

## GLOSSARY

### **Absorption of radiation**

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

### **Acid rain**

Rainwater that has an 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 vapor and precipitate as sulfuric acid or nitric acid in rain, snow, or fog. The dry forms are acidic gases or particulates.

### **Aerosol**

A collection of airborne particles. The particulate matter, solid or liquid, is larger than a molecule but small enough to remain suspended in the atmosphere. Aerosols can original from 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.

The term has also come to be associated, erroneously, with the propellant used in « aerosol sprays »

### **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.

### **Annex I Parties**

Countries listed in the annex I of the Framework Convention on Climate Change.

These countries were members of the Organization for Economic Cooperation and Development (OECD) in 1992 , 11 countries undergoing the process of transition to a market economy and The European Union.

These countries are committed to adopt national policies and take measures to mitigate climate change.

### **Antarctic "Ozone Hole"**

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

### **Anthropogenic**

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

### **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. The layer nearest the Earth is the troposphere, which reaches up to an altitude of about 8 km in the polar regions and up to 17 km above the equator. The stratosphere, which reaches to an altitude of about 50 km 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.

### **Atmospheric lifetime**

See lifetime

### **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).

### **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.

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

A colorless, odorless, 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 (CDE)**

A metric measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). The carbon dioxide equivalent for a gas is derived by multiplying the mass of the gas by the associated GWP.

$$\text{CDE} = (\text{mass of a gas}) * (\text{GWP of the gas})$$

Note generally the unit used is Gg ( 10<sup>9</sup> g = 1 000 000 tons ) or Tg ( 10<sup>12</sup> g = 1 billion tons )

### **Carbon equivalent (CE)**

A metric measure used to compare the emissions of the different greenhouse gases based upon their global warming potential (GWP). 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:

$$CE = \text{mass of a gas} * (\text{GWP of the gas}) * (12/44)$$

$$CE = CDE * 12/44$$

### **Chlorofluorocarbons (CFCs)**

Organic compounds made up of atoms of carbon, chlorine, and fluorine. An example is CFC-12 (CCl<sub>2</sub>F<sub>2</sub>), 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**

Climate is usually defined as the average weather, or more rigorously, as the statistical description of the weather in terms of the mean and variability of relevant quantities over period of several decades typically three decades as defined by WMO. These quantities are most often surface variables such as temperature, precipitation, humidity, sunshine, wind. But in a wider sense the « climate » is the description of the state of the climate system.

### **Climate change**

#### **FCCC usage:**

A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which in addition to natural climate variability observed over comparable time periods.

#### **IPCC usage:**

Climate change as referred in the observational record of the climate occurs because of internal changes within the climate system or in the interaction between its components, or because of changes in external forcing either for natural reasons or because of human activities. It is generally not possible clearly to make attribution between the causes.

Projections of future climate change reported by IPCC generally consider only the influence of anthropogenic increases in greenhouse gases and other human-related factors.

#### **Cloud condensation**

Airborne particles that serve as an initial site of condensation of liquid water and which lead to the formation of cloud droplets.

### **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 sulfur dioxide. The benefits associated with reductions in emissions of particulates and sulfur dioxide are the cocontrol benefits of reductions in carbon dioxide.

### **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.

### **Commercialization**

Sequence of sections necessary to achieve market entry and general market competitiveness of new innovative technologies, processes and products.

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

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

### **Cost-effective**

A criterion that specifies that a technology or measure deliver a good or service at equal or lower cost than current practice.

### **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.

### **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.

### **Emission Permit**

A non-transferable or tradable allocation of entitlements by a government to an individual firm to emit a specified amount of a substance.

### **Emission Quota**

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

### **Emission Standard**

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

### **Energy conservation**

Reduction or elimination of unnecessary energy use and waste.

### **Energy intensity**

Ratio of the energy consumption and economic or physical output. At national level, energy intensity is the ratio of primary energy consumption or final energy consumption to gross domestic product or physical output.

### **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 traveled 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, SF<sub>6</sub>, NF<sub>3</sub>, and other photochemically important gases caused by human activities such as fossil fuel consumption, trap more infrared radiation, thereby exerting a warming influence on the climate.

### **Environment take ISO 14001 DEFINITION**

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

### **Equivalent CO<sup>2</sup>**

The concentration of CO<sup>2</sup> that would cause the same amount of radiative forcing as the given mixture of CO<sup>2</sup> and other greenhouse gases.

### **Feedback**

When one variable in a system triggers changes in a second variable that in turn ultimately affects the original variable ; a positive feedback intensifies the affect, and a negative feedback reduces the effect.

### **Final Energy**

Energy supplied that is available to the consumer to be converted into useful energy.

### **Fluorocarbons**

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

### **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.

### **Fugitive emissions**

Unintended gas leaks from the processing, transmission, and/or transportation of fossil fuels, CFCs from refrigeration leaks, SF<sub>6</sub> from electrical power distributor, etc.

### **GHG reduction Potential**

Possible reduction in emissions of greenhouses gases ( quantified in terms of absolute reductions or in percentages o baseline emissions) that can be achieved through the use of technologies and measures.

### **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.

### 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 15°C warmer than it would otherwise be. Current life on Earth could not be sustained without the natural greenhouse effect.

### Greenhouse Gas

A gas that absorbs radiation at specific wavelengths within the spectrum of radiation ( infrared radiation ) emitted by the Earth's surface and by clouds.

The gas in turn emits infrared radiation from a level where the temperature is colder than the surface. the net effect is a local trapping of part of the absorbed energy and a tendency to warm the planetary surface Water vapor (H<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), ozone (O<sub>3</sub>) are the primary greenhouses gases in the earth's atmosphere, chlorofluorocarbon ( CFC ) halogenated fluorocarbons (HCFCs), ozone (O<sub>3</sub>), perfluorinated carbons (PFCs), and hydrofluorocarbons (HFCs) are some others greenhouse gases.

### Halocarbons

Compounds containing either chlorine, bromine, fluorine or iodine and carbon. Sometime Hydrogen can be present in the compound.

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.

### Halons

Compounds, also known as bromofluorocarbons, 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

### Hydrocarbons

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

### **Hydrochlorofluorocarbons (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.

### **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).

### **Industrial sector**

Construction, manufacturing, agricultural and mining establishments.

### **Information and Education Measures**

Actions that provide information, training or encouragement or help to develop understanding. Such measures may provide information about the availability, performance and other characteristics of technologies, practices and measures.

### **Infrared radiation**

Radiation emitted by the earth's surface, the atmosphere and by the clouds. Infrared radiation have distinctive spectrum governed by the temperature of the earth-atmosphere system. The spectrum of infrared radiation is practically distinct.

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.

### **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.

### **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.

### **Kyoto Protocol**

This is an international agreement struck by 159 nations attending the Third Conference of Parties (COP-3) 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.

### **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).

### **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.

### **Market Barriers**

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

### **Measures**

Actions that can be taken by a government or a group of governments, often in conjunction with the private sector, to accelerate the use of technologies or other practices that reduce CHG emissions.

### **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.

### **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>4</sub>) and butane (C<sub>4</sub>H<sub>10</sub>).

### **No Regrets**

Measures whose benefits – such as improved performance or reduces emissions of local/regional pollutants, but excluding the benefits of climate change mitigation-equal or exceed their costs. They are sometimes known as «measures worth doing anyway.»

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

A colorless gas with a pungent odor, having the molecular form of O<sub>3</sub>, 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), bromofluorocarbons (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 (O<sub>3</sub>) 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.

### **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.

### **Perfluorocarbons (PFCs)**

A group of human-made 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: CF<sub>4</sub> has a global warming potential (GWP) of 6,500 and C<sub>2</sub>F<sub>6</sub> has a GWP of 9,200.

### **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.

### **Policies**

Procedures developed and implemented by government(s) regarding the goal of mitigating climate change through the use of technologies and measures.

### **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.

### **Precautionary principal**

Avoiding a solution that is irreversible, because the assumptions on which the solution is based may prove incorrect, in favor of a seemingly inferior solution that can be reversed.

### **Primary Energy**

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

### **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.

### **Radiative damping**

An imposed positive radiative forcing on the earth-atmosphere system ( e.g. through the addition of greenhouse gases) represents an energy surplus. The temperature of the surface and lower atmosphere will increase and in turn increase the amount of infrared radiation being emitted to space, thus a new energy balance will be established. The amount that emissions of infrared radiation to space increase for a given increase in temperature is known as radiative damping.

### **Radiative Forcing**

A simple measure of the importance of a potential climate change mechanism. radiating forcing is the perturbation to the energy balance of the Earth-atmosphere system in  $W/m^2$ ) following, for example, a change in the concentration of  $CO_2$  or a change in the output of the Sun ; the climate system responds to the radiative forcing so as to re-establish the energy balance. A positive radiative forcing tends to warm the surface and a negative radiating forcing tends to cool the surface.

The radiative forcing is normally quoted as a global and annual mean value.

In IPCC reports, radiative forcing is the perturbation of the energy balance of the surface troposphere system, after allowing for the atmosphere to re-adjust to a state of global mean radiative equilibrium. Sometimes called « climate forcing ».

### **Recycling**

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

### **Regulatory Measures**

Rules and codes enacted by governments that mandate product specifications or process performance characteristics.

#### **Residential sector**

An area or portion consisting only of housing units.

### **Scenario**

A plausible description of how the future may develop, based on a coherent and internally consistent set of assumptions about key relationships and driving forces ( e.g. rate of technology changes, prices). Note that scenario are neither predictions nor forecasts.

### **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).

### **Source**

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

### **Standards/Performance Criteria**

Set of rules or codes, amndating or defining product performance (e.g., grades, dimensions, characteristics, test methods, rules for use).

### **Stratosphere**

Second layer of the atmosphere, extending from about 19 to 48 kilometers above the earth's surface. It contains small amounts of gaseous ozone (O<sub>3</sub>), 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.

### **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.

### **Sustainable development**

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

### **Technical potential**

The amount by which it is possible to reduce GHC emission or improve energy efficiency by using a technology or pratice in all applications in which it could technically be adopted, without consideration of its costs or pratical feasibility

### **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 livability.

### **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 vapor, 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.

### **Transportation sector**

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

### **Tropopause**

The boundary between the troposphere and the stratosphere

### **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.

### **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.

### **United Nations Framework Convention on Climate Change**

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.

### **Volatile organic compounds (VOCs)**

Any one of several organic compounds which are released to the atmosphere by plants or through vaporization of oil products, and which are chemically reactive and are involved in the chemistry of tropospheric ozone production. VOCs contribute significantly to photochemical smog production and certain health problems.

### **Voluntary Measures**

Measures to reduce CHG emission that are adopted by firms or other actors in the absence of governments mandates. Voluntary measures help make climate-friendly products or processes more readily available or encourage consumers to incorporate environmental values in their market choices.

### **Water Vapor**

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

### **Weather**

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