



# **Climate Change:** *A Glossary of Terms*

*2nd Edition, January 2000*



International Petroleum Industry  
Environmental Conservation Association

## **Preface**

This glossary of climate change terms was first printed in June 1999. This version has been updated following the UNFCCC COP-5. Some terms have been amended; the following terms or acronyms have been added:

ARD Activities—Afforestation, Reforestation, Deforestation

Articles 4.8 & 4.9

Budget

Budget period

Buenos Aires Plan of Action

Carbon Intensity

Combined Cycle

Commitment Period

Forest

Fuel Cell

Grandfathering

Kyoto Lands

LULUCF

Radiative Forcing

Reforestation

---

Copyright ©IPIECA 2000

International Petroleum Industry Environmental Conservation Association  
2nd Floor, Monmouth House,  
87–93 Westbourne Grove, London W2 4UL  
United Kingdom

# IPIECA

## *Climate Change: a Glossary of Terms*

### **Activities Implemented Jointly, or AIJ**

The pilot phase for joint implementation (JI), as defined in Article 4.2(a) of the FCCC, that allows for project activity among developed countries (and their companies) and between developed and developing countries (and their companies). AIJ is intended to allow Parties to gain experience in jointly implemented project activities. There is no crediting for AIJ activity during the pilot phase. (See also ‘Joint Implementation’ and ‘Clean Development Mechanism’). A decision remains to be taken on the future of AIJ projects and how they may relate to the Kyoto Mechanisms.

### **Adaptation**

The adjustment of an organism or population to a new or altered environment. Also refers to conscious and unconscious decisions made by people to adjust to changes, such as adaptation to potential climate change.

### **Additionality**

According to the Kyoto Protocol Articles on *Joint Implementation* and the *Clean Development Mechanism*, emissions reduction units (ERUs) will be awarded to project-based activities provided that the projects achieve reductions that are ‘*additional to those that otherwise would occur.*’ The issue is subject to further clarification by Parties. Some now make the distinction between environmental additionality and economic/financial additionality. Under financial additionality, in one approach projects will only earn credit if funds additional to existing ODA and GEF commitments are specifically committed to achieve the GHG reductions. In other approaches funding from any source, including private investment, must be additional to funding for the project in the absence of a mechanism for credits. With environmental additionality, credits are awarded

according to the level of GHG reductions or limitations achieved.

**Ad Hoc Group on the Berlin Mandate, or AGBM**

Working group established by the first meeting of the Conference of the Parties (COP-1) to develop a process aimed at strengthening developed countries' commitments to greenhouse gas reductions in the post-2000 period through the adoption of a protocol or other legal instrument. The AGBM convened for the last time at COP-3 in Kyoto.

**Afforestation**

The act or process of establishing a forest on land that had not been forested in relatively recent history.

**AIJ**

See 'Actions Implemented Jointly'.

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

A group of developing countries which share common objectives on environmental and sustainable development matters. The group was formed during the Second World Climate Conference in 1990 and comprise small island and low-lying coastal developing countries which are particularly vulnerable to the adverse consequences of climate change such as sea level rise, coral bleaching and the increased frequency and intensity of tropical storms (AOSIS' own definition). The group includes more than 35 states from the Atlantic, Caribbean, Indian Ocean, Mediterranean and Pacific.

**Alternative Energy**

Energy derived from non-fossil fuel sources.

**Anthropogenic Emissions**

Emissions of greenhouse gases associated with human activities. These include burning of fossil fuels for energy, deforestation and land-use changes.

**Annex I Countries**

Annex I to the Climate Convention (UNFCCC) lists all the countries in the Organization of Economic Cooperation and Development (OECD), plus countries

with economies in transition, Central and Eastern Europe (excluding the former Yugoslavia and Albania). By default the other countries are referred to as Non-Annex I countries. Under Article 4.2 (a&b) of the Convention, Annex I countries commit themselves specifically to the aim of returning individually or jointly to their 1990 levels of GHG emissions by the year 2000.

**Annex II Countries**

Annex II to the Climate Convention lists all countries in the OECD. Under Article 4.2 (g) of the Convention, these countries are expected to provide financial resources to assist developing countries comply with their obligations such as preparing national reports. Annex II countries are also expected to promote the transfer of environmentally sound technologies to developing countries.

**Annex B Countries**

Annex B in the Kyoto Protocol lists those developed countries that have agreed to a target for their greenhouse gas emissions, including those in the OECD, Central and Eastern Europe and the Russian Federation. Not quite the same as Annex I, which also includes Turkey, and Belarus, while Annex B includes Croatia, Monaco, Liechtenstein and Slovenia.

**AOSIS**

See 'Alliance of Small Island States.'

**ARD Activities**

Afforestation, Reforestation, Deforestation (See separate definitions). These are the three land-use change and forestry activities that are included in Article 3.3 of the Kyoto Protocol. Net changes resulting from these activities are allowed to be used by the Parties in meeting their GHG obligations under the Protocol in the first commitment period (they are required in the second commitment period). They are often referred to together as ARD. ARD Activities are the focus of Ch.4 of the IPCC Special Report on LULUCF currently at the draft stage.

**Articles 4.8 and 4.9**

Adverse impacts of climate change, the impact of measures taken to respond to climate change, and compensation for these impacts is referred to in Articles 4.8 and 4.9 of the Convention. This issue is also addressed under Article 3.14 of the Kyoto Protocol. In the negotiations, discussion of these articles is of particular concern to small island countries and those non-Annex I countries whose economies are highly dependent on fossil fuels.

**Assigned Amounts**

Under the Kyoto Protocol, the total amount of greenhouse gas emissions that each developed country has agreed that its emissions will not exceed in the first commitment period (2008–12) is the assigned amount. This is calculated by multiplying its total greenhouse gas emissions in 1990 by 5 (for the five-year commitment period) and then by the percentage it agreed to as listed in Annex B of the Protocol (e.g., 92 per cent for the EU; 93 per cent for the USA).

**Atmosphere**

The envelope of gases surrounding the earth and bound to it by the earth's gravitational attraction. The atmosphere is divided into layers: the troposphere (from ground level to between 8–17km); the stratosphere (up to 50km); the mesosphere (50–90km); and the thermosphere which forms the transition zone to outer space. There is relatively little mixing between layers.

**Banking**

Parties to the Kyoto Protocol may save excess emissions allowances or credits from the first commitment period for use in subsequent commitment periods (post-2012).

**Baseline**

A projected level of future emissions against which reductions by project activities could be determined, or the emissions that would occur without policy intervention.

**Berlin Mandate**

Decision of the Parties reached at the first session of the Conference of the Parties to the FCCC (COP-1) in

1995 in Berlin. Governments agreed that the commitments in the Convention were inadequate, and further agreed to begin a negotiating process to prepare a protocol or other legal instrument to strengthen these commitments in the post-2000 period.

**Biofuel**

A fuel produced from dry organic matter or combustible oils produced by plants. Examples of biofuel include alcohols (from fermented sugar), black liquor from the paper manufacturing process, wood and soybean oil.

**Biomass**

The total dry organic matter or stored energy content of living organisms. Biomass can be used for fuel directly by burning it (e.g., wood), indirectly by fermentation to an alcohol (e.g., sugar) or extraction of combustible oils (e.g., soybeans).

**Borrowing**

The Kyoto Protocol does not permit borrowing emissions credits or units from future commitment periods (i.e., from the periods after 2012) to satisfy obligations in the first commitment period (2008–12). On the other hand, carrying forward excess credits is allowed. (See also ‘Banking.’)

**BTU Tax**

Energy tax levied at a rate based on the BTU (British Thermal Unit) energy content of a fuel.

**Bubble**

Article 4 of the Kyoto Protocol allows a group of countries to meet their target listed in Annex B jointly by aggregating their total emissions under one ‘bubble’ and sharing the burden. The EU nations have agreed to aggregate and share their emissions commitments under one bubble.

**Budget**

See ‘Assigned Amount’.

**Budget Period**

See ‘Commitment Period’.

**Buenos Aires Plan of Action**

The Plan of Action agreed by governments at COP-4 held in Buenos Aires (November, 1998). The Plan of Action states the aim to resolve, by COP-6, a list of outstanding issues concerning the FCCC and the Kyoto Protocol, principally on the Kyoto Mechanisms and compliance. The development and transfer of technology, compensation for adverse effects (of climate change itself and mitigation policies), and the status of projects under the Activities Implemented Jointly (AIJ) pilot programme are also included in the Plan of Action and require resolution by COP-6. It is sometimes referred to as the BAPA.

**Cap**

See 'Emissions Cap'

**Capacity Building**

A process of constructive interaction between developing countries and the private sector to help them develop the capability and skills needed to achieve environmentally sound forms of economic development. The process makes use of the private sector's modern technologies and management systems, in combination with a competent workforce and appropriate laws and regulations.

**Carbon Cycle**

The natural processes that govern the exchange of carbon (in the form of CO<sub>2</sub>, carbonates and organic compounds etc.) among the atmosphere, ocean and terrestrial systems. Major components include photosynthesis, respiration and decay between atmospheric and terrestrial systems (approximately 100 billion tonnes/year (gigatons)); thermodynamic invasion and evasion between the ocean and atmosphere, operation of the carbon pump and mixing in the deep ocean (approx. 90 billion tonnes/year). Deforestation and fossil fuel burning releases approximately 7 gt into the atmosphere annually. The total carbon in the reservoirs is approximately 2000 gt in land biota, soil and detritus, 750 gt in the atmosphere and 38,000 gt in the oceans. (Figures from IPCC WGI Scientific Assessment 1990.) Over still longer periods geological processes of outgassing, volcanism, sedimentation and weathering are also important.

**Carbon Dioxide, or CO<sub>2</sub>**

A naturally occurring gas, it is also a by-product of burning fossil fuels and biomass, as well as land-use changes and other industrial processes. It is the principal anthropogenic greenhouse gas that affects the earth's temperature. It is the reference gas against which other GHGs are indexed and therefore has a 'Global Warming Potential' (see below) of 1. Carbon dioxide constitutes approximately 0.036 per cent of the atmosphere. The mass ratio of carbon to carbon dioxide is 12:44.

**Carbon Dioxide Fertilization**

Enhancement of plant growth or yield as a result of an increase in the atmospheric concentration of CO<sub>2</sub>.

**Carbon Intensity**

Carbon dioxide emissions per unit of energy or economic output.

**Carbon Sequestration**

The long-term storage of carbon or carbon dioxide in the forests, soils, ocean, or underground in depleted oil and gas reservoirs, coal seams, and saline aquifers. Examples include: the separation and disposal of CO<sub>2</sub> from flue gases or processing fossil fuels to produce H<sub>2</sub> and carbon-rich fractions; and the direct removal of CO<sub>2</sub> from the atmosphere through land use change, afforestation, reforestation, ocean fertilization, and agricultural practices to enhance soil carbon.

**Carbon Sinks**

Natural or man-made systems that absorb carbon dioxide from the atmosphere and store them. Trees, plants, and the oceans all absorb CO<sub>2</sub> and, therefore, are carbon sinks.

**Carbon Tax**

A tax placed on carbon emissions. It is similar to a BTU tax, except that the tax rate is based on the fuel's carbon content.

**CDM**

See 'Clean Development Mechanism'.

**Certified Emission Reduction Unit, or CER**

A CER represents a specified amount of greenhouse gas emissions reduction achieved through a Clean Development Mechanism project.

**CER**

See ‘Certified Emission Reduction Unit’.

**CFCs**

See ‘Chlorofluorocarbons.’

**CH<sub>4</sub>**

See ‘Methane.’

**Chlorofluorocarbons (CFCs)**

Greenhouse gases covered under the 1987 Montreal Protocol used for refrigeration, air conditioning, packaging, insulation, solvents or aerosol propellants. Because they are not destroyed in the lower atmosphere, CFCs mix into the upper atmosphere where, given suitable conditions, they break down ozone. These gases are being replaced by other compounds including hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs), which are greenhouse gases covered under the Kyoto Protocol.

**Clean Development Mechanism, or CDM**

Defined in Article 12 of the Kyoto Protocol, CDM projects undertaken in developing countries are intended to meet two objectives: (1) to address the sustainable development needs of the host country; and (2) to generate emissions credits that can be used to satisfy commitments of Annex 1 Parties and thus increase flexibility in *where* government Parties meet their reduction commitments. Projects that limit or reduce greenhouse gas emissions can earn the investor (government or industry) credits if approved by the CDM Executive Board. A share of the proceeds from the project activities is to be used to cover administration costs and to assist developing countries vulnerable to potential adverse impacts from climate change or the policies designed to mitigate against it.

**Climate**

The average trend of weather, including its variability in a geographical region. The averaging period is typically several decades.

**Climate Change** (*UNFCCC definition*)

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

**Climate Convention**

See 'UN Framework Convention on Climate Change,' or UNFCCC.

**Climate Feedbacks**

Interaction between greenhouse gases and important climate mechanisms, such as vegetation, water vapour, ice cover, clouds, and the ocean. Such interactions can increase, decrease, or neutralize the warming produced by increased concentrations of greenhouse gases.

**Climate Models**

Large and complex computer programmes used to mathematically simulate global climate. They are based on mathematical equations that seek to represent the physical processes that govern the earth-atmosphere system. (See 'General Circulation Models').

**Climate Sensitivity**

Theoretical change in earth's average surface air temperature for a given change in greenhouse gas concentration or other forcing mechanism. Does not refer to changes in any other climate properties.

**Climate System**

The totality of the atmosphere, hydrosphere, biosphere and geosphere and their interactions.

**Combined cycle**

Electricity generation where the waste heat of a gas-turbine generator is used to heat water in a boiler to drive a steam-turbine generator, thereby increasing efficiency.

**Cogeneration**

The use of waste heat from electricity generation, such as exhaust from gas turbines, for either industrial purposes or district heating.

**Commitment Period**

In order to allow Parties some flexibility in when they meet their GHG emissions reduction obligations under the Kyoto Protocol (i.e. emit their assigned amount), the reduction target is applied to a 5-year period, known as the commitment period. The first commitment period will be 2008–12. Terms governing the nature of the second and subsequent periods are subject to future negotiation. The Kyoto Protocol calls for negotiations concerning the second period to commence by 2005.

**Conference of the Parties, or COP**

The supreme body of the UNFCCC, comprised of countries that have ratified or acceded to the Framework Convention on Climate Change. The first session of the COP (COP-1) was held in Berlin in 1995, COP-2 Geneva 1996, COP-3 Kyoto 1997, and COP-4 Buenos Aires. COP-5 will be held in Bonn. (See also ‘COP/moP’ and ‘meeting of Parties’).

**COP/moP**

The Conference of Parties of the FCCC will serve as the ‘moP’ (meeting of Parties, the supreme body of the Kyoto Protocol) but only Parties to the Kyoto Protocol may participate in deliberations and make decisions. Until the Protocol enters into force, the moP cannot meet.

**CO<sub>2</sub>**

See ‘Carbon Dioxide.’

**Credit for Early Action**

Some governments have suggested giving credit for action taken before 2008. The intent would be to stimulate investment in GHG abatement projects in developed countries in the years prior to 2008. Under the Kyoto Protocol, Annex B governments cannot receive credits towards their emissions obligations for actions aimed at reducing greenhouse gas (GHG) emissions prior to the first commitment period (2008–12), except under the

Clean Development Mechanism (i.e. in developing countries only). Governments may choose to give domestic credits prior to the first commitment period.

**CSD**

See 'UN Commission on Sustainable Development'.

**Deforestation**

The removal of forest stands by cutting and burning to provide land for agricultural purposes, residential or industrial building sites, roads, etc., or by harvesting the trees for building materials or fuel.

**Demand-Side Management**

Policies and programmes designed to reduce consumer demand for electricity and other energy sources. It helps to reduce the need for constructing new power facilities.

**Desertification**

The progressive destruction or degradation of vegetative cover, especially in arid or semi-arid regions bordering existing deserts. Overgrazing of rangelands, large-scale cutting of forests and woodlands, drought, and burning of extensive areas and climate changes all serve to destroy or degrade the vegetation cover.

**Early Crediting**

Article 12 on the Clean Development Mechanism indicates that early crediting will be given for CDM projects undertaken between 2000 and 2008. These credits can be used to assist in achieving compliance in the first commitment period.

**Earth Summit, or UN Conference on Environment and Development (UNCED)**

The Earth Summit was held in 1992 in Rio de Janeiro at which the climate treaty, or UN Framework Convention on Climate Change, was signed by more than 150 countries.

**Ecosystem**

The interacting system of a biological community and its non-living environmental surroundings.

**El Niño/La Niña/ENSO**

At irregular intervals, but on average about every four years, widespread warming of the east-central equatorial Pacific sea surface temperature occurs. This warming, which typically lasts for about a year, is called an El Niño event. (The term has its origins in a seasonal Christmas-time phenomenon off the South American coast that is prolonged and amplified when the pan-Pacific event occurs.) El Niño can be regarded as the warm phase of a major climate oscillation. During the cold phase, called La Niña, the equatorial Pacific sea surface temperature is cooler than normal. The sea surface temperatures are associated with widespread atmospheric shifts in winds, rainfall etc. Southern Oscillation is the term for the changes in tropical surface pressure that accompany the El Niño/La Niña cycle. The events involve strong interaction between the ocean and atmosphere, and the term ENSO (El Niño/Southern Oscillation) is often used to refer to the phenomenon as a whole. In the Pacific region the ENSO cycle produces large coherent changes in tropical ocean currents, temperature, trade winds, rainfall patterns, etc. Through atmospheric teleconnections, ENSO also influences seasonal climate in many other regions around the globe.

**Emissions** (*UNFCCC Definition*)

The release of greenhouse gases and/or their precursors into the atmosphere over a specified area and period of time.

**Emissions Cap**

A mandated restraint, in a scheduled timeframe, that puts a 'ceiling' on the total amount of anthropogenic greenhouse gas (GHG) emissions that can be released into the atmosphere. The Kyoto Protocol mandates caps on the GHG emissions released by Annex B, or developed, countries.

**Emissions Reduction Unit, or ERU**

The ERU represents a specified amount of greenhouse gas emissions reductions achieved through a Joint Implementation project or as the unit of trade in greenhouse gas emissions trading systems.

**Emissions Trading**

A market-based approach to achieving environmental objectives that allows those reducing greenhouse gas (GHG) emissions below what is required to use or trade the excess reductions to offset emissions at another source inside or outside the country. In general, trading can occur at the domestic, international and intra-company levels. Article 17 of the Kyoto Protocol, allows Annex B countries to exchange emissions obligations. Negotiations will determine the extent to which firms and others may be allowed to participate. International emissions trading constitutes one of the Kyoto Mechanisms, designed to provide Annex B countries cost-effective flexibility in reducing emissions to achieve their agreed commitments.

**ERU**

See 'Emission Reduction Unit'.

**FCCC**

See 'UN Framework Convention on Climate Change (UNFCCC)'.

**Flexibility Mechanisms**

See 'Kyoto Mechanisms'.

**Forest**

Key to the identification of Kyoto lands is a definition of forest that is consistent for all Parties. This definition is critical to the accounting of sources and sinks under the Kyoto Protocol (Articles 3.3 and 3.4). There are many definitions of forest, based on land use status, (administrative/cultural records) or a minimum threshold of canopy cover and/or tree height. None however, were specifically designed for carbon accounting as required under the Protocol. This definition and the implications of using different definitions are addressed in detail in the current draft of Ch.3 of the IPCC Special Report on LULUCF.

**Fossil Fuels**

Carbon-based fuels, including coal, oil and natural gas.

**Fuel Cell**

An electrochemical device, like a battery, that combines hydrogen and oxygen to produce electricity, heat and water. The source of hydrogen can be either pure hydrogen or a number of other fuels (such as methanol or other hydrocarbons) which are converted to hydrogen.

**Fuel Switching**

Supplying energy services using different fuels. Often used to refer to actions that reduce CO<sub>2</sub> emissions from electric utilities by switching from coal to natural gas.

**GCMs**

See 'General Circulation Models'.

**GEF**

See 'Global Environment Facility'.

**General Circulation Models, or GCMs**

Large and complex computer programmes that attempt to mathematically simulate global climate. They are based on mathematical equations that seek to represent the physical processes that govern the earth-atmosphere system. (See 'Climate Models').

**GHGs**

See 'Greenhouse Gases'.

**Global Environment Facility, or GEF**

A joint funding programme established by developed countries to meet their obligations under various international environmental treaties. GEF serves as the interim financial mechanism for the UNFCCC, in particular to cover the cost of reporting by non-Annex I countries. It provides funds to complement traditional development assistance by covering the additional or 'agreed incremental costs' incurred, by non-Annex I countries, when a national, regional or global development project also targets global environmental objectives such as those which address biodiversity.

**Global Warming**

The view that the earth's temperature is being increased, in part, due to emissions of greenhouse gases associated

with human activities, such as burning fossil fuels, biomass burning, cement manufacture, cow and sheep rearing, deforestation and other land-use changes.

**Global Warming Potential, or GWP**

A time dependent index used to compare the radiative forcing, on a mass basis, of an impulse of a specific greenhouse gas relative to that of CO<sub>2</sub>. Gases included in the Kyoto Protocol are weighted in the first commitment period according to their GWP over a 100-year time horizon as published in the 1995 Second Assessment Report of the IPCC. In that report, methane, for example has a radiative forcing that was estimated to be about 21 times greater than that of CO<sub>2</sub>, thus it has a GWP of 21.

**Grandfathering**

A method used to allocate emissions credits to companies or other legal entities based on their emissions levels at a certain point in the past (such as 1990). Those companies which have reduced their emissions since that point in the past (through efficiency gains or shutting down operations for example) will be rewarded under this process of allocation. Companies established after the baseline date (and therefore having zero emissions at that time) would not receive any emissions credits if this method of allocation is used alone. Alternative emissions credit allocation methods include auctioning which would be similar to emissions taxation, and free allocation based on negotiation.

**Greenhouse Effect**

The trapping of heat by naturally occurring heat-retaining atmospheric gases (water vapour, carbon dioxide, nitrous oxide, methane and ozone) that keeps the earth about 30° C (60° F) warmer than if these gases did not exist.

**Greenhouse Gases, or GHGs**

Gases in the earth's atmosphere that absorb and re-emit infra-red radiation. These gases occur through both natural and human-influenced processes. The major GHG is water vapour. Other GHGs include carbon dioxide, nitrous oxide, methane, ozone and CFCs.

**Group of 77 and China (G77/China)**

Originally 77, now more than 130 developing countries that act as a major negotiating bloc. The G77 and China are also referred to as non-Annex I countries in the context of the UNFCCC.

**GWP**

See ‘Global Warming Potential’.

**HFCs**

See ‘Hydrofluorocarbons’.

**Heat-Island Effect**

Localized warming produced in cities due to the density of infrastructure, such as pavement, buildings and roads that retain heat. This effect can influence readings obtained from nearby weather stations.

**Hot Air**

A few countries, notably Russia and the Ukraine, have emissions allocations under the Kyoto Protocol that appear to be well in excess of their anticipated emissions (as a result of economic downturn). The potentially excess allocation is referred to as hot air. Under the Kyoto Protocol it could be traded with other Parties.

**Hydrofluorocarbons, or HFCs**

Among the six greenhouse gases to be curbed under the Kyoto Protocol. They are produced commercially as a substitute for Chlorofluorocarbons (CFCs). HFCs largely are used in refrigeration and semi-conductor manufacturing. Their Global Warming Potentials range from 1,300 to 11,700 times that of CO<sub>2</sub>, depending on the HFC. See ‘Global Warming Potential’.

**IEA**

See ‘International Energy Agency’.

**IGO**

See ‘Intergovernmental Organization’.

**Impact Models**

Computer programmes used to estimate the impact of

a specific climate change on natural, social or economic systems.

**Intergovernmental Organization, or IGO**

Organizations constituted of governments. Examples include the World Bank, the Organization of Economic Cooperation and Development (OECD), the International Civil Aviation Organization (ICAO). The Convention allows accreditation of these IGOs to attend the negotiating sessions.

**Intergovernmental Panel on Climate Change, or IPCC**

Panel established in 1988, by governments under the auspices of the World Meteorological Organization and the UN Environment Programme. It prepares assessments, reports and guidelines on the science of climate change, its potential environmental, economic and social impacts, technological developments, possible national and international responses to climate change and cross-cutting issues. It provides advice to the UNFCCC's Conference of the Parties. It is currently organized into 3 Working Groups which address: I) Science; II) Impacts, Adaptation and Vulnerability; and III) Mitigation; there is also a Working Group to address GHG Inventories.

**International Energy Agency, or IEA**

Paris-based organization formed in 1973 by the major oil-consuming nations to manage future oil supply shortfalls.

**Joint Implementation, or JI**

Jointly implemented projects that limit or reduce emissions or enhance sinks are permitted among developed countries under Article 6 of the Kyoto Protocol. JI activity is also permitted in Article 4.2(a) of the FCCC, between all Parties. As defined in the Kyoto Protocol JI would allow developed countries, or companies from those countries, to cooperate on projects to reduce greenhouse gas emissions and share the emissions reduction units (ERUs). As JI occurs between Annex B countries (who have emissions caps), no new emissions units are generated (unlike the case with projects under the Clean Development

Mechanism). JI can be viewed as an investment for ERUs swap. See also ‘Activities Implemented Jointly’.

**Kyoto Lands**

The Kyoto Protocol describes land use, land use change and forestry activities that require or allow the net GHG emissions from sinks to be accounted for by Parties in meeting their emission reduction commitments. The lands on which these activities take place are designated as Kyoto lands (as defined in the IPCC draft report on LULUCF).

**Kyoto Mechanisms**

*(formerly known as Flexibility Mechanisms)*

Procedures that allow Annex 1 Parties to meet their commitments under the Kyoto Protocol based on actions outside their own borders. As potentially market-based mechanisms they have the potential to reduce the economic impacts of greenhouse gas emission-reduction requirements. They include *Joint Implementation* (Article 6), the *Clean Development Mechanisms* (Article 12) and *Emissions Trading* (Article 17).

**Kyoto Protocol**

The Protocol, drafted during the Berlin Mandate process, that, on entry into force, would require countries listed in its Annex B (developed nations) to meet differentiated reduction targets for their greenhouse gas emissions relative to 1990 levels by 2008–12. It was adopted by all Parties to the Climate Convention in Kyoto, Japan, in December 1997.

**LULUCF**

Land Use, Land-Use Change and Forestry—see ‘ARD Activities’ and ‘Kyoto lands’.

**Methane, or CH<sub>4</sub>**

One of the six greenhouse gases to be included under the Kyoto Protocol, it has a relatively short atmospheric lifetime of 10± 2 years. Primary sources of methane are landfills, coal mines, paddy fields, natural gas systems and livestock. The SAR (1995) estimate of the Global Warming Potential of methane is 21, over a 100-year time horizon. See ‘Global Warming Potential’.

**Methane Recovery**

Method by which methane emissions, from for example coal mines or waste sites, are captured and then re-used either through cost-effective management methods or through power generation.

**meeting of the Parties (to the Kyoto Protocol) or moP**

Supreme body of the Kyoto Protocol, which can only convene after the Protocol enters into force. Only the moP can make amendments to the Protocol.

**Montreal Protocol**

International agreement under the UN which entered into force in January 1989 to phase out the use of ozone-depleting compounds such as CFCs, methyl chloroform, carbon tetrachloride and many others.

**National Action Plans**

Plans submitted to the Conference of the Parties (COP) by all Parties outlining the steps that they have adopted to limit their anthropogenic GHG emissions. Countries must submit these plans as a condition of participating in the UN Framework Convention on Climate Change and, subsequently, must communicate their progress to the COP regularly. The National Action Plans form part of the National Communications which include the national inventory of greenhouse gas (GHG) sources and sinks.

**NGO**

See 'Non-Governmental Organization'.

**Nitrous Oxide, or N<sub>2</sub>O**

One of the six greenhouse gases to be curbed under the Protocol, it is generated by burning fossil fuels and the manufacture of fertilizer. It has a Global Warming Potential of 310 over a 100-year time horizon. See 'Global Warming Potential'.

**Non-Annex I Parties**

The countries that have ratified or acceded to the UNFCCC that are not included in Annex I of the Convention.

## **IPIECA**

*Climate Change: a Glossary of Terms*

### **Non-Annex B Parties**

The countries that are not included in the Annex B list of developed nations in the Kyoto Protocol.

### **Non-Governmental Organization/Observer, or NGOs**

NGOs can include registered non-profit organizations and associations from business and industry, environmental groups, cities and municipalities, academics, social and activist organizations. Under the UN, NGOs must be accredited to observe its activities and, to do so, they must meet certain qualifications. IPIECA is the petroleum industry's only accredited NGO to the UN.

### **No Regrets**

Actions which result in greenhouse gas limitations and abatement, and which also make good environmental and economic sense in their own right.

### **Ozone**

Ozone (O<sub>3</sub>) is a greenhouse gas. In the troposphere, or lower part of the atmosphere, O<sub>3</sub> can be a constituent of smogs. It is created naturally and also by reactions in the atmosphere involving gases resulting from human activities, including NO<sub>x</sub>, or nitrogen oxides, from motor vehicles and power plants. The Montreal Protocol seeks to control chemicals which destroy ozone in the stratosphere (upper part of the atmosphere) where ozone absorbs ultra-violet radiation.

### **PAMs**

See 'Policies and Measures'.

### **Perfluorocarbons, or PFCs**

Among the six greenhouse gases to be abated under the Protocol. They are a by-product of aluminum smelting and uranium enrichment. They also are the replacement for CFCs in manufacturing semiconductors. The Global Warming Potential of PFCs are 6,500–9,200 over a 100-year time horizon. See 'Global Warming Potential'.

### **PFCs**

See 'Perfluorocarbons'.

**Policies and Measures, or PAMs**

In UNFCCC parlance, **policies** are actions that can be taken and/or mandated by a government—often in conjunction with business and industry within its own country, as well as with other countries—to accelerate the application and use of successful measures to curb greenhouse gas (GHG) emissions. **Measures** are technologies, processes and practices used to implement policies, which, if employed, would reduce GHG emissions below anticipated future levels. Examples might include carbon or other energy taxes, standardized fuel efficiency standards for automobiles, etc. ‘Common and coordinated’ or ‘harmonized’ policies would refer to those adopted jointly by Parties. (This could be by region, such as the EU, or by countries comprising a given classification, for example, all Annex I nations.)

**Precautionary Principle**

From the UN Framework Convention on Climate Change (Article 3): *Parties should take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects. Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing such measures taking into account that policies and measures to deal with climate change should be cost-effective so as to ensure global benefits at the lowest possible cost.*

**‘Primary Market’ & ‘Secondary Market’ Trading**

In commodities and financial exchanges, buyers and sellers who trade directly with each other constitute the ‘primary market,’ while buying and selling through the exchange facilities represent the ‘secondary market.’

**QELROs, or Quantified Emissions Limitations and Reductions Objectives**

The greenhouse gas emissions reduction commitments made by developed countries listed in Annex B of the Protocol. (See also ‘Targets and Timetables’.)

**Radiative Forcing**

A change in the balance between incoming solar radiation and outgoing infra-red and short-wave radiation. Without any radiative forcing, solar radiation absorbed

by the earth would continue to be approximately equal to the infra-red radiation emitted from the earth. The addition of greenhouse gases absorbs an increased fraction of the infra-red radiation in the atmosphere, reradiating it and creating a warming influence.

**Reforestation**

The act or process of re-establishing a forest on land that had been deforested in relatively recent history.

**Renewables**

Energy sources that are constantly renewed by natural process. These include non-carbon technologies such as solar energy, hydropower and wind as well as technologies based on biomass. Life cycle analyses are required to assess the extent to which such biomass based technologies may limit net carbon emissions.

**Reservoir**

A component or components of the climate system where a greenhouse gas or a precursor of a greenhouse gas is stored (UNFCCC definition). The oceans, soils and forests are all carbon reservoirs.

**Rio Summit**

See 'UN Conference on Environment and Development.'

**SAR**

See '*Second Assessment Report*'.

**SBI**

See 'Subsidiary Body for Implementation'.

**SBSTA**

See 'Subsidiary Body for Science and Technological Advice'.

**SF<sub>6</sub>**

See 'Sulphur Hexafluoride'.

**Second Assessment Report, or SAR**

Published by the IPCC in 1995 the *SAR* provided a comprehensive overview of the state of knowledge on

climate change at that time. It contains the widely cited statement '*the balance of evidence suggests that there is a discernible human influence on global climate*'. The IPCC's *Third Assessment Report* is expected to be finalised in 2001.

**Secretariat of the UN Framework Convention on Climate Change**

United Nations administrative and clerical staff assigned the responsibility of conducting the affairs of the UNFCCC. In 1996 the Secretariat moved from Geneva, Switzerland, to Bonn, Germany.

**Sinks** (*UNFCCC Definition*)

Any process or activity or mechanism which removes a greenhouse gas or a precursor from the atmosphere.

**Source** (*UNFCCC Definition*)

Any process or activity which releases a greenhouse gas or a precursor from the atmosphere.

**SO<sub>2</sub> Trading**

See 'Sulphur Dioxide Trading'.

**Subsidiary Body for Implementation or SBI**

As established as a permanent standing body of the UN Framework Convention on Climate Change, the SBI develops recommendations to assist the Conference of the Parties in assessing and reviewing the implementation of the Climate Convention.

**Subsidiary Body for Scientific and Technological Advice, or SBSTA**

Established as a permanent standing body of the UNFCCC, SBSTA serves as the link between the policy-oriented needs of the COP and the scientific, technical and technological assessments and information provided by various external groups, such as the Intergovernmental Panel on Climate Change.

**Sulphur Dioxide (or SO<sub>2</sub>) Trading**

To mitigate the US acid rain problem in a cost-efficient manner, the US government, under its Clean Air Act, mandated an SO<sub>2</sub> emissions trading programme. This

trading system is often cited as the model for an international Emissions Trading Programme proposed under the Kyoto Protocol to curb the world's anthropogenic greenhouse gas emissions.

**Sulphur Hexafluoride, or SF<sub>6</sub>**

One of the six greenhouse gases to be curbed under the Kyoto Protocol. It is largely used in heavy industry to insulate high-voltage equipment and to assist in the manufacturing of cable-cooling systems. Its Global Warming Potential is 23,900 times that of CO<sub>2</sub>. See 'Global Warming Potential'.

**Supplementarity**

The Kyoto Protocol states that Emissions Trading and Joint Implementation activities are to be *supplemental* to domestic actions (e.g., energy taxes, fuel efficiency standards, etc.) taken by developed countries to reduce their greenhouse gas emissions. Under some proposed definitions of supplementarity, e.g., a concrete ceiling on level of use, developed countries could be restricted in their use of the Kyoto Mechanisms to achieve their reductions targets. This is a subject for further negotiation and clarification by the Parties.

**TAR**

See '*Third Assessment Report*'.

**Targets and Timetables** (See also 'QELROS')

A target is the reduction of a specific percentage of greenhouse gas (GHG) emissions (e.g., 6 per cent, 7 per cent) from a base year (e.g., 'below 1990 levels') to be achieved by a set date, or timetable (e.g., 2008–12). For example, under the Kyoto Protocol's formula, the EU has agreed to reduce its GHG emissions to 8 per cent below 1990 levels by the 2008–12 commitment period. These targets and timetables are, in effect, a cap on the total amount of GHG emissions that can be emitted by a country or region in a given time period.

**Technology Cooperation**

A process of constructive interaction with local, national and international partners to select and apply appropriate technology systems to achieve economic develop-

ment. It includes both 'hard' (equipment and technology) and 'soft' technology (software, management assistance, training).

**Trace Gas**

A minor constituent of the atmosphere. The most important trace gases contributing to the greenhouse effect are carbon dioxide, ozone, methane, nitrous oxide, ammonia, nitric acid, ethylene, sulphur dioxide, nitric oxide, CFCs, HFCs HCFCs, SF<sub>6</sub>, methyl chloride, carbon monoxide and carbon tetrachloride.

**Third Assessment Report, or TAR**

The third in a series of Assessment Reports prepared by the Intergovernmental Panel on Climate Change which review the existing scientific literature on the subject. Due to be finalized in 2001, it will contain three main sections: Science; Impacts, Adaptation and Vulnerability; and Mitigation. It will also include a 50-80 page *Synthesis Report*, which will draw upon the three main sections and other IPCC Special Reports to answer a number of policy-relevant scientific and technical questions (asked by UNFCCC SBSTA and refined by the IPCC Plenary). Each of the three main sections and the *Synthesis Report* will have a short *Summary for Policy Makers*. The information in the TAR will be considered by governments during UNFCCC negotiations.

**Umbrella Group**

A set of largely non-European developed countries who occasionally act as a negotiating bloc on specific issues.

**UNCED**

See 'Earth Summit'.

**UNCTAD**

See 'UN Conference on Trade and Development'.

**UNDP**

See 'UN Development Programme'.

**UNEP**

See 'UN Environment Programme.'

**UN Conference on Trade and Development, or UNCTAD**

Established in 1964 by the UN General Assembly, UNCTAD is the principal organ of the UN General Assembly in the field of trade and development. Its main goals are to maximize trade, investment and development opportunities of developing countries. UNCTAD pursues its goals through research, policy analysis, IGO deliberations, technical cooperation and interaction with the business sector. UNCTAD has had a long-standing programme that is examining international emissions trading. Since 1991 it has produced publications on key parameters such as cost-efficiency, equity, monitoring certification and enforcement, and legal and institutional aspects.

**UN Commission on Sustainable Development, or CSD**

The Commission also oversees the implementation of Agenda 21, the action plan adopted at the Rio Summit which is a blueprint for environmentally sustainable development for the 21st century. The CSD consists of representatives from more than 50 nations. It also monitors progress made by governments and UN agencies in reaching their commitments to the UNFCCC.

**UN Development Programme, or UNDP**

The purpose of UNDP is to assist countries (particularly those with a low per capita income) to achieve sustainable development. UNDP focuses on poverty elimination, environmental regeneration, job creation and the advancement of women. It also assists in promoting sound governance and market development. Its work is achieved with a core budget of about US\$800M used to fund projects in developing countries. UNDP is a managing partner of the Global Environment Facility, along with UNEP and the World Bank.

**UN Environment Programme, or UNEP**

The UN agency, established in 1972, to coordinate the environmental activities of the UN. It aims to help reinforce and integrate the large number of separate environmental efforts by intergovernmental, non-govern-

mental, national and regional bodies. UNEP has fostered the development of the UNFCCC and the Convention on Biological Diversity.

**UN Framework Convention on Climate Change, or UNFCCC**

A treaty signed at the 1992 Earth Summit in Rio de Janeiro by more than 150 countries. Its ultimate objective is the 'stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic [human-induced] interference with the climate system'. While no legally binding level of emissions is set, the treaty states an aim by Annex I countries to return these emissions to 1990 levels by the year 2000. The treaty took effect in March 1994 upon the ratification of more than 50 countries; a total of some 160 nations have now ratified. In March 1995, the UNFCCC held the first session of the Conference of the Parties (COP) the supreme body of the Convention in Berlin. Its Secretariat is based in Bonn, Germany. In the biennium 2000–01, its approved budget and staffing level are approximately US\$12M annually with approximately 80 personnel.

## **IPIECA**

*Climate Change: a Glossary of Terms*

### **Additional terms**

(Record below any new definitions established since the publication of this *Glossary*.)

# **IPIECA**

*A Glossary of Climate Change Terms*

## **Acknowledgements**

This *Glossary of Climate Change Terms* has been prepared by the International Petroleum Industry Environmental Conservation Association (IPIECA).

The base text was prepared by Jonathan Grant (IPIECA). Valuable comments on drafts have been received from:

Lenny Bernstein (Mobil)  
Michel Boeuf (IPIECA)  
Brian Flannery (Exxon)  
Lois Johnston (Texaco)  
Clem Malin (Texaco)  
Horacio Peluffo (UNFCCC)  
Bob Reinstein  
Simon Worthington (BP Amoco)

## ***Disclaimer***

*Whilst every effort has been made to ensure the accuracy of the information contained in this publication, neither IPIECA nor any of its members will assume liability for any use made thereof.*

---

**Updated January 2000**

*This publication is printed on chlorine-free paper manufactured from recycled waste, sawmill residues, forest thinnings and fibre from sustainable forests.*

The International Petroleum Industry Environmental Conservation Association (IPIECA) was founded in 1974 following the establishment of the United Nations Environment Programme (UNEP) at the Stockholm Conference of the United Nations in 1972. IPIECA is the petroleum industry's principal channel of communication with the United Nations.

IPIECA is involved in global and international environmental and health issues related to the petroleum industry, including global climate change, oil spill response, urban air quality management, emerging issues, biodiversity and Agenda 21.

IPIECA's programme takes full account of international developments in these global issues, including those developments within the United Nations and within intergovernmental institutions and industry groups.



International Petroleum Industry  
Environmental Conservation Association

2nd Floor, Monmouth House  
87-93 Westbourne Grove  
London W2 4UL, United Kingdom

Tel: +44 (0)20 7221 2026  
Fax: +44 (0)20 7229 4948  
E-mail: [info@ipieca.org](mailto:info@ipieca.org)  
Internet: [www.ipieca.org](http://www.ipieca.org)