional Households”.

### Human settlements

Refer to the totality of the human community, whether people live in large cities, towns or villages. They encompass the human population that resides in a settlement, the physical elements (e.g., shelter and infrastructure), services (e.g., water, sanitation, waste removal, energy and transport) and the exposure of humans to potentially deleterious environmental conditions.

### Hydrocarbons

Substances containing only hydrogen and carbon. Fossil fuels are made up of hydrocarbons.

### 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.

### Hydro-fluorocarbons (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.

### Hydrologic Cycle

The process of evaporation, vertical and horizontal transport of vapour, 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.

### Hydrosphere

The component of the climate system comprising liquid surface and subterranean water, such as: oceans, seas, rivers, fresh water lakes, underground water etc.

## I

### Improved drinking water source

Includes the use of – pipedwater into dwelling, plot or yard; public tap or standpipe; borehole or tube well; protected dug well; protected spring; rainwater collection and bottled water (if a secondary available source is also improved).

### Improved sanitation facility

Defined as one that hygienically separates human excreta from human contact. Improved facilities include flush/pour flush toilets connected to a sewer, septic tank, or pit, ventilated improved pit latrines, pit latrines with slab and composting toilets.

### Incinerable (Waste)

Waste which can be incinerated without causing pollution to the environment or damage to the incineration plant.

### Institutional dimension of environment statistics

Refers to the institutional factors necessary to develop and strengthen the sustained production, dissemination and use of environment statistics. It comprises the legal framework that establishes the mandates and roles of the main partners, the institutional setting and institutional development level of environment statistics units and the existence and effectiveness of inter-institutional cooperation and coordination mechanisms at the national level and with specialized international agencies.

### In-stream water use

Refers to the use of water without moving it from its source or when water is immediately returned with little or no alteration.

### Insufficiently Known

A taxon is insufficiently known when an evaluation has been made but the available data are inadequate to assign a category.

### Intertidal mudflats

The unvegetated areas that are alternately exposed and inundated by the falling and rising of the tide. They may be mudflats or sand flats depending on the coarseness of the material of which they are made.

### Indirect Emissions

Indirect emissions from a building, home or business are those emissions of greenhouse gases that occur as a result of the generation of electricity used in that building. These emissions are called ‘indirect’ because the actual emissions occur at the power plant which generates the electricity, not at the building using the electricity.

### Industrial Revolution

A period of rapid industrial growth with far-reaching social and economic consequences, beginning in England during the second half of the 18th century and spreading to Europe and later to other countries including the United States. The industrial revolution marks the beginning of a strong increase in combustion of fossil fuels and related emissions of carbon dioxide.

### Infrared Radiation

Infrared radiation consists of light whose wavelength is longer than the red color in the visible part of the spectrum, but shorter than microwave radiation. Infrared radiation can be perceived as heat. The Earth’s surface, the atmosphere and clouds all emit infrared radiation, which is also known as terrestrial or long-wave radiation. In contrast, solar radiation is mainly short-wave radiation because of the temperature of the Sun.

### 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.

#### [Inundation](#)

Submergence of land by water, particularly in a coastal setting.

#### [Irrigation](#)

Process of purposely providing land with water other than rain water by artificial means.

#### [IUCN Red list \(of Threatened Species\)](#)

The IUCN Red List of Threatened Species is the world's most comprehensive inventory of the global conservation status of plant and animal species. It uses a set of criteria to evaluate the extinction risk of thousands of species and subspecies. These criteria are relevant to all species and all regions of the world.

## **K**

#### [Known mineral deposits](#)

Commercially recoverable deposits, potential commercially recoverable deposits and non-commercial and other known deposits.

## **L**

#### [Lagoons/Backwaters](#)

Such coastal bodies of water, partly separated from the sea by barrier beaches or bass of marine origin, are more properly termed lagoons. As a rule, lagoons are elongate and lie parallel to the shoreline. A creek, arm of the sea or series of connected lagoons, usually parallel to the coast, separated from the sea by a narrow strip of land but communicating with it through barred outlets are referred to as 'backwaters'.

#### [Lakes](#)

Larger bodies of standing water occupying distinct basins. These wetlands occur in natural depressions and normally fed by streams/rivers.

#### [Land](#)

Space provided for natural ecosystems, human habitats and human activities. As this space is finite, the expansion of human activities can reduce the space occupied by natural ecosystems, thus reducing ecosystems' capacity to yield ecosystem goods and services for all living beings. From the resource perspective, land is a unique environmental resource that delineates the space in which economic activities and environmental processes take place and within which environmental resources and economic assets are located.

#### [Land cover](#)

Observed (bio) physical cover on the earth's surface.

### 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.

### Landfillable (Waste)

Hazardous waste which cannot be recycled or incinerated safely, is deposited in specially created sites where the waste is deposited for final disposal and covered. These landfills are designed to minimize the chance of release of hazardous waste into the environment.

### Land put to non-agricultural uses

Land occupied by buildings, paths, etc. or under water (e.g. tank, canals, etc.) and land put to uses other than agricultural production.

### Land use

Reflects both the activities undertaken and the institutional arrangements put in place for a given area for the purposes of economic production, or the maintenance and restoration of environmental functions. Land being “used” means the existence of some kind of human activity or management. Consequently, there are areas of land that are “not in use” by human activities.

### Least Developed Country

A country with low indicators of socio-economic development and human resources, as well as economic vulnerability, as determined by the United Nations.

### Lithological map

Map differentiating the regions based on the rocks found in the region.

### Livestock

Animal species that are raised by humans for commercial purposes, consumption or labour.

### Long-Period Average (Monsoon)

Calculated on the basis of an average annual rainfall received during a significantly long period. In India, reference period used by IMD is 1951-2000.

### Longwave Radiation

Radiation emitted in the spectral wavelength greater than about 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.

## M

### Mangroves

The mangrove swamp is an association of halophytic trees, shrubs and other plants growing in brackish to saline tidal waters of tropical and sub-tropical coastlines.

### Methane (CH<sub>4</sub>)

A hydrocarbon that is a greenhouse gas with a global warming potential most recently estimated at 25 times that of carbon dioxide (CO<sub>2</sub>). 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.

### Metric Ton

Common international measurement for the quantity of greenhouse gas emissions. A metric ton is equal to 1000 kilograms.

### Metropolitan cities

Cities with a population of more than 4 million (or 40 lakh).

## Mitigation

A human intervention to reduce the human impact on the climate system; it includes strategies to reduce greenhouse gas sources and emissions and enhancing greenhouse gas sinks.

## Multilateral Environmental Agreements

Agreements that address, via international cooperation, environmental problems, especially those which have a trans-boundary nature or are global in scope. For the most relevant MEAs, participant or signatory countries are usually expected to report on progress periodically, either on a mandatory or voluntary basis.

## Municipal Solid Waste (MSW)

Includes commercial and residential wastes generated in municipal or notified areas in either solid or semi-solid form excluding industrial hazardous wastes but including treated bio-medical wastes. It consists of household waste, wastes from hotels and restaurants, construction and demolition debris, sanitation residue and waste from streets.

## N

### Natural biological resources

Consist of animals, birds, fish and plants that yield both once-only and repeat products for which natural growth and/or regeneration is not under the direct control, responsibility and management of institutional units.

### Natural Gas

Underground deposits of gases consisting of 50 to 90 percent methane (CH<sub>4</sub>) and small amounts of heavier gaseous hydrocarbon compounds such as propane (C<sub>3</sub>H<sub>8</sub>) and butane (C<sub>4</sub>H<sub>10</sub>).

### Natural Variability

Variations in the mean state and other statistics (such as standard deviations or statistics of extremes) of the climate on all time and space scales beyond that of individual weather events. Natural variations in climate over time are caused by internal processes of the climate system, as well as changes in external influences, such as volcanic activity and variations in the output of the sun.

### Net area irrigated

Total of all the areas irrigated from different sources, counting each area irrigated only once even though it was irrigated more than once in the same year.

### Net sown area

Sown area with crops and orchards, counting in the area sown more than once in the same year, only once. The net area sown was defined as the difference between the total geographical area of all plots of land of the holding and the sum of the areas of land under (1) forest, (2) barren & uncultivable wastes, (3) put to non-agricultural uses, (4) culturable wastes, (5) permanent pastures & other grazing land, (6) miscellaneous tree crops excluding orchards and (7) all type of fallow lands.

### Nitrogen Cycle

The natural circulation of nitrogen among the atmosphere, plants, animals and microorganisms that live in soil and water. Nitrogen takes on a variety of chemical forms throughout the nitrogen cycle, including nitrous oxide (N<sub>2</sub>O) and nitrogen oxides (NO<sub>x</sub>).

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

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

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

A powerful greenhouse gas with a global warming potential of 298 times that of carbon dioxide (CO<sub>2</sub>). 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. Natural emissions of N<sub>2</sub>O are mainly from bacteria breaking down nitrogen in soils and the oceans. Nitrous oxide is mainly removed from the atmosphere through destruction in the stratosphere by ultraviolet radiation and associated chemical reactions, but it can also be consumed by certain types of bacteria in soils.

### Non-Methane Volatile Organic Compounds (NMVOCs)

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

### Nuclear radiation-related diseases and conditions

Include, but are not limited to, thermal burns from infrared heat radiation, beta and gamma burns from beta and gamma radiation, radiation sickness or “atomic disease”, leukaemia, lung cancer, thyroid cancer and cancer of other organs, sterility and congenital anomalies or malformations, premature aging, cataracts and increased vulnerability to disease and emotional disorders. Exposure to nuclear radiation could occur from a nuclear explosion or an accident involving a nuclear reactor.

## O

### Ocean Acidification

Increased concentrations of carbon dioxide in sea water causing a measurable increase in acidity (i.e., a reduction in ocean pH). This may lead to reduced calcification rates of calcifying organisms such as corals, molluscs, algae and crustaceans.

### Open Forest

Forest whose crown density is more than 10 percent but less than 40 percent.

### Other fallow land

All lands which are taken up for cultivation in the past, but are temporarily out of cultivation for a period of not less than one year and not more than five years including the current agricultural year are classified under ‘other fallow’.

### Other non-cultivated biological resources

Include wild berries, fungi, bacteria, fruits, sap and other plant resources that are harvested, as well as wild animals that are trapped or killed for production, consumption and trade.

### Other wooded land

Land not classified as “Forest”, spanning more than 0.5 hectares; with trees higher than 5 metres and a canopy cover of 5-10 per cent, or trees able to reach these thresholds in situ; or with a combined cover of shrubs, bushes and trees above 10 per cent. It does not include land that is predominantly under agricultural or urban land use.

### Ox-bow lakes/ Cut off meanders

A meandering stream may erode the outside shores of its broad bends and in time, the loops may become cut-off, leaving basins. The resulting shallow crescent-shaped lakes are called oxbow lakes.

### Oxidize

To chemically transform a substance by combining it with oxygen.

### Ozone

Ozone, the triatomic form of oxygen (O<sub>3</sub>), is a gaseous atmospheric constituent. In the troposphere, it is created by photochemical reactions involving gases resulting both from natural

sources and from human activities (photochemical smog). In high concentrations, tropospheric ozone can be harmful to a wide range of living organisms. Tropospheric ozone acts as a greenhouse gas. In the stratosphere, ozone is created by the interaction between solar ultraviolet radiation and molecular oxygen (O<sub>2</sub>). Stratospheric ozone plays a decisive role in the stratospheric radiative balance. Depletion of stratospheric ozone, due to chemical reactions that may be enhanced by climate change, results in an increased ground-level flux of ultraviolet (UV-) B radiation

#### Ozone Depleting Substance (ODS)

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

#### Ozone Layer

The layer of ozone that begins approximately 15 km above Earth and thins to an almost negligible amount at about 50 km, shields the Earth from harmful ultraviolet radiation from the sun. The highest natural concentration of ozone (approximately 10 parts per million by volume) occurs in the stratosphere at approximately 25 km above Earth. The stratospheric ozone concentration changes throughout the year as stratospheric circulation changes with the seasons. Natural events such as volcanoes and solar flares can produce changes in ozone concentration, but man-made changes are of the greatest concern.

#### 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

#### Pastures and grazing land

Include all grazing lands irrespective of whether they are permanent pastures and meadows or not. Grazing lands within forest area shall be included under this category.

#### Particulate Matter(PM)

Very small pieces of solid or liquid matter such as particles of soot, dust, fumes, mists or aerosols. PM<sub>10</sub> is particulate matter 10 micrometers or less in diameter, PM<sub>2.5</sub> is particulate matter 2.5 micrometers or less in diameter.

#### 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 by Volume (ppmv)

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

#### Parts per Trillion (ppt)

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

#### Perfluorocarbons (PFCs)

A group of chemicals composed of carbon and fluorine only. These chemicals (predominantly CF<sub>4</sub> and C<sub>2</sub>F<sub>6</sub>) 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: These chemicals are predominantly human-made, though there is a small natural source of CF<sub>4</sub>.

### pH

The logarithm to the base 10 of the reciprocal of Hydrogen ion concentration.

### Phenology

The timing of natural events, such as flower blooms and animal migration, which is influenced by changes in climate. Phenology is the study of such important seasonal events. Phenological events are influenced by a combination of climate factors, including light, temperature, rainfall and humidity.

### Photosynthesis

Process by which plants take CO<sub>2</sub> from the air (or bicarbonate in water) to build carbohydrates, releasing O<sub>2</sub> in the process. There are several pathways of photosynthesis with different responses to atmospheric CO<sub>2</sub> concentrations.

### Precession

The wobble over thousands of years of the tilt of the Earth's axis with respect to the plane of the solar system.

### Protected Area Management Categories

Depending on the strictness of protection and serve as the classification for protected areas, the main categories are strict nature reserve; wilderness area; national park; natural monument or feature; habitat/species management area; protected landscape/seascape; and protected area with sustainable use of natural resources.

## R

### Radiation

Energy transfer in the form of electromagnetic waves or particles that release energy when absorbed by an object.

### Radiative Forcing

A measure of the influence of a particular factor (e.g. greenhouse gas (GHG), aerosol, or land use change) on the net change in the Earth's energy balance.

### Rare

The species with small world populations that are not at present endangered or vulnerable but are at risk. These species are usually localised within restricted geographic areas or habitats or are thinly scattered over a more extensive range.

### Recyclable (Hazardous Waste)

A hazardous waste is said to be recyclable, if it can be used, reused, or reclaimed.

### Recycling

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

### Reflectivity

Ability of a surface material to reflect sunlight including the visible, infrared and ultraviolet wavelengths.

### Reforestation

Planting of forests on lands that have previously contained forests but that have been converted to some other use.

### Re-injected (Natural gas)

Gas which is re-injected into an underground reservoir, typically one already containing both natural gas and crude oil, in order to increase the pressure within the reservoir and thus induce the flow of crude oil.

#### Relative Sea Level Rise

The increase in ocean water levels at a specific location, taking into account both global sea level rise and local factors, such as local subsidence and uplift. Relative sea level rise is measured with respect to a specified vertical datum relative to the land, which may also be changing elevation over time.

#### Remaining resources

Mineral resources that have not yet been declared as economically viable, but are potentially valuable and for which reasonable prospects exist for eventual economic extraction.

#### Remote sensing

Science of obtaining information about objects or areas from a distance, typically from aircraft or satellites.

#### Renewable Energy

Energy captured from resources that are naturally replenishing such as biomass, hydro, geothermal, solar, wind, ocean thermal, wave action and tidal action.

#### Renewable water resources

Resources are generated by precipitation and inflows of water from neighbouring territories and reduced by evapotranspiration.

#### Reserves

Estimates of deposits, that are valuable and legally and economically and technically feasible

#### Reservoir/Barrage

A pond or lake built for the storage of water, usually by the construction of a dam across a river or by dykes constructed for irrigation/water facilities.

#### Resources - Proved, Indicated, Inferred

Based on the depth of the resource and the scope of exploration, resources are classified into proved, indicated and inferred resources. While proved resources (also referred to as reserves) are those which have been reliably estimated and can be recovered economically, Indicated resources are identified based on combination of direct measurement and reasonable geological assumptions. Inferred resources are based on geological evidence and assumed but have not yet been verified. In respect of coal resources in India, Proved Resources are coal resources falling within 200 m radius from a borehole point (or observation point). Indicated resources occur in the area falling between radii of 200m and 1km from a borehole point and Inferred resources occur in the area falling between radii of 1km and 2km from a borehole point.

#### Residuals

Flows of solid, liquid and gaseous materials and energy, that are discarded, discharged or emitted by establishments and households through processes of production, consumption or accumulation.

#### Resilience

A capability to anticipate, prepare for, respond to and recover from significant multi-hazard threats with minimum damage to social well-being, the economy and the environment.

#### Resource management activities

Activities whose primary purpose is preserving and maintaining the stock of natural resources and hence safeguarding against depletion. These activities include, but are not limited to, reducing the withdrawals of natural resources; restoring natural resource stocks; the general management of natural resources (including monitoring, control, surveillance and data collection); and the production of goods and services used to manage or conserve natural resources. They cover the

management of mineral and energy resources; timber resources; aquatic resources; other biological resources; water resources; research and development activities for resource management; and other resource management activities.

#### Reused water

Wastewater supplied to a user for further use with or without prior treatment.

#### River/stream

These are linear water features of the landscape.

#### Riverine Wetlands

Classified as marshes or swamp, these are formed when water accumulates along the rivers. Swamps are wetlands dominated by mosses, grass, trees or shrubs while marshes are frequently or continually inundated wetland characterised by emergent herbaceous vegetation adapted to saturated soil conditions.

## S

#### Salt pans

Shallow rectangular man-made depressions in which saline water is accumulated for drying in the sun for making salt.

#### Salt Marsh

Natural or semi-natural halophytic grassland and dwarf brushwood on the alluvial sediments bordering saline water bodies whose water level fluctuates either tidally or non- tidally.

#### Salt Water Intrusion

Displacement of fresh or ground water by the advance of salt water due to its greater density, usually in coastal and estuarine areas.

#### Sand/Beach

Beach is an un-vegetated part of the shoreline formed of loose material, usually sand that extends from the upper berm (a ridge or ridges on the backshore of the beach, formed by the deposit of material by wave action, that marks the upper limit of ordinary high tides and wave wash) to low water mark. Beach comprising rocky material is called rocky beach.

#### Sea Surface Temperature

The temperature in the top several feet of the ocean, measured by ships, buoys and drifters.

#### Sensitivity

The degree to which a system is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea level rise).

#### Sink

Any process, activity or mechanism which removes a greenhouse gas, an aerosol or a precursor of a greenhouse gas or aerosol from the atmosphere.

#### Slums

Residential areas where dwellings are unfit for human habitation by reasons of dilapidation, overcrowding, faulty arrangements and design of such buildings, narrowness or faulty arrangement of street, lack of ventilation, light, or sanitation facilities or any combination of these factors which are detrimental to the safety and health.

#### 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 resources

Comprise the top layers (horizons) of soil that form a biological system.

#### Solar Radiation

Radiation emitted by the Sun. It is also referred to as short-wave radiation. Solar radiation has a distinctive range of wavelengths (spectrum) determined by the temperature of the Sun.

#### Species

Group of individual specimens having close resemblance but differing from others and belonging to the same genus.

#### Stocks of non-renewable energy resources

Defined as the amount of known deposits of mineral energy resources.

#### Stocks of mineral resources

Defined as the amount of known deposits of non-metallic and metallic mineral resources

#### Stratosphere

Region of the atmosphere between the troposphere and mesosphere, having a lower boundary of approximately 8 km at the poles to 15 km at the equator and an upper boundary of approximately 50 km. Depending upon latitude and season, the temperature in the lower stratosphere can increase, be isothermal, or even decrease with altitude, but the temperature in the upper stratosphere generally increases with height due to absorption of solar radiation by ozone.

#### Stratospheric Ozone

See ozone layer.

#### Stream flow

Volume of water that moves over a designated point over a fixed period of time. It is often expressed as cubic feet per second.

#### Sub-soil resources

Underground deposits of various minerals that provide raw materials and energy sources for humans. When considered as resources for human use, these sub-soil elements differ fundamentally from ecosystems in that they are non-renewable. Their use thus results in permanent depletion.

#### 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. Sulphate aerosols can lower the Earth's temperature by reflecting away solar radiation (negative radiative forcing).

#### Sulphur Hexafluoride (SF<sub>6</sub>)

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.

#### Surface water

Comprises all water that flows over or is stored on the ground's surface, regardless of its salinity levels. Surface water includes water in artificial reservoirs, lakes, rivers and streams, snow, ice and glaciers

## T

### Tanks/Ponds

An artificial pond, pool or lake formed by building a mud wall across the valley of a small stream to retain the monsoon or to store water, including those constructed for industrial purposes.

### Technological disasters

Disasters arising as a result of human intent, negligence or error, or from faulty or failed technological applications. The three types of technological disasters are: industrial accidents which cover accidents associated with chemical spill, collapse, explosion, fire, gas leak, poisoning, radiation and other; transport accidents which cover accidents associated with air, road, rail and water; and miscellaneous accidents which cover accidents associated with collapse, explosion, fire and other disasters of varied origin.

### Thermal Expansion

The increase in volume (and decrease in density) that results from warming water. A warming of the ocean leads to an expansion of the ocean volume, which leads to an increase in sea level.

### Timber resources

Defined by the volume of trees, living and dead, which can still be used for timber or fuel.

### Toxic substances

Include toxic pesticides (e.g., pesticides that have teratogenic, carcinogenic, tumorigenic and/or mutagenic effects) and toxic industrial chemicals (e.g., lead, arsenic, mercury and nickel, among others)

### Toxic substance-related diseases and health problems

Include, but are not limited to, chronic illnesses of the respiratory system (such as pneumonia, upper and lower respiratory diseases, asthma and chronic obstructive pulmonary diseases), cancer, infertility and congenital anomalies or malformations.

### 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.

### Troposphere

The lowest part of the atmosphere from the surface to about 10 km in altitude in mid-latitudes (ranging from 9 km in high latitudes to 16 km in the tropics on average) where clouds and "weather" phenomena occur. In the troposphere temperatures generally decrease with height.

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

See ozone.

### Tropospheric Ozone Precursors

See ozone precursors.

### Turbidity

Measure of the degree to which the water loses its transparency due to the presence of suspended particulates. The more total suspended solids in the water, the murkier it seems and the higher the turbidity. Turbidity is considered as a good measure of the quality of water.

### Type of dwelling

Dwellings, have been classified under three categories, namely, chawl/bustee, independent house and flat.

(a) Chawl/Bustee: A collection of poorly built kutcha or semi-pucca huts or tenements.

(b) Independent house: A separate structure with a room or rooms and having all its accessories and a separate entrance to it. In other words, if the dwelling unit and the entire structure of the building are physically coterminous, it should be considered an independent house.

(c) Flat: All housing arrangements other than chawl/bustee and independent house are to be taken as flats. Flat thus includes any self-contained dwelling unit with a room or rooms provided with normal housing facilities for water supply and sanitation used exclusively by the family residing there or jointly with other families. It also includes detached room or rooms with or without other housing facilities.

#### Type of structure

The structures have been classified into three categories, namely pucca, semi-pucca and kutcha on the basis of the materials used for construction.

(a) Pucca Structure: A structure whose walls and roof at least are made of pucca materials.

(b) Kutcha Structure: A structure which has walls and roof made of non-pucca materials.

(c) Semi-Pucca Structure: A structure which has either the walls or the roof, but not both, made of pucca materials.

Materials such as oven-burnt bricks, stone, stone-blocks, cement, concrete, jack-board (cement plastered reed), tiles and timber are pucca materials. Corrugated iron or asbestos sheets used in the construction of roof will also be treated as pucca materials.

## U

### Ultraviolet Radiation (UV)

The energy range just beyond the violet end of the visible spectrum. Although ultraviolet radiation constitutes only about 5 percent of the total energy emitted from the sun, it is the major energy source for the stratosphere and mesosphere, playing a dominant role in both energy balance and chemical composition. Most ultraviolet radiation is blocked by Earth's atmosphere, but some solar ultraviolet penetrates and aids in plant photosynthesis and helps produce vitamin D in humans. Too much ultraviolet radiation can burn the skin, cause skin cancer and cataracts and damage vegetation.

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

The Convention on Climate Change, which entered into force on 21 March 1994, sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. The Convention enjoys near universal membership, with 189 countries having ratified. Under the Convention, governments:

- gather and share information on greenhouse gas emissions, national policies and best practices
- launch national strategies for addressing greenhouse gas emissions and adapting to expected impacts, including the provision of financial and technological support to developing countries
- cooperate in preparing for adaptation to the impacts of climate change

### Urban Agglomeration

(i) A city or a town with a continuous outgrowth, the outgrowth being outside the statutory limits but falling within the boundaries of the adjoining villages; or

(ii) Two or more adjoining towns with their outgrowths, if any, as in (i) above; or

(iii) A city and one or more adjoining towns with or without outgrowths all of which form a continuous spread.

## V

### Vascular plants

Land plants that use specialized lignified tissues (the xylem) for conducting water and minerals throughout the plant. They also have a specialized non-lignified tissue (the phloem) to conduct products of photosynthesis. Examples of vascular plants include trees, flowers, grasses and vines.

### Vector-borne diseases

Diseases transmitted by organisms (e.g., insects and arachnids) that carry viruses, bacteria, protozoa and other pathogens. Common vector-borne diseases include, but are not limited to, malaria, dengue fever, chikungunya fever, Acute Encephalitis Syndrome/Japanese Encephalitis and Kala-azar (Visceral leishmaniasis).

### Vulnerable

Species believed likely to move into the endangered category in the near future if the causal factors continue operating. Included are species of which most or all the populations are decreasing because of overexploitation, extensive destruction of habitat or other environmental disturbance; species with populations that have been seriously depleted and whose ultimate security is not yet assured; and species with populations that are still abundant but are under threat from serious adverse factors throughout their range.

### Vulnerability

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

## W

### Waste

Covers discarded materials that are no longer required by the owner or user.

### Wastewater

Discarded water that is no longer required by the owner or user and contains dissolved or suspended waste materials

### Water abstraction

The amount of water that is removed from any source, either permanently or temporarily, in a given period of time by economic activities and households.

### Waterlogged areas

Said of an area in which water stands near, at, or above the land surface, so that the roots of all plants except hydrophytes are drowned and the plants die. Spectrally, during the period when surface water exists, waterlogged areas appear more or less similar to lakes/ponds. However, during dry season large or all parts of such areas dry up and give the appearance of mud/salt flats. Man-made activities like canals can also cause waterlogging in adjacent areas due to seepage especially when canals are unlined. Such areas can be identified along the canal network.

### Water-related diseases and conditions

Diseases and conditions resulting from micro-organisms and chemicals in the water that humans drink. They include, but are not limited to, diseases caused by biological contamination, such as

gastroenteritis infections caused by bacteria, viruses and protozoa and water-borne parasite infections.

#### Water resources

Consist of freshwater and brackish water, regardless of their quality, in inland water bodies, including surface water, groundwater and soil water

#### Watershed

The geographic area through which water flows across the land and drains into a common body of water, whether a stream, river, lake, or ocean.

#### Water Vapour

The most abundant greenhouse gas, it is the water present in the atmosphere in gaseous form. Water vapour is an important part of the natural greenhouse effect. In addition to its role as a natural greenhouse gas, water vapour also affects the temperature of the planet because clouds form when excess water vapour in the atmosphere condenses to form ice and water droplets and precipitation.

#### Weather

Atmospheric condition at any given time or place. 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 in a narrow sense is usually defined as the "average weather". 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).

#### Wetlands

Areas of land that are either temporarily or permanently covered by water. These are neither truly aquatic nor terrestrial; it is possible that wetlands can be both at the same time depending on seasonal variability. These could be natural or man-made and found both in the inland and coastal areas.