Climate Change 2001: Mitigation
Appendices

I

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M. Ruth	Boston University
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S. Schneider	Stanford University
K. Segerson	University of Connecticut
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W. Shadis	TA Engineering Inc.
M. Sheehan	Osterberg & Sheehan
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T. Siddiqi	Global Environment and Energy in the 21st century
L. Silverman	US Department of Energy
K. Skog	USDA Forest Products Laboratory
K. Smith	North Carolina State University
W. Smith	US Environmental Protection Agency
A. Solomon	Executive Office of the President
J. Solomon	Praxair Inc.
T. Terry	US Department of Energy
J. Tester	Massachusetts Institute of Technology
T. Tietenberg	Colby College
M. Toman	Resources for the Future
R. Tuccillo	Executive Office of the President
Th. Vanderspurt	ExxonMobil Research and Engineering Company
C. Walker	US Agency for International Development
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H. Wesoky	Federal Aviation Administration
N. Young	Air Transportation Association of America, Inc.

Venezuela

L. Pérez	Ministerio del Ambiente y de los Recursos Naturales / Ministerio de Energia y Minas

IGO/NGO

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R. Baron	International Energy Agency
L. Bernstein	International Petroleum Industry Environmental Conservation Association
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J. Corfee Morlot	Organisation for Economic Cooperation and Development
J. Crayston	International Civil Aviation Organisation
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J. Grant	Int'l Petroleum Industry Environmental Conservation Association
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V. Kagramanian	International Atomic Energy Agency
A. Khan	International Atomic Energy Agency

K. Mallon	Greenpeace International
D. Mansell-Moullin	International Petroleum Industry Environmental Conservation Association
D. O'Connor	Organisation for Economic Co-operation and Development
L. Schipper	International Energy Agency
W.-J. Schmidt-Küster	FORATOM – European Atomic Forum
J. Wise	International Petroleum Industry Environmental Conservation Association
F. Unander	International Energy Agency
D. Wallace	International Energy Agency

II

Glossary

Glossary[1]

AAs
See ***assigned amounts***.

AAU
See ***assigned amount unit***.

Activities Implemented Jointly (AIJ)
The pilot phase for ***joint implementation***, as defined in Article 4.2(a) of the ***United Nations Framework Convention on Climate Change***, 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 the *United Nations Framework Convention on Climate Change* to gain experience in jointly implemented project activities. There is no crediting for AIJ activity during the pilot phase. A decision remains to be taken on the future of AIJ projects and how they may relate to the Kyoto Mechanisms. As a simple form of tradable permits, AIJ and other market-based schemes represent important potential mechanisms for stimulating additional resource flows for the global environmental good. See also ***Clean Development Mechanism***, and ***emissions trading***.

Adaptation
Adjustment in natural or human systems to a new or changing environment. Adaptation to ***climate change*** refers to adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation.

Additionality
Reduction in ***emissions*** by ***sources*** or enhancement of removals by ***sinks*** that is additional to any that would occur in the absence of a ***Joint Implementation*** or a ***Clean Development Mechanism*** project activity as defined in the ***Kyoto Protocol*** Articles on ***Joint Implementation*** and the ***Clean Development Mechanism***. This definition may be further broadened to include financial, investment, and ***technology*** additionality. Under *financial additionality*, the project activity funding shall be additional to existing Global Environmental Facility, other financial commitments of Parties included in Annex I, Official Development Assistance, and other systems of co-operation. Under *investment additionality*, the ***value*** of the ***Emissions Reduction Unit /Certified Emission Reduction Unit*** shall significantly improve the financial and/or commercial viability of the project activity. Under *technology additionality*, the technology used for the project activity shall be the best available for the circumstances of the host Party.

Administrative costs
The costs of activities of the project or sectoral activity directly related and limited to its short-term implementation. They include the costs of planning, training, administration, monitoring, etc.

Afforestation
Planting of new forests on lands that historically have not contained forests[2]. See also ***Deforestation*** and ***Deforestation.***

AIJ
See ***Activities Implemented Jointly***.

Alliance of Small Island States (AOSIS)
The group was formed during the Second World Climate Conference in 1990 and comprises small island and low-lying coastal developing countries that 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. With more than 35 states from the Atlantic, Caribbean, Indian Ocean, Mediterranean, and Pacific, AOSIS share common objectives on environmental and sustainable development matters in the ***UNFCCC*** (***United Nations Framework Convention on Climate Change)*** process.

Alternative development paths
Refer to a variety of possible scenarios for societal values and consumption and production patterns in all countries, including but not limited to a continuation of today's trends. In this Report, these paths do not include additional climate initiatives which means that no scenarios are included that explicitly assume implementation of the **UNFCCC** or the emission targets of the **Kyoto Protocol,** but do include assumptions about other policies that influence greenhouse gas emissions indirectly.

Alternative energy
Energy derived from non-fossil fuel sources.

Ancillary benefits
The ancillary, or side effects, of policies aimed exclusively at ***climate change mitigation***. Such policies have an impact not only on ***greenhouse gas emissions***, but also on resource use efficiency, like reduction in emissions of local and regional air pollutants associated with fossil fuel use, and on issues such as transportation, agriculture, ***land-use*** practices, employment, and fuel security. Sometimes these benefits are referred to as "ancillary impacts" to reflect that in some cases the benefits may be negative. From the perspective of policies directed at

[1] The terms that are independent entries in this glossary are highlighted in ***bold and italics*** in text as cross-references.

[2] For a discussion of the term *forest* and related terms such as *afforestation*, *reforestation*, and *deforestation (ARD)*: see the IPCC Special Report on Land Use, Land-Use Change and Forestry, Cambridge University Press, 2000.

abating local air pollution, ***greenhouse gas mitigation*** may also be considered an ancillary benefit, but these relationships are not considered in this assessment. See also ***co-benefits***.

Anthropogenic emissions
Emissions of ***greenhouse gases***, *greenhouse gas* precursors, and aerosols associated with human activities. These include burning of ***fossil fuels*** for energy, ***deforestation*** and ***land-use*** changes that result in net increase in emissions.

Annex I countries/Parties
Group of countries included in Annex I (as amended in 1998) to the ***United Nations Framework Convention on Climate Change***, including all the developed countries in the Organisation of Economic Co-operation and Development, and ***Economies in transition***. By default, the other countries are referred to as ***Non-Annex I countries***. Under Articles 4.2 (a) and 4.2 (b) of the Convention, Annex I countries commit themselves specifically to the aim of returning individually or jointly to their 1990 levels of ***greenhouse gas emissions*** by the year 2000. See also ***Annex II***, ***Annex B***, and ***Non-Annex B countries***.

Annex II countries
Group of countries included in Annex II to the ***United Nations Framework Convention on Climate Change***, including all developed countries in the Organisation of Economic Co-operation and Development. Under Article 4.2 (g) of the Convention, these countries are expected to provide financial resources to assist developing countries to 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. See also ***Annex I***, ***Annex B***, ***Non-Annex I***, and ***Non-Annex B countries/Parties***.

Annex B countries/Parties
Group of countries included in Annex B in the ***Kyoto Protocol*** that have agreed to a target for their ***greenhouse gas emissions***, including all the ***Annex I countries*** (as amended in 1998) but Turkey and Belarus. See also ***Annex II***, ***Non-Annex I***, and ***Non-Annex B countries/Parties***.

AOSIS
See ***Alliance of Small Island States***.

Assigned amounts (AAs)
Under the ***Kyoto Protocol***, the total amount of ***greenhouse gas emissions*** that each ***Annex B country*** has agreed that its emissions will not exceed in the first commitment period (2008 to 2012) is the assigned amount. This is calculated by multiplying the country's total *greenhouse gas* emissions in 1990 by five (for the 5-year commitment period) and then by the percentage it agreed to as listed in Annex B of the Kyoto Protocol (e.g., 92% for the European Union; 93% for the USA).

Assigned amount unit (AAU)
Equal to 1 tonne (metric ton) of ***CO_2-equivalent emissions*** calculated using the ***Global Warming Potential***.

Average cost
Total cost divided by the number of units of the item for which the cost is being assessed. With ***greenhouse gases***, for example, it would be the total cost of a programme divided by the physical quantity of ***emissions*** avoided.

Banking
According to the ***Kyoto Protocol*** [Article 3 (13)], Parties included in Annex I to the ***United Nations Framework Convention on Climate Change*** may save excess ***emissions*** allowances or credits from the first commitment period for use in subsequent commitment periods (post-2012).

Barrier
A barrier is any obstacle to reaching a potential that can be overcome by a policy, programme, or measure.

Barrier removal costs
The costs of activities aimed at correcting market failures directly or at reducing the transactions costs in the public and/or private sector. Examples include costs of improving institutional capacity, reducing risk and ***uncertainty***, facilitating market transactions, and enforcing regulatory policies.

Baseline
A non-intervention ***scenario*** used as a base in the analysis of intervention scenarios.

Benefit transfer
An application of monetary values from a particular valuation study to an alternative or secondary policy-decision setting, often in a geographic area other than the one in which the original study was performed.

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

Biological options
Biological options for mitigation of climate change involves one or more of the three strategies: *conservation* - conserving an existing carbon ***pool,*** and thereby preventing ***emissions*** to the atmosphere; ***sequestration*** - increasing the size of existing carbon pools, and thereby extracting carbon dioxide from the atmosphere; and *substitution* - substituting biological products for ***fossil fuels*** or energy-intensive products, thereby reducing carbon dioxide emissions.

Biomass
The total mass of living organisms in a given area or volume; recently dead plant material is often included as dead biomass. Biomass can be used for fuel directly by burning it (e.g., wood), or indirectly by fermentation to alcohol (e.g., sugar) or extraction of combustible oils (e.g., soybeans).

Bottom-up models
A modelling approach that includes technological and engineering details in the analysis. See also ***top-down models***.

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 European Union nations intend to aggregate and share their emissions commitments under one bubble.

Cap
See ***emissions cap***.

Capital costs
Costs associated with capital or investment expenditure on land, plant, equipment, and inventories. Unlike labour and operating costs, capital costs are independent of the level of output for a given capacity of production.

Capacity building
In the context of ***climate change***, capacity building is a process of developing the technical skills and institutional capability in developing countries and ***Economies in transition*** to enable them to participate in all aspects of ***adaptation*** to, ***mitigation*** of, and research on climate change, and the implementation of the ***Kyoto Mechanisms***, etc.

Carbon cycle
The term used to describe the flow of carbon in various forms (e.g., as ***carbon dioxide***) through the atmosphere, ocean, terrestrial biosphere, and lithosphere.

Carbon dioxide (CO_2)
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 anthropogenic ***greenhouse gas*** that affects the earth's radiative balance. It is the reference gas against which other *greenhouse gases* are measured and therefore has a ***Global Warming Potential*** of 1.

Carbon dioxide fertilization
The enhancement of the growth of plants as a result of increased atmospheric carbon dioxide concentration. Depending on their mechanism of photosynthesis, certain types of plants are more sensitive to changes in atmospheric carbon dioxide concentration. In particular, plants that produce a three-carbon compound (C_3) during photosynthesis; including most trees and agricultural crops such as rice, wheat, soybeans, potatoes and vegetables, generally show a larger response than plants that produce a four-carbon compound (C_4) during photosynthesis; mainly of tropical origin, including grasses and the agriculturally important crops maize, sugar cane, millet and sorghum.

Carbon leakage
See *leakage*.

Carbon tax
See ***emissions tax.***

CDM
See C***lean Development Mechanism***.

CER
See ***certified emission reduction***.

Certified emission reduction (CER)
Equal to 1 tonne (metric ton) of ***CO_2-equivalent emissions*** reduced or sequestered through a ***Clean Development Mechanism*** project, calculated using ***Global Warming Potentials***. See also ***emissions reduction units***.

CFCs
See ***chlorofluorocarbons***.

CH_4
See ***methane***.

Chlorofluorocarbons (CFCs)
Greenhouse 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, including hydrochlorofluorocarbons and ***hydrofluorocarbons***, which are *greenhouse gases* covered under the ***Kyoto Protocol***.

Clean Development Mechanism (CDM)
Defined in Article 12 of the ***Kyoto Protocol***, the Clean Development Mechanism is intended to meet two objectives: (1) to assist Parties not included in Annex I in achieving sustainable development and in contributing to the ultimate objective of the convention; and (2) to assist Parties included in Annex I in achieving compliance with their quantified emission limitation and reduction commitments. ***Certified emission reductions*** from Clean Development Mechanism projects undertaken in ***non-Annex I countries*** that limit or reduce ***greenhouse gas emissions***, when certified by operational entities designated by ***Conference of the Parties/Meeting of the Parties,*** can be accrued to the investor (government or industry) from Parties in ***Annex B***. A share of the proceeds from the certified project activities is used to cover administrative expenses as well as to assist developing country Parties that are particularly vulnerable to the adverse effects of ***climate change*** to meet the costs of ***adaptation***.

Climate change
Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period (typically decades or longer). Climate change may result from natural internal processes or external forcings, or to persistent anthropogenic changes in the composition of the atmosphere or in ***land use***. Note that ***United Nations Framework Convention on Climate Change***, in its Article 1, defines "climate change" as "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 observed over comparable time periods". *United Nations Framework Convention on Climate Change* thus makes a distinction between "climate change" attributable to human activities altering the atmospheric composition, and "climate variability" attributable to natural causes.

Climate Convention
See ***United Nations Framework Convention on Climate Change***.

CO_2
See ***carbon dioxide***.

CO_2-equivalent
The concentration of ***carbon dioxide*** that would cause the same amount of ***radiative forcing*** as the given mixture of carbon dioxide and other ***greenhouse gases***.

Co-benefits
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). The term co-impact is also used in a more generic sense to cover both the positive and negative side of the benefits. See also ***ancillary benefits***.

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

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

Compliance
See ***implementation.***

Conference of the Parties (CoP)
The supreme body of the ***United Nations Framework Convention on Climate Change***, comprising countries that have ratified or acceded to the Framework Convention on Climate Change. The first session of the *Conference of the Parties* (CoP-1) was held in Berlin in 1995, followed by CoP-2 in Geneva 1996, CoP-3 in Kyoto 1997, CoP-4 in Buenos Aires, CoP-5 in Bonn, and CoP-6 in The Hague. See also ***CoP/MoP*** and ***Meeting of the Parties***.

Consumer surplus
A measure of the ***value*** of consumption beyond the price paid for a good or service.

CoP
See ***Conference of the Parties***.

CoP/MoP
The ***Conference of the Parties*** of the ***United Nations Framework Convention on Climate Change*** will serve as the ***Meeting of the Parties (MoP)*** 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, ***MoP*** cannot meet.

Cost-effective
A criterion that specifies that a ***technology*** or measure delivers a good or service at equal or lower cost than current practice, or the least-cost alternative for the achievement of a given target.

Deforestation
Conversion of forest to non-forest[3].

Demand-side management
Policies and programmes designed for a specific purpose to influence consumer demand for goods and/or services. In the energy sector, for instance, it refers to policies and programmes designed to reduce consumer demand for electricity and other energy sources. It helps to reduce ***greenhouse gas emissions***.

Dematerialization
The process by which economic activity is decoupled from matter–energy throughput, through processes such as eco-efficient production or ***industrial ecology***, allowing environmental impact to fall per unit of economic activity.

Deposit–refund system
Combines a deposit or fee (tax) on a commodity with a refund or rebate (***subsidy***) for implementation of a specified action. See also ***emissions tax***.

Desertification
Land degradation in arid, semi-arid, and dry sub-humid areas resulting from various factors, including climatic variations and human activities. Further, the United Nations Convention to Combat Desertification (UNCCD) defines land degradation as a reduction or loss, in arid, semi-arid, and dry sub-humid

[3] See footnote 2.

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.

Double dividend
The effect that revenue-generating instruments, such as a *carbon tax* or auctioned (tradable) carbon emission permits, can (1) limit or reduce *greenhouse gas* ***emissions*** and (2) offset at least part of the potential welfare losses of climate policies through recycling the revenue in the economy to reduce other taxes likely to be distortionary. In a world with involuntary unemployment, the ***climate change*** policy adopted may have an effect (a positive or negative "third dividend") on employment. Weak double dividend occurs as long as there is a revenue-recycling effect; that is, as long as revenues are recycled through reductions in the marginal rates of distortionary taxes. Strong double dividend requires that the (beneficial) revenue recycling effect more than offset the combination of the primary cost and in this case, the net cost of abatement is negative. See also ***interaction effects*.**

Economic potential
Economic potential is the portion of ***technological potential*** for *greenhouse gas* ***emissions*** reductions or ***energy efficiency*** improvements that could be achieved cost-effectively through the creation of markets, reduction of market failures, increased financial and technological transfers. The achievement of economic potential requires additional ***policies and measures*** to break down ***market barriers***. See also ***market potential***, ***socio-economic potential***, and ***technological potential***.

Economies in transition (EITs)
Countries with national economies in the process of changing from a planned economic system to a market economy.

Ecosystem
A system of interacting living organisms and their physical environment. The boundaries of what can be called an ecosystem are somewhat arbitrary, depending on the focus of interest or study. Thus, the extent of an ecosystem may range from very small spatial scales to, ultimately, the entire earth.

Ecotax
See ***emissions tax***

EITs
See **economies in transition**.

Emissions
In the ***climate change*** context, emissions refer to the release of ***greenhouse gases*** and/or their precursors and aerosols 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 emissions*** that can be released into the atmosphere. The ***Kyoto Protocol*** mandates caps on the *greenhouse gas* emissions released by ***Annex B countries/Parties***.

Emissions factor
An emissions factor is the coefficient that relates actual ***emissions*** to activity data as a standard rate of emission per unit of activity.

Emissions permit
An emissions permit is the non-transferable or tradable allocation of entitlements by a government to an individual firm to emit a specified amount of a substance.

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

Emissions reduction unit (ERU)
Equal to 1 tonne (metric ton) of ***carbon dioxide emissions*** reduced or sequestered arising from a ***Joint Implementation*** (defined in Article 6 of the ***Kyoto Protocol***) project, calculated using ***Global Warming Potential***. See also ***certified emission reduction*** and ***emissions trading***.

Emission standard
A level of emission that under law or voluntary agreement may not be exceeded.

Emissions tax
Levy imposed by a government on each unit of ***CO_2-equivalent emissions*** by a ***source*** subject to the tax. Since virtually all of the carbon in ***fossil fuels*** is ultimately emitted as carbon dioxide, a levy on the carbon content of fossil fuels – a *carbon tax* – is equivalent to an emissions tax for emissions caused by to fossil fuel combustion. An *energy tax* – a levy on the energy content of fuels – reduces demand for energy and so reduces carbon dioxide emissions from fossil fuel use. An *ecotax* is designated for the purpose of influencing human behaviour (specifically economic behaviour) to follow an ecologically benign path. International emissions/carbon/energy tax is a tax imposed on specified sources in participating countries by an international agency. The revenue is distributed or used as specified by participating countries or the international agency.

Emissions trading
A market-based approach to achieving environmental objectives that allows those reducing ***greenhouse gas 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 intracompany, domestic, and international levels. The Second Assessment Report by the Intergovernmental Panel on Climate Change adopted the con-

vention of using "permits" for domestic trading systems and "quotas" for international trading systems. Emissions trading under Article 17 of the ***Kyoto Protocol*** is a *tradable quota system* based on the ***assigned amounts*** calculated from the emission reduction and limitation commitments listed in Annex B of the Protocol. See also ***certified emission reduction*** and ***Clean Development Mechanism***.

Energy conversion
See ***energy transformation***.

Energy efficiency
Ratio of energy output of a conversion process or of a system to its energy input.

Energy intensity
Energy intensity is the ratio of energy consumption to economic or physical output. At the national level, energy intensity is the ratio of total domestic ***primary energy*** consumption or ***final energy*** consumption to ***Gross Domestic Product*** or physical output.

Energy service
The application of useful energy to tasks desired by the consumer such as transportation, a warm room, or light.

Energy Tax
See ***emissions tax.***

Energy transformation
The change from one form of energy, such as the energy embodied in ***fossil fuels***, to another, such as electricity.

Equivalent CO_2
See **CO_2-equivalent**.

ERU
See ***emissions reduction unit***.

Externality
See ***external cost***.

External cost
Used to define the costs arising from any human activity, when the agent responsible for the activity does not take full account of the impacts on others of his or her actions. Equally, when the impacts are positive and not accounted for in the actions of the agent responsible they are referred to as *external benefits*. ***Emissions*** of particulate pollution from a power station affect the health of people in the vicinity, but this is not often considered, or is given inadequate weight, in private decision making and there is no market for such impacts. Such a phenomenon is referred to as an *externality*, and the costs it imposes are referred to as the external costs.

FCCC
See ***United Nations Framework Convention on Climate Change***.

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

Flexibility mechanisms
See ***Kyoto Mechanisms***.

Forest
A vegetation type dominated by trees. Many definitions of the term *forest* are in use throughout the world, reflecting wide differences in bio-geophysical conditions, social structure, and economics[4]. See also ***afforestation***, ***deforestation*** and ***reforestation***.

Fossil fuels
Carbon-based fuels from fossil carbon deposits, including coal, oil, and natural gas.

Fuel switching
Policy designed to reduce ***carbon dioxide emissions*** by switching to lower carbon-content fuels, such as from coal to natural gas.

Full-cost pricing
The pricing of commercial goods – such as electric power – that includes in the final prices faced by the end user not only the private costs of inputs, but also the costs of ***externalities*** created by their production and use.

G77/China
See ***Group of 77 and China***.

GDP
See ***Gross Domestic Product***.

General equilibrium analysis
General equilibrium analysis is an approach that considers simultaneously all the markets and feedback effects among these markets in an economy leading to market clearance. See also ***market equilibrium***.

Geo-engineering
Efforts to stabilise the climate system by directly managing the energy balance of the earth, thereby overcoming the enhanced ***greenhouse effect***.

GHG
See ***greenhouse gas***.

[4] See footnote 2.

Global warming
Global warming is an observed or projected increase in global average temperature.

Global Warming Potential (GWP)
An index, describing the radiative characteristics of well-mixed ***greenhouse gases***, that represents the combined effect of the differing times these gases remain in the atmosphere and their relative effectiveness in absorbing outgoing infrared radiation. This index approximates the time-integrated warming effect of a unit mass of a given *greenhouse gas* in today's atmosphere, relative to that of ***carbon dioxide***. Note that ***GWP*** also stands for ***Gross World Product***.

GNP
See **Gross National Product**.

GPP
See **Gross Primary Production.**

Greenhouse effect
Greenhouse gases effectively absorb infrared radiation emitted by the earth's surface, by the atmosphere itself from these same gases, and by clouds. Atmospheric radiation is emitted to all sides, including downwards to the earth's surface. Thus, *greenhouse gase*s trap heat within the surface–troposphere system. This is called the natural greenhouse effect. Atmospheric radiation is strongly coupled to the temperature of the level at which it is emitted. In the troposphere the temperature generally decreases with height. Effectively, infrared radiation emitted to space originates from an altitude with a temperature of, on average, –19°C, in balance with the net incoming solar radiation. However, the earth's surface is kept at a much higher temperature of on average +14°C. An increase in the concentration of *greenhouse gases* leads to an increased infrared opacity of the atmosphere, and therefore to an effective radiation into space from a higher altitude at a lower temperature. This causes a ***radiative forcing***, an imbalance that can only be compensated for by an increase in the temperature of the surface–troposphere system. This is the enhanced greenhouse effect.

Greenhouse gas (GHG)
Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, that absorb and emit radiation at specific wavelengths within the spectrum of infrared radiation emitted by the earth's surface, the atmosphere, and clouds. This property causes the ***greenhouse effect***. Water vapour (H_2O), ***carbon dioxide***, ***nitrous oxide***, ***methane*** and ***ozone*** (O_3) are the primary *greenhouse gas*es in the earth's atmosphere. Moreover, there are a number of entirely human-made *greenhouse gas*es in the atmosphere, such as the halocarbons and other chlorine- and bromine-containing substances, dealt with under the ***Montreal protocol***. Beside carbon dioxide, *nitrous oxide* and *methane*, the ***Kyoto Protocol*** deals with the *greenhouse gas*es ***sulphur hexafluoride***, ***hydrofluorocarbons***, and ***perfluorocarbons***.

Gross World Product (GWP)
An aggregation of the ***Gross Domestic Products*** of the world. Note that ***GWP*** also stands for ***Global Warming Potential***.

Gross Domestic Product (GDP)
The sum of gross ***value added***, at purchasers' prices, by all resident and non-resident producers in the economy, plus any taxes and minus any subsidies not included in the value of the products in a country or a geographic region for a given period of time, normally 1 year. It is calculated without deducting for depreciation of fabricated assets or depletion and degradation of natural resources

Gross National Product (GNP)
GNP is a measure of national income. It measures ***value added*** from domestic and foreign sources claimed by residents. GNP comprises ***Gross Domestic Product*** plus net receipts of primary income from non-resident income.

Gross Primary Production (GPP)
The amount of carbon fixed from the atmosphere through photosynthesis.

Group of 77 and China (G77/China)
Originally 77, now more than 130 developing countries that act as a major negotiating bloc in the ***UNFCCC (United Nations Framework Convention on Climate Change)*** process. G77/China is also referred to as ***non-Annex I countries*** in the context of the *United Nations Framework Convention on Climate Change*.

GWP
See ***Global Warming Potential, Gross World Product***.

Harmonized emissions/carbon/energy tax
Commits participating countries to impose a tax at a common rate on the same ***sources***. Each country can retain the tax revenue it collects. A harmonized tax would not necessarily require countries to impose a tax at the same rate, but imposing different rates across countries would not be ***cost-effective***. See also ***emissions tax.***

HFCs
See ***hydrofluorocarbons***.

Hydrofluorocarbons (HFCs)
Among the six ***greenhouse gases*** to be curbed under the ***Kyoto Protocol***. They are produced commercially as a substitute for ***chlorofluorocarbons***. HFCs largely are used in refrigeration and semiconductor manufacturing. Their ***Global Warming Potentials*** range from 1300 to 11,700.

IEA
See ***International Energy Agency***.

IGO
See ***Intergovernmental Organization***.

Implementation
Implementation refers to the actions (legislation or regulations, judicial decrees, or other actions) that governments take to translate international accords into domestic law and policy. It includes those events and activities that occur after the issuing of authoritative public policy directives, which include the effort to administer and the substantive impacts on people and events. It is important to distinguish between the legal implementation of international commitments (in national law) and the effective implementation (measures that induce changes in the behaviour of target groups). *Compliance* is a matter of whether and to what extent countries do adhere to the provisions of the accord. Compliance focuses not only on whether implementing measures are in effect, but also on whether there is compliance with the implementing actions. Compliance measures the degree to which the actors whose behaviour is targeted by the agreement, whether they be local government units, corporations, organizations, or individuals, conform to the implementing measures and obligations.

Implementation costs
Costs involved in the implementation of ***mitigation*** options. These costs are associated with the necessary institutional changes, information requirements, market size, ***opportunities*** for ***technology*** gain and learning, and economic incentives needed (grants, subsidies, and taxes).

Income elasticity
The percentage change in the quantity of demand for a good or service, given a 1% change in income.

Industrial ecology
The set of relationships of a particular industry with its environment; often refers to the conscious planning of industrial processes so as to minimize their negative interference with the surrounding environment (e.g., by heat and materials cascading).

Industrialization
The conversion of a society from one based on manual labour to one based on the application of mechanical devices.

Inertia
Property by which matter continues in its existing state of rest or uniform motion in a straight line, unless that state is changed by external force. In the context of ***climate change mitigation***, it is associated with different forms of capital (e.g., physical man-made capital, natural capital, and social non-physical capital, including institutions, regulations, and norms).

Infrastructure
The basic installations and facilities upon which the operation and growth of a community depend, such as roads, schools, electric, gas and water utilities, transportation, and communications systems.

Integrated assessment
A method of analysis that combines results and models from the physical, biological, economic, and social sciences, and the interactions between these components, in a consistent framework to evaluate the status and the consequences of environmental change and the policy responses to it.

Interaction effect
The result or consequence of the interaction of ***climate change*** policy instruments with existing domestic tax systems, including both cost-increasing tax interaction and cost-reducing revenue-recycling effect. The former reflects the impact that ***greenhouse gas*** policies can have on the functioning of labour and capital markets through their effects on real wages and the real return to capital. By restricting the allowable *greenhouse gas* ***emissions***, permits, regulations, or a ***carbon tax*** raise the costs of production and the prices of output, thus reducing the real return to labour and capital. For policies that raise revenue for the government, carbon taxes and auctioned permits, the revenues can be recycled to reduce existing distortionary taxes. See also ***double dividend***.

Intergovernmental Organization (IGO)
Organizations constituted of governments. Examples include the World Bank, the Organization of Economic Co-operation and Development (OECD), the International Civil Aviation Organization (ICAO), the Intergovernmental Panel on Climate Change (IPCC), and other UN and regional organizations. The ***Climate Convention*** allows accreditation of these IGOs to attend the negotiating sessions.

International emissions/carbon/energy tax
See ***emissions tax***.

International Energy Agency (IEA)
Paris-based energy forum established in 1974. It is linked with the Organization for Economic Co-operation and Development (OECD) to enable member countries to take joint measures to meet oil supply emergencies, to share energy information, to co-ordinate their energy policies, and to co-operate in the development of rational energy programmes.

International product and/or technology standards
See ***Standards***.

JI
See ***Joint Implementation***.

Joint Implementation (JI)
A market-based implementation mechanism defined in Article 6 of the ***Kyoto Protocol***, allowing ***Annex I countries*** or companies from these countries to implement projects jointly that limit or reduce ***emissions***, or enhance ***sinks***, and to share the ***Emissions Reduction Units***. JI activity is also permitted in Article 4.2(a) of the ***United Nations Framework Convention on Climate Change***. See also ***Activities Implemented Jointly*** and ***Kyoto Mechanisms***.

Known technological options
Refer to technologies that exist in operation or pilot plant stage today. It does not include any new technologies that will require drastic technological breakthroughs.

Kyoto Mechanisms
Economic mechanisms based on market principles that Parties to the ***Kyoto Protocol*** can use in an attempt to lessen the potential economic impacts of ***greenhouse gas*** emission-reduction requirements. They include ***Joint Implementation*** (Article 6), the ***Clean Development Mechanism*** (Article 12), and ***Emissions Trading*** (Article 17).

Kyoto Protocol
The Kyoto Protocol to the ***United Nations Framework Convention on Climate Change*** was adopted at the Third Session of the ***Conference of the Parties*** (COP) to the United Nations Framework Convention on Climate Change in 1997 in Kyoto, Japan. It contains legally binding commitments, in addition to those included in the UNFCCC. Countries included in Annex B of the Protocol (most OECD countries and countries with ***Economies in transition***) agreed to reduce their anthropogenic ***greenhouse gas emissions*** (***carbon dioxide***, ***methane***, ***nitrous oxide***, ***hydrofluorocarbons***, ***perfluorocarbons***, and ***sulphur hexafluoride***) by at least 5% below 1990 levels in the commitment period 2008 to 2012. The Kyoto Protocol has not yet entered into force (November 2000).

Land use
The total of arrangements, activities, and inputs undertaken in a certain land-cover type (a set of human actions). The social and economic purposes for which land is managed (e.g., grazing, timber extraction, and conservation).

Leakage
The part of ***emissions*** reductions in ***Annex B countries*** that may be offset by an increase of the emission in the non-constrained countries above their ***baseline*** levels. This can occur through (1) relocation of energy-intensive production in non-constrained regions; (2) increased consumption of ***fossil fuels*** in these regions through decline in the international price of oil and gas triggered by lower demand for these energies; and (3) changes in incomes (and thus in energy demand) because of better terms of trade. Leakage also refers to the situation in which a carbon ***sequestration*** activity (e.g., tree planting) on one piece of land inadvertently, directly or indirectly, triggers an activity, which in whole or part, counteracts the carbon effects of the initial activity.

Macroeconomic costs
Usually measured as changes in ***Gross Domestic Product*** or growth in *Gross Domestic Product*, or as loss of "welfare" or loss of consumption.

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

Market barriers
In the context of ***mitigation*** of ***climate change***, conditions that prevent or impede the diffusion of ***cost-effective*** technologies or practices that would mitigate ***greenhouse gas emissions.***

Market-based incentives
Measures intended to use price mechanisms (e.g., taxes and tradable permits) to reduce ***greenhouse gas emissions***.

Market equilibrium
The point at which demand for goods and services equals the supply; often described in terms of the level of prices, determined in a competitive market, that "clears" the market.

Market penetration
Market penetration is the share of a given market that is provided by a particular good or service at a given time.

Market potential
The portion of the economic potential for ***greenhouse gas emissions*** reductions or ***energy efficiency*** improvements that could be achieved under forecast market conditions, assuming no new ***policies and measures***. See also ***economic potential***, ***socio-economic potential***, and ***technological potential***.

Methane (CH_4)
Methane is one of the six ***greenhouse gases*** to be mitigated under the ***Kyoto Protocol***.

Methane recovery
Method by which ***methane emissions***, for example from coal mines or waste sites, are captured and then reused either as a fuel, or for some other economic purpose (e.g., reinjection in oil or gas reserves).

Meeting of the Parties (to the Kyoto Protocol) (MoP)
Conference of the Parties to the ***United Nations Framework Convention on Climate Change*** serving as the meeting of the Parties to the ***Kyoto Protocol***. It is the supreme body of the Kyoto Protocol.

Mitigation
An anthropogenic intervention to reduce the ***sources*** or enhance the ***sinks*** of ***greenhouse gases.*** See also ***biological options, geo-engineering***.

Mitigative capacity
The social, political, and economic structures and conditions that are required for effective ***mitigation.***

Montreal Protocol
The Montreal Protocol on Substances that Deplete the ***Ozone*** Layer was adopted in Montreal in 1987, and subsequently adjusted and amended in London (1990), Copenhagen (1992), Vienna (1995), Montreal (1997) and Beijing (1999). It controls the consumption and production of chlorine- and bromine-containing chemicals that destroy stratospheric ozone, such as

chlorofluorocarbons, methyl chloroform, carbon tetrachloride, and many others.

MOP
See ***Meeting of the Parties*** (to the Kyoto Protocol).

N_2O
See **nitrous oxide**.

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

Nitrous oxide (N_2O)
One of the six ***greenhouse gases*** to be curbed under the ***Kyoto Protocol.***

Non-Annex I Parties/Countries
The countries that have ratified or acceded to the ***United Nations Framework Convention on Climate Change*** that are not included in Annex I of the ***Climate Convention***.

Non-Annex B countries/Parties
The countries that are not included in Annex B in the ***Kyoto Protocol***.

No regrets options
See **no regrets policy.**

No regrets policy
One that would generate net social benefits whether or not there is climate change. *No regrets opportunities* for ***greenhouse gas emissions*** reduction are defined as those options whose benefits such as reduced energy costs and reduced emissions of local/regional pollutants equal or exceed their costs to society, excluding the benefits of avoided climate change. *No regrets potential* is defined as the gap between the ***market potential*** and the ***socio-economic potential***.

No regrets potential
See **no regrets policy.**

Optimal policy
A policy is assumed to be "optimal" if marginal abatement costs are equalized across countries, thereby minimizing ***total costs***.

Opportunity
An opportunity is a situation or circumstance to decrease the gap between the ***market potential*** of any ***technology*** or practice and the ***economic potential, socio-economic potential,*** or ***technological potential.***

Opportunity cost
Opportunity cost is the cost of an economic activity forgone by the choice of another activity.

Ozone
Ozone, the triatomic form of oxygen (O_3), is a gaseous atmospheric constituent. In the troposphere it is created both naturally and by photochemical reactions involving gases resulting from human activities ("smog"). Tropospheric ozone acts as a ***greenhouse gas***. In the stratosphere it is created by the interaction between solar ultraviolet radiation and molecular oxygen (O_2). Stratospheric ozone plays a decisive role in the stratospheric radiative balance. Its concentration is highest in the ozone layer.

PAMs
See ***Policies and Measures***.

Pareto criterion / Pareto optimum
A requirement or status that an individual's welfare could not be further improved without making others in the society worse off.

Pareto improvement
The opportunity that one individual's welfare can be improved without making the welfare of the rest of society worse off.

Performance criteria
See ***standards***.

Perfluorocarbons (PFCs)
Among the six ***greenhouse gases*** to be abated under the ***Kyoto Protocol***. These are by-products of aluminium smelting and uranium enrichment. They also replace ***chlorofluorocarbons*** in manufacturing semiconductors. The ***Global Warming Potential*** of PFCs is 6500–9200 times that of ***carbon dioxide***.

PFCs
See ***perfluorocarbons***.

Policies and Measures (PAMs)
In ***United Nations Framework Convention on Climate Change*** 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 measures to curb ***greenhouse gas emissions***. **Measures** are technologies, processes, and practices used to implement policies, which, if employed, would reduce *greenhouse gas* emissions below anticipated future levels. Examples might include carbon or other energy taxes, standardized fuel efficiency ***standards*** for automobiles, etc. "Common and co-ordinated" or "harmonized" policies refer to those adopted jointly by Parties.

Pool
See ***reservoir***.

PPP
See ***Purchasing Power Parity***. It also stands for polluter-pays-principle.

Precautionary Principle
A provision under Article 3 of the ***United Nations Framework Convention on Climate Change***, stipulating that the 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.

Present value cost
The sum of all costs over all time periods, with future costs discounted.

Price elasticity
The responsiveness of demand to the cost for a good or service; specifically, the percentage change in the quantity consumed of a good or service for a 1% change in the price for that good or service.

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

"Primary market" and "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".

Private costs
Categories of costs influencing an individual's decision-making are referred to as private costs. See also ***social cost, external cost,*** and ***total cost***.

Producer surplus
Returns beyond the cost of production that provide compensation for owners of skills or assets that are scarce (e.g., agriculturally productive land). See also ***consumer surplus***.

Project costs
Project costs are all the financial costs of a project such as capital, labour, and operating costs.

Purchasing Power Parity (PPP)
Estimates of ***Gross Domestic Product*** based on the purchasing power of currencies rather than on current exchange rates. Such estimates are a blend of extrapolated and regression-based numbers, using the results of the International Comparison Program. PPP estimates tend to lower per capita *Gross Domestic Product*s in industrialized countries and raise per capita *Gross Domestic Product*s in developing countries. ***PPP*** is also an acronym for polluter-pays-principle.

QELRCs
See ***quantified emission limitation or reduction commitments***.

Quantified emission limitation or reduction commitments (QELRCs)
The ***greenhouse gas emissions*** reduction commitments, in percentage terms relevant to base year or period, made by developed countries listed in Annex B of the ***Kyoto Protocol***. See also ***targets and timetables***.

Radiative forcing
Radiative forcing is the change in the net vertical irradiance (expressed in Watts per square meter: Wm^{-2}) at the tropopause due to an internal change or a change in the external forcing of the climate system, such as, for example, a change in the concentration of ***carbon dioxide*** or the output of the Sun. Usually radiative forcing is computed after allowing for stratospheric temperatures to readjust to radiative equilibrium, but with all tropospheric properties held fixed at their unperturbed values. Radiative forcing is called *instantaneous* if no change in stratospheric temperature is accounted for.

Rebound effect
Occurs because, for example, an improvement in motor efficiency lowers the cost per kilometre driven; it has the perverse effect of encouraging more trips.

Reforestation
Planting of forests on lands that have previously contained forests but that have been converted to some other use[5]. See also ***afforestation*** and ***deforestation.***

Regulatory measures
Rules or codes enacted by governments that mandate product specifications or process performance characteristics. See also ***standards.***

Renewables
Energy sources that are, within a short timeframe relative to the earth's natural cycles, sustainable, and include non-carbon technologies such as solar energy, hydropower, and wind, as well as carbon neutral technologies such as ***biomass***.

[5] See also footnote 2.

Research, development, and demonstration
Scientific and/or technical research and development of new production processes or products, coupled with analysis and measures that provide information to potential users regarding the application of the new product or process; demonstration tests, and feasibility of applying these products processes via pilot plants and other pre-commercial applications.

Reserves
Refer to those occurrences that are identified and measured as economically and technically recoverable with current technologies and prices. See also ***resources***.

Reservoir
A component of the climate system, other than the atmosphere, which has the capacity to store, accumulate or release a substance of concern, e.g. carbon, a ***greenhouse gas*** or a precursor. Oceans, soils, and forests are examples of reservoirs of carbon. *Pool* is an equivalent term (note that the definition of pool often includes the atmosphere). The absolute quantity of substance of concern, held within a reservoir at a specified time, is called the *stock*.

Resources
Resources are those occurrences with less certain geological and/or economic characteristics, but which are considered potentially recoverable with foreseeable technological and economic developments.

Resource base
Resource base includes both ***reserves*** and ***resources***.

Revenue recycling
See ***interaction effect***.

Safe landing approach
See ***tolerable windows approach***.

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

Sequestration
The process of increasing the carbon content of a carbon ***reservoir*** other than the atmosphere. Biological approaches to sequestration include direct removal of ***carbon dioxide*** from the atmosphere through *land-use* change, ***afforestation***, ***reforestation***, and practices that enhance soil carbon in agriculture. Physical approaches include separation and disposal of ***carbon dioxide*** from flue gases or from processing ***fossil fuels*** to produce hydrogen- (H_2) and carbon dioxide-rich fractions and long-term storage underground in depleted oil and gas reservoirs, coal seams, and saline aquifers.

SF_6
See ***sulphur hexafluoride***.

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

Social costs
The social cost of an activity includes the ***value*** of all the resources used in its provision. Some of these are priced and others are not. Non-priced resources are referred to as ***externalities***. It is the sum of the costs of these externalities and the priced resources that makes up the social cost. See also ***private cost, external cost,*** and ***total cost***.

Socio-economic potential
The socio-economic potential represents the level of GHG mitigation that would be approached by overcoming social and cultural obstacles to the use of technologies that are cost-effective. See also ***economic potential***, ***market potential***, and ***technology potential***.

Source
A source is any process, activity or mechanism that releases a ***greenhouse gas***, an aerosol, or a precursor of a *greenhouse gas* or aerosol into the atmosphere.

Spillover effect
The economic effects of domestic or sectoral ***mitigation*** measures on other countries or sectors. In this report, no assessment is made on environmental spillover effects. Spillover effects can be positive or negative and include effects on trade, carbon ***leakage***, transfer, and diffusion of environmentally sound ***technology*** and other issues.

Stabilization
The achievement of stabilization of atmospheric concentrations of one or more ***greenhouse gases*** (e.g., ***carbon dioxide*** or a ***CO_2-equivalent*** basket of *greenhouse gases*).

Stabilization analysis
In this report this refers to analyses or ***scenarios*** that address the ***stabilization*** of the concentration of ***greenhouse gases***.

Stabilization scenarios
See ***stabilization analysis***.

Stakeholders
Person or entity holding grants, concessions, or any other type of ***value*** or interest that would be affected by a particular action or policy.

Standards
Set of rules or codes mandating or defining product performance (e.g., grades, dimensions, characteristics, test methods, and rules for use). *International product and/or technology or*

performance standards establish minimum requirements for affected products and/or technologies in countries where they are adopted. The standards reduce ***greenhouse gas emissions*** associated with the manufacture or use of the products and/or application of the technology. See also ***emissions standards***, ***regulatory measures***.

Stock
See ***reservoir***.

Storyline
A narrative description of a *scenario* (or a family of scenarios) that highlights the main scenario characteristics, relationships between key driving forces, and the dynamics of the scenarios.

Structural change
Changes, for example, in the relative share of ***Gross Domestic Product*** produced by the industrial, agricultural, or services sectors of an economy; or more generally, systems transformations whereby some components are either replaced or potentially substituted by other ones.

Subsidy
Direct payment from the government to an entity, or a tax reduction to that entity, for implementing a practice the government wishes to encourage. ***Greenhouse gas emissions*** can be reduced by lowering existing subsidies that have the effect of raising emissions, such as subsidies to ***fossil fuel*** use, or by providing subsidies for practices that reduce emissions or enhance ***sinks*** (e.g., for insulation of buildings or planting trees).

Sulphur hexafluoride (SF_6)
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.

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 reduction targets. This is a subject for further negotiation and clarification by the parties.

Targets and timetables
A target is the reduction of a specific percentage of ***greenhouse gas emissions*** from a ***baseline*** date (e.g., "below 1990 levels") to be achieved by a set date, or timetable (e.g., 2008 to 2012). For example, under the ***Kyoto Protocol's*** formula, the European Union has agreed to reduce its *greenhouse gas* emissions by 8% below 1990 levels by the 2008 to 2012 commitment period. These targets and timetables are, in effect, an ***emissions cap*** on the total amount of *greenhouse gas* emissions that can be emitted by a country or region in a given time period. See also ***quantified emission limitation or reduction commitments***.

Tax-interaction effect
See ***interaction effect***.

Technological potential
The amount by which it is possible to reduce ***greenhouse gas emissions*** or improve ***energy efficiency*** by implementing a ***technology*** or practice that has already been demonstrated. See also ***economic potential***, ***market potential***, and ***socio-economic potential***.

Technology
A piece of equipment or a technique for performing a particular activity.

Technology or performance standard
See ***standard***.

Technology transfer
The broad set of processes that cover the exchange of knowledge, money, and goods among different ***stakeholders*** that lead to the spreading of *technology* for adapting to or mitigating ***climate change***. As a generic concept, the term is used to encompass both diffusion of technologies and technological co-operation across and within countries.

Tolerable windows approach
These approaches analyse ***greenhouse gas emissions*** as they would be constrained by adopting a long-term climate - rather than *greenhouse gas* concentration ***stabilization -*** target (e.g., expressed in terms of temperature or sea level changes or the rate of such changes). The main objective of these approaches is to evaluate the implications of such long-term targets for short- or medium-term "tolerable" ranges of global *greenhouse gas* emissions. Also referred to as safe landing approaches.

Top-down models
The terms "top-down" and "bottom-up" are shorthand for aggregate and disaggregated models. The top-down label derives from how modellers applied macroeconomic theory and econometric techniques to historical data on consumption, prices, incomes, and factor costs to model final demand for goods and services, and supply from main sectors, like the energy sector, transportation, agriculture, and industry. Therefore, top-down models evaluate the system from aggregate economic variables, as compared to ***bottom-up models*** that consider technological options or project specific ***climate change mitigation*** policies. Some technology data were, however, integrated into top-down analysis and so the distinction is not that clear-cut.

Total cost
All items of cost added together. The total cost to society is made up of both the ***external cost*** and the ***private cost***, which together are defined as ***social cost***.

Trace gas
A minor constituent of the atmosphere. The most important trace gases that contribute to the ***greenhouse effect*** are, *inter alia*, ***carbon dioxide***, ***ozone***, ***methane***, ***nitrous oxide***, ***perfluorocarbons***, ***chlorofluorocarbons***, ***hydrofluorocarbons***, ***sulphur hexafluoride***, methyl chloride, and water vapour.

Tradable quota system
See ***emissions trading***.

Trade effects
Economic impacts of changes in the purchasing power of a bundle of exported goods of a country for bundles of goods imported from its trade partners. Climate policies change the relative production costs and may change terms of trade substantially enough to change the ultimate economic balance.

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

United Nations Framework Convention on Climate Change (UNFCCC)
The Convention was adopted on 9 May 1992 in New York and signed at the 1992 Earth Summit in Rio de Janeiro by more than 150 countries and the European Economic Community. Its ultimate objective is the "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system". It contains commitments for all Parties. Under the Convention Parties included in ***Annex I*** aim to return greenhouse gas emission not controlled by the ***Montreal Protocol*** to 1990 levels by the year 2000. The convention entered in force in March 1994. See also ***Conference of the Parties*** and ***Kyoto Protocol***.

Uncertainty
An expression of the degree to which a value (e.g., the future state of the climate system) is unknown. Uncertainty can result from lack of information or from disagreement about what is known or even knowable. It may have many types of sources, from quantifiable errors in the data to ambiguously defined concepts or terminology, or uncertain projections of human behaviour. Uncertainty can therefore be represented by quantitative measures (e.g., a range of values calculated by various models) or by qualitative statements (e.g., reflecting the judgement of a team of experts).

UNFCCC
See ***United Nations Framework Convention on Climate Change***.

Value added
The net output of a sector after adding up all outputs and subtracting intermediate inputs.

Value
Worth, desirability, or utility based on individual preferences. The total value of any resource is the sum of the values of the different individuals involved in the use of the resource. The values, which are the foundation of the estimation of costs, are measured in terms of the willingness to pay (WTP) by individuals to receive the resource or by the willingness of individuals to accept payment (WTA) to part with the resource.

Vision
Picture of a future world, usually a desired future world.

Voluntary agreement
An agreement between a government authority and one or more private parties, as well as a unilateral commitment that is recognized by the public authority, to achieve environmental objectives or to improve environmental performance beyond compliance.

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

III

Acronyms, Abbreviations, and Chemical Compounds

Acronyms, Abbreviations, and Chemical Compounds

AAUs	Assigned Amount Units
ABWR	Advanced Boiling Water Reactor
ACEA	European Automobile Manufacturer's Association
ADB	Asian Development Bank
AEEI	Autonomous Energy Efficiency Improvement
AIJ	Activity Implemented Jointly
ALGAS	Asia-Least-Cost Greenhouse Gas Abatement Strategy
ARD	Afforestation, Reforestation and Deforestation
ASF	Atmospheric Stabilization Framework
BAU	Business-As-Usual
BIGCC	Biomass Integrated Gasification Combined Cycle
BOP	Balance-Of-Payments
BWR	Boiling Water Reactor
C	Carbon
C_2F_6	Perfluoroethane / Hexafluoroethane
CAC	Command and control
CAFE	Corporate Average Fuel Economy
CANZ	Canada, Australia and New Zealand
CBA	Cost Benefit Analysis
CCGT	Combined Cycle Gas Turbine
CDM	Clean Development Mechanism
CEA	Cost-Effectiveness Analysis
CERs	Certified Emission Reduction
CF_4	Perfluoromethane / Tetrafluoromethane
CFCs	Chlorofluorocarbons
CFL	Compact Fluorescent Lamps
CGE	Computable General Equilibrium
CH_4	Methane
CHP	Combined Heat and Power
CO	Carbon-monoxide
CO_2	Carbon-dioxide
COP	Conference of Parties
CSD	Commission for Sustainable Development
DCs	Developing Countries
DES	Development, Equity, and Sustainability
DMF	Decision Making Framework
DSM	Demand Side Management
EBRD	European Bank for Reconstruction and Development
EEA	European Environmental Agency
EITs	Economies In Transition
EMS	Environmental Management Standard
ERUs	Emission Reduction Units
ESCOs	Energy Service Companies
ESTs	Environmentally Sound Technologies
EU	European Union
FAO	United Nations Food and Agricultural Organization
FBC	Fluid Bed Combustion
FDI	Foreign Direct Investments
FGD	Flue Gas Desulphurization
GATT	General Agreement on Trade and Tariff
GDP	Gross Domestic Product
GEF	Global Environment Facility
GHGs	Greenhouse Gases
GNP	Gross National Product
GWP	Global Warming Potential / Gross World Product
H_2O	Water vapour
HC	Hydrocarbons
HCFC	Hydrochlorofluorocarbon
HDI	Human Development Index
HFCs	Hydrofluorocarbons (hydrogenated Fluorocarbons)
HFE	Hydrofluoroethers
HVAC	Heating, Ventilation and Air Conditioning
IA	Integrated Assessment
IAEA	International Atomic Energy Agency
IAMs	Integrated Assessment Models
ICAO	International Civil Aviation Organization
ICE	Internal Combustion Engine
IEA	International Energy Agency
IET	International Emissions Trading
IGCC	Integrated Gasification Combined Cycle
IGCCS	Integrated Gasification Combined Cycle or Supercritical
IMO	International Maritime Organization
IPCC	Intergovernmental Panel on Climate Change
IPR	Intellectual Property Rights
IS92	IPCC 1992 Scenario
ISIC	International Standard Industrial Classification
ISO	International Standardization Organization
IUCN	International Union for the Conservation of Nature and Natural Resources
JI	Joint Implementation
LESS	Low CO_2 – emitting Energy Supply System
LNG	Liquid Natural Gas
LPG	Liquefied Petroleum Gas
LWR	Light Water Reactor
MAC	Marginal Abatement Cost
MDB	Multilateral Development Banks
MEA	Multilateral Environmental Agreements
MNCs	Multinational Corporation
N	Nitrogen (element)
N_2	Nitrogen (gas)
N_2O	Nitrous oxide
Na_3AlF_6	Cryolite
NACE	Nomenclature des Activites dans la Communaute Europienne (Index of Business Activities in the European Union)
NGOs	Non-Governmental Organizations
NH_3	Ammonia
NH_4^+	Ammonium ion
NICs	Newly Industrialized Countries

NMHC	Non-Methane Hydrocarbon
NMVOCs	Non-Methane Volatile Organic Compounds
NO	Nitric oxide
NO_2	Nitrogen dioxide
NO_x	The sum of NO and NO_2
O_2	Oxygen
O_3	Ozone
ODA	Official Development Assistance
ODS	Ozone Depleting Substances
OECD	Organization for Economic Co-operation and Development
OPEC	Organization of Petroleum Exporting Countries
PEM	Proton exchange membrane
PFC	Perfluorocarbon
PPM	Processes and Production Method or Parts Per Million
PPP	Purchasing Power Parity or Polluter Pays Principle
PV	Photo Voltaic
PWR	Pressurized Water Reactor
QELRCs	Quantified Emission Limitation or Reduction Commitments
R&D	Research and Development
SAR	Second Assessment Report of the IPCC
SBSTA	Subsidiary Body for Scientific and Technological Advice
SF_6	Sulfur hexafluoride
SMEs	Small and Medium Sized Enterprises
SO_2	Sulphur dioxide
SO_x	Sulphur oxides
SPM	Summary for Policymakers
SRES	Special Report on Emissions Scenarios
SRLULUCF	Special Report on Land-Use, Land-Use Change and Forestry
SRTT	Special Report on Methodological and Technological Issues in Technology Transfer
TAR	Third Assessment Report
TPES	Total Primary Energy Supply
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VA	Voluntary Agreements or Value - Added
VAT	Value Added Tax
VOC	Volatile organic compound
WCED	World Commission on Environment and Development
WEC	World Energy Council
WG I	Working Group One of the IPCC
WG II	Working Group Two of the IPCC
WG III	Working Group Three of the IPCC
WHO	World Health Organization
WTA	Willingness to Accept compensation
WTO	World Trade Organization
WTP	Willingness to Pay
WWF	World Wide Fund for Nature

IV

Units, Conversion Factors, and GDP Deflators

Units

SI (Systeme Internationale) Units

Physical Quanitty	Name of Unit	Symbol
length	metre	m
mass	kilogram	kg
time	second	s
thermodynamic temperature	kelvin	K
amount of substance	mole	mol

Fraction	Prefix	Symbol	Multiple	Prefix	Symbol
10^{-1}	deci	d	10	deca	da
10^{-2}	cent	c	10^{2}	hecto	h
10^{-3}	milli	m	10^{3}	kilo	k
10^{-6}	micro	μ	10^{6}	mega	M
10^{-9}	nano	n	10^{9}	giga	G
10^{-12}	pico	p	10^{12}	tera	T
10^{-15}	femto	f	10^{15}	peta	P
			10^{18}	eta	E
			10^{21}	zeta	Z

Special Names and Symbols for Certain SI-Derived Units

Physical Quantity	Name of SI Unit	Symbol for SI Unit	Definition of Unit
force	newton	N	kg m s^{-2}
pressure	pascal	Pa	kg m^{-1} s^{-2} (=N m^{-2})
energy	joule	J	kg m^{2} s^{-2}
power	watt	W	kg m^{2} s^{-3} (=J s^{-1})
frequency	hertz	Hz	s^{-1} (cycles per second)

Decimal Fractions and Multiples of SI Units Having Special Names

Physical Quantity	Name of Unit	Symbol for Unit	Definition of Unit
length	ångstrom	Å	10^{-10} m = 10^{-8} cm
length	micron	μm	10^{-6} m
area	hectare	ha	10^{4} m^{2}
force	dyne	dyn	10^{-5} N
pressure	bar	bar	10^{5} N m^{-2} = 10^{5} Pa
pressure	millibar	mb	10^{2} N m^{-2} = 1 hPa
mass	tonne	t	10^{3} kg
mass	gram	g	10^{-3} kg
column density	Dobson units	DU	2.687×10^{16} molecules cm^{-2}
Stream function	Sverdrup	Sv	10^{6} m^{3} s^{-1}

Non-SI Units

°C	degree Celsius (0 °C = 273 K approximately) Temperature differences are also given in °C (=K) rather than the more correct form of "Celsius degrees".
ppmv	parts per million (10^6) by volume
ppbv	parts per billion (10^9) by volume
pptv	parts per trillion (10^{12}) by volume
yr	year
Btu	British Themal Unit
MWe	megawatts of electricity
tce	tonnes of coal equivalent
toe	tonnes of oil equivalent
boe	barrels of oil equivalent

The units of mass adopted in this report are generally those which have come into common usage and have deliberately not been harmonized, e.g.,

kt	kilotonnes (10^3 tonnes)
GtC	gigatonnes of carbon (1 GtC = (10^9 tonnes C = 3.67 Gt carbon dioxide)
PgC	petagrams of carbon (1 PgC = 1 GtC)
MtN	megatonnes (10^6 tonnes) of nitrogen
TgC	teragrams of carbon (1 TgC = 1 MtC)
$TgCH_4$	teragrams of methane
TgN	teragrams of nitrogen
TgS	teragrams of sulphur

Conversion Factors[1]

C - CO_2 Conversion Factor
$C/CO_2 = 1/3.67$

General Conversion Factors for Energy

To:	**TJ**	**Gcal**	**Mtoe**	**MBtu**	**GWh**
From:	*multiply by:*				
TJ	1	238.8	2.388×10^{-5}	947.8	0.2778
Gcal	4.1868×10^{-3}	1	10^{-7}	3.968	1.163×10^{-3}
Mtoe	4.1868×10^{4}	10^{7}	1	3.968×10^{7}	11630
Mbtu	1.0551×10^{-3}	0.252	2.52×10^{-8}	1	2.391×10^{-4}
GWh	3.6	860	8.6×10^{-5}	3412	1

[1] Energy related conversion factors are taken from *World Energy Outlook 2000*, International Energy Agency, Paris.

Conversion Factors for Mass

To:	kg	t	lt	st	lb
From:	*multiply by:*				
kilogram (kg)	1	0.001	9.84×10^{-4}	1.102×10^{-3}	2.2046
tonne (t)	1000	1	0.984	1.1023	2204.6
long ton (lt)	1016	1.016	1	1.120	2240.0
short ton (st)	907.2	0.9072	0.893	1	2000.0
Pound (lb)	0.454	4.54×10^{-4}	4.46×10^{-4}	5.0×10^{-4}	1

Conversion Factors for Volume

To:	gal US	gal UK	bbl	ft^3	l	m^3
From:	*multiply by:*					
US Gallon (gal)	1	0.8327	0.02381	0.1337	3.785	0.0038
UK Gallon (gal)	1.201	1	0.02859	0.1605	4.546	0.0045
Barrel (bbl)	42.0	34.97	1	5.615	159.0	0.159
Cubic foot (ft^3)	7.48	6.229	0.1781	1	28.3	0.0283
Litre (l)	0.2642	0.220	0.0063	0.0353	1	0.001
Cubic metre (m^3)	264.2	220.0	6.289	35.3147	1000.0	1

Specific Net Calorific Values

Crude Oil*

	toe/tonne
Saudi Arabia	1.0160
United States	1.0286
Former USSR	1.0050
Iran	1.0190
Venezuela	1.0685
Mexico	1.0115
Norway	1.0260
People's Rep. of China	1.0000
United Kingdom	1.0415
UAE	1.0180

* for selected countries

Petroleum Products*

	toe/tonne
Refinery gas	1.150
LPG	1.130
Ethane	1.130
Motor Gasoline	1.070
Jet Fuel	1.065
Kerosene	1.045
Naphtha	1.075
Gas/Diesel Oil	1.035
Fuel Oil	0.960
Other Products	0.960

* selected products – average values

Coal*

	toe/tonne
Peoples's Rep. of China	0.500
United States	0.646
India	0.477
South Africa	0.564
Australia	0.597
Russia	0.444
Poland	0.543
Kazakhstan	0.444
Ukraine	0.516
Germany	0.604

* steam coal production for selected countries

Gross Caloric Values

Natural Gas*

	kJ/m^3
Russia	37579
United States	38416
Canada	38130
Netherlands	38220
United Kingdom	39518
Indonesia	40600
Algeria	42000
Uzbekistan	37889
Saudi Arabia	38000
Norway	40460

* for selected countries (production).
Note: to calculate the net heat content, the gross heat content is multiplied by 0.9.

Conventions for Electricity

Figures for electricity production, trade and final consumption are calculated using the energy content of the electricity (i.e. at a rate of 1TWh = 0.086Mtoe). Hydro-electricity production (excluding pumped storage) and electricity produced by other non-thermal means (wind, tide, photovoltaic, *etc*.) are accounted for similarly using 1TWh = 0.086 Mtoe. However, the primary energy equivalent of nuclear electricity is calculated from the gross generation by assuming a 33% conversion efficiency, i.e. 1TWh = (0.086 / 0.33) Mtoe. In the case of electricity produced from geothermal heat, if the actual geothermal efficiency is not known, then the primary equivalent is calculated assuming an efficiency of 10%, so 1TWh = (0.086 / 0.1) Mtoe.

GDP Deflators and Changes in Consumer Prices

(Per cent)

	1982-1991	1992-2001	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
GDP deflators												
Advanced economies	**4.8**	**2.0**	**3.2**	**2.7**	**2.2**	**2.2**	**1.8**	**1.7**	**1.4**	**1.0**	**1.5**	**1.9**
United States	3.7	2.0	2.4	2.4	2.1	2.2	1.9	1.9	1.2	1.5	2.0	2.3
Japan	5.8	2.5	4.3	3.5	2.7	3.0	2.5	1.9	2.0	1.6	1.7	1.7
European Union	1.8	-	1.7	0.6	0.2	-0.6	-1.4	0.3	0.3	-0.9	-0.8	0.9
Other advanced economies	8.7	2.4	3.8	3.8	3.3	3.4	2.9	2.1	1.5	0.3	1.3	2.2
Consumer prices												
Advanced economies	**4.9**	**2.3**	**3.5**	**3.1**	**2.6**	**2.6**	**2.4**	**2.1**	**1.5**	**1.4**	**1.9**	**2.0**
United States	4.1	2.5	3.0	3.0	2.6	2.8	2.9	2.3	1.6	2.2	2.5	2.5
European Union	5.7	2.5	4.6	3.8	3.0	2.9	2.5	1.8	1.4	1.4	1.8	1.8
Japan	1.9	0.7	1.7	1.2	0.7	-0.1	0.1	1.7	0.6	-0.3	0.1	0.9
Other advanced economies	8.8	2.8	3.8	3.4	3.3	3.8	3.2	2.4	2.6	1.0	2.5	2.4
Developing countries	**45.7**	**20.3**	**36.1**	**49.8**	**55.1**	**22.9**	**15.1**	**9.5**	**10.1**	**6.5**	**5.7**	**4.7**
Regional groups												
Africa	19.6	24.4	47.1	38.7	54.8	35.5	30.0	13.6	9.2	11.0	9.6	6.1
Asia	9.7	7.6	8.6	10.8	16.0	13.2	8.2	4.7	7.6	2.5	2.6	3.0
Middle East and Europe	21.2	24.7	26.5	26.6	33.3	38.9	26.6	25.3	26.0	20.3	16.2	9.4
Western Hemisphere	166.9	47.4	109.1	202.6	202.5	34.4	21.4	13.0	9.8	8.8	7.7	6.4
Analytical groups												
By source of export earnings												
Fuel	13.7	21.4	22.1	26.2	31.8	43.2	31.9	16.1	15.6	12.0	10.5	8.8
Nonfuel	51.2	20.3	38.0	53.0	58.0	20.8	13.5	8.9	9.6	6.0	5.2	4.3
By external financing source												
Net creditor countries	2.8	3.6	4.3	5.5	4.0	5.8	3.9	1.9	1.8	1.4	3.3	4.1
Net debtor countries	47.7	20.9	37.4	51.6	57.2	23.5	15.5	9.8	10.4	6.7	5.8	4.7
Official financing	34.3	24.0	59.3	37.4	64.8	30.9	22.4	11.2	8.2	10.4	7.6	4.4
Private financing	54.6	21.0	38.0	57.1	61.4	21.4	13.9	9.2	10.0	5.7	5.1	4.3
Diversified financing	22.5	19.2	24.6	28.5	26.2	33.0	26.1	13.3	12.5	11.5	10.7	8.6
Net debtor countries by debt-servicing experience												
Countries with arrears and/or rescheduling during 1994-1998	100.1	49.8	113.6	204.3	219.9	38.7	19.8	10.4	16.6	11.6	8.1	6.0
Other net debtor countries	27.5	11.0	14.0	14.1	18.6	18.0	13.9	9.6	8.3	5.0	5.0	4.3
Countries in transition	**15.5**	**118.4**	**788.9**	**634.3**	**273.3**	**133.5**	**42.4**	**27.3**	**21.8**	**43.7**	**19.5**	**14.2**
Central and eastern Europe	…	74.8	278.3	366.8	150.4	72.2	32.1	38.4	18.7	20.5	19.4	12.3
Excluding Belarus and Ukraine	…	34.0	104.8	85.1	47.5	24.8	23.3	41.4	17.0	10.9	10.7	7.1
Russia	…	156.1	1,734.7	874.7	307.4	197.4	47.6	14.7	27.7	85.9	20.5	15.9
Transcaucasus and Central Asia	…	193.8	949.2	1,428.7	1,800.7	265.4	80.8	33.0	13.1	15.5	16.3	17.9
Memorandum												
Median inflation rate												
Advanced economies	5.4	2.2	3.2	3.0	2.4	2.4	2.1	1.7	1.6	1.4	2.1	2.0
Developing countries	9.5	7.0	9.9	9.3	10.6	10.1	7.1	6.3	5.7	4.0	4.0	3.6
Countries in transition	11.9	155.2	839.1	472.3	131.6	39.2	24.1	14.8	10.0	8.1	7.9	5.2

Source: IMF (2000) *World Economic Outlook*, International Monetary Fund, Washington DC.

V

List of Annex I, Annex II, and Annex B Countries

List of Annex I Countries, UNFCCC

Australia
Austria
Belarus a/
Belgium
Bulgaria a/
Canada
Croatia*
Czech Republic a/ *
Denmark
European Union
Estonia a/
Finland
France
Germany
Greece
Hungary a/
Iceland
Ireland
Italy
Japan
Latvia a/
Liechtenstein*
Lithuania a/
Luxembourg
Monaco*
Netherlands
New Zealand
Norway
Poland a/
Portugal
Romania a/
Russian Federation a/
Slovakia a/*
Slovenia a/*
Spain
Sweden
Switzerland
Turkey
Ukraine a/
United Kingdom of Great Britain and Northern Ireland
United States of America

List of Annex II Countries, UNFCCC

Australia
Austria
Belgium
Canada
Denmark
European Union
Finland
France
Germany
Greece
Iceland
Ireland
Italy
Japan
Luxembourg
Netherlands
New Zealand
Norway
Portugal
Spain
Sweden
Switzerland
Turkey
United Kingdom of Great Britain and Northern Ireland
United States of America

Note: Party included in Annex I means a Party included in Annex I to the Convention, as may be amended, or a Party which has made a notification under Article 4, paragraph 2(g), of the Convention.
a/ Countries that are undergoing the process of transition to a market economy.
* Countries added to Annex I by an amendment that entered into force on 13 August 1998, pursuant to Decision 4/CP.3 adopted at CoP 3.
Source: Annex I to the United Nations Framework Convention on Climate Change, p. 29.
Annex II to the United Nations Framework Convention on Climate Change, p. 30.

List of Annex B Countries, Kyoto Protocol

Party	Quantified emission limitation or reduction commitment (percentage of base year or period)
Australia	108
Austria	92
Belgium	92
Bulgaria*	92
Canada	94
Croatia*	95
Czech Republic*	92
Denmark	92
Estonia*	92
European Community	92
Finland	92
France	92
Germany	92
Greece	92
Hungary*	94
Iceland	110
Ireland	92
Italy	92
Japan	94
Latvia*	92
Liechtenstein	92
Lithuania*	92
Luxembourg	92
Monaco	92
Netherlands	92
New Zealand	100
Norway	101
Poland*	94
Portugal	92
Romania*	92
Russian Federation*	100
Slovakia*	92
Slovenia*	92
Spain	92
Sweden	92
Switzerland	92
Ukraine*	100
United Kingdom of Great Britain and Northern Ireland	92
United States of America	93

* Countries that are undergoing the process of transition to a market economy.

Source: Annex B to the Kyoto Protocol to the Convention on Climate Change, p.28.

VI

List of Major IPCC Reports

Climate Change—The IPCC Scientific Assessment
The 1990 Report of the IPCC Scientific Assessment Working Group (also in Chinese, French, Russian, and Spanish)

Climate Change—The IPCC Impacts Assessment
The 1990 Report of the IPCC Impacts Assessment Working Group (also in Chinese, French, Russian, and Spanish)

Climate Change—The IPCC Response Strategies
The 1990 Report of the IPCC Response Strategies Working Group (also in Chinese, French, Russian, and Spanish)

Emissions Scenarios
Prepared for the IPCC Response Strategies Working Group, 1990

Assessment of the Vulnerability of Coastal Areas to Sea Level Rise–A Common Methodology
1991 (also in Arabic and French)

Climate Change 1992—The Supplementary Report to the IPCC Scientific Assessment
The 1992 Report of the IPCC Scientific Assessment Working Group

Climate Change 1992—The Supplementary Report to the IPCC Impacts Assessment
The 1992 Report of the IPCC Impacts Assessment Working Group

Climate Change: The IPCC 1990 and 1992 Assessments
IPCC First Assessment Report Overview and Policymaker Summaries, and 1992 IPCC Supplement

Global Climate Change and the Rising Challenge of the Sea
Coastal Zone Management Subgroup of the IPCC Response Strategies Working Group, 1992

Report of the IPCC Country Studies Workshop, 1992

Preliminary Guidelines for Assessing Impacts of Climate Change, 1992

IPCC Guidelines for National Greenhouse Gas Inventories
Three volumes, 1994 (also in French, Russian, and Spanish)

IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations
1995 (also in Arabic, Chinese, French, Russian, and Spanish)

Climate Change 1994—Radiative Forcing of Climate Change and an Evaluation of the IPCC IS92 Emission Scenarios, 1995

Climate Change 1995—The Science of Climate Change – Contribution of Working Group I to the Second Assessment Report, 1996

Climate Change 1995—Impacts, Adaptations, and Mitigation of Climate Change: Scientific-Technical Analyses – Contribution of Working Group II to the Second Assessment Report, 1996

Climate Change 1995—Economic and Social Dimensions of Climate Change – Contribution of Working Group III to the Second Assessment Report, 1996

Climate Change 1995—IPCC Second Assessment Synthesis of Scientific-Technical Information Relevant to Interpreting Article 2 of the UN Framework Convention on Climate Change
1996 (also in Arabic, Chinese, French, Russian, and Spanish)

Technologies, Policies, and Measures for Mitigating Climate Change – IPCC Technical Paper I
1996 (also in French and Spanish)

An Introduction to Simple Climate Models used in the IPCC Second Assessment Report – IPCC Technical Paper II
1997 (also in French and Spanish)

Stabilization of Atmospheric Greenhouse Gases: Physical, Biological and Socio-economic Implications – IPCC Technical Paper III
1997 (also in French and Spanish)

Implications of Proposed CO_2 Emissions Limitations – IPCC Technical Paper IV
1997 (also in French and Spanish)

The Regional Impacts of Climate Change: An Assessment of Vulnerability – IPCC Special Report, 1998

Aviation and the Global Atmosphere - IPCC Special Report, 1999

Land Use, Land Use Changes and Forestry - IPCC Special Report, 2000

Methodological and Technological Issues in Technology Transfer - IPCC Special Report, 2000

Emissions Scenarios - IPCC Special Report, 2000

Climate Change 2001: The Scientific Basis, 2001

Climate Change 2001: Impacts, Adaptation, and Vulnerability, 2001

Climate Change 2001: Mitigation, 2001.

ENQUIRIES: IPCC Secretariat, c/o World Meteorological Organization, 7 bis, Avenue de la Paix, Case Postale 2300, 1211 Geneva 2, Switzerland

VII

Index

Index[1]

[1] This index refers to the main occurrences of key terms in the chapters of this Report and the Technical Summary, excluding the Summary for Policymakers, Executive Summaries, reference lists and title pages; numbers in bold refer to the main discussion on the term in the report.

C

M

N

W