6 Glossary and Acronyms

6.1 Glossary

Sources: Derived from the Intergovernmental Panel on Climate Change Third and Fourth Assessment Reports, Working Group II and other sources as indicated.

Words in italics indicate that the following term is also contained in this glossary.

A

Acclimatization
The physiological *adaptation* to climatic variations.
Adaptability
See *Adaptive capacity*.
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.
Adaptation assessment
The practice of identifying options to adapt to *climate change* and evaluating them in terms of criteria such as availability, benefits, costs, effectiveness, efficiency, and feasibility.
Adaptation benefits
The avoided damage costs or the accrued benefits following the adoption and *implementation* of *adaptation* measures.
Adaptation costs
Costs of planning, preparing for, facilitating, and implementing *adaptation* measures, including transition costs.
Adaptive capacity
The ability of a system to adjust to *climate change* (including *climate variability* and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences.
Aeroallergens[1]
Any of various airborne substances, such as pollen or spores, that can cause an allergic response.
Aggregate impacts
Total impacts summed up across sectors and/or regions. The aggregation of *impacts* requires knowledge of (or assumptions about) the relative importance of impacts in different sectors and regions. Measures of aggregate impacts include, for example, the total number of people affected, change in net primary productivity, number of systems undergoing change, or total economic costs.
Albedo
The fraction of solar radiation reflected by a surface or object, often expressed as a percentage. Snow-covered surfaces have a high albedo; the albedo of soils ranges from high to low; vegetation-covered surfaces and oceans have a low albedo. The Earth's albedo varies mainly through varying cloudiness, snow, ice, leaf area, and land-cover changes.

[1] *The American Heritage® Dictionary of the English Language, Fourth Edition*. Retrieved November 21, 2007, from Dictionary.com website: http://dictionary.reference.com/browse/aeroallergen

Algal bloom
A reproductive explosion of algae in a lake, river or ocean.
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 abating local air pollution, greenhouse gas mitigation may also be considered an ancillary benefit, but these relationships are not considered in this assessment.
Anthropogenic
Resulting from or produced by human beings.
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.
Aquifer
A stratum of permeable rock that bears water. An unconfined aquifer is recharged directly by local rainfall, rivers and lakes, and the rate of recharge will be influenced by the permeability of the overlying rocks and soils.
Arid regions
Ecosystems with less than 250 mm precipitation per year.
Atmosphere
The gaseous envelop surrounding the Earth. The dry atmosphere consists almost entirely of nitrogen (78.1% *volume mixing ratio*) and oxygen (20.9% volume mixing ratio), together with a number of trace gases, such as argon (0.93% volume mixing ratio), helium, and radiatively active *greenhouse gases* such as *carbon dioxide* (0.035% volume mixing ratio) and *ozone*. In addition, the atmosphere contains water vapor, whose amount is highly variable but typically 1% volume mixing ratio. The atmosphere also contains clouds and *aerosols*.

B

Baseline
The baseline (or reference) is any datum against which change is measured. It might be a "current baseline," in which case it represents observable, present-day conditions. It might also be a "future baseline," which is a projected future set of conditions excluding the driving factor of interest. Alternative interpretations of the reference conditions can give rise to multiple baselines.
Biofuel
A fuel produced from organic matter or bombustible oils produced by plants. Examples of biofuel include alcohol, black liquor from the paper-manufacturing process, wood, and soybean oil.
Biogenic[2]
Produced by living organisms or biological processes.

C

Carbon dioxide (CO2)
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 has a *Global Warming Potential* of 1.
Cholera
An intestinal infection that results in frequent watery stools, cramping abdominal

[2] *The American Heritage® Dictionary of the English Language, Fourth Edition*. Retrieved November 21, 2007, from Dictionary.com website: http://dictionary.reference.com/browse/biogenic

pain, and eventual collapse from dehydration.

Chronic obstructed pulmonary disease (COPD)[3]

Chronic obstructive pulmonary disease, or COPD, refers to a group of diseases that cause airflow blockage and breathing-related problems. It includes emphysema, chronic bronchitis, and in some cases asthma.

Climate

Climate in a narrow sense is usually defined as the "average weather" or more rigorously as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period is 30 years, as defined by the World Meteorological Organization (WMO). These relevant quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the *climate system*.

Climate change

Climate change refers to any change in *climate* over time, whether due to natural variability or as a result of human activity. This usage differs from that in the *United Nations Framework Convention on Climate Change (UNFCCC)*, which 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'. See also *climate variability*.

Climate change commitment

Due to the thermal inertia of the ocean and slow processes in the *biosphere*, the *cryosphere* and land surfaces, the climate would continue to change even if the atmospherica composition was held fixed at today's values. Past changes in atmospheric position leads to a 'committed' *climatic change* which continues for as long as a radiative imbalance persists and until all components of the *climate system* have adjusted to a new state. The further change in temperature after the composition of the *atmosphere* is head constant is referred to as the committed warming or warming commitment. Climate change commitment includes other future changes, for example in the hydrological cycle, in *extreme weather events*, and in *sea-level rise.*

Climate model (hierarchy)

A numerical representation of the *climate system* based on the physical, chemical, and biological properties of its components, their interactions and *feedback* processes, and accounting for all or some of its known properties. The climate system can be represented by models of varying complexity—that is, for any one component or combination of components a "hierarchy" of models can be identified, differing in such aspects as the number of spatial dimensions, the extent to which physical, chemical or biological processes are explicitly represented, or the level at which empirical *parametrizations* are involved. Coupled atmosphere/ocean/sea-ice *general circulation models* (AOGCMs) provide a comprehensive representation of the climate system. There is an evolution towards more complex models with active chemistry and biology. Climate models are applied, as a research tool, to study and simulate the climate, but also for operational purposes, including monthly, seasonal, and interannual *climate predictions*.

Climate prediction

A climate prediction or climate forecast is the result of an attempt to produce a most likely description or estimate of the actual evolution of the *climate* in the future (e.g., at seasonal, interannual, or long-term *time-scales*). See also *climate projection* and *climate (change) scenario*.

Climate projection

A *projection* of the response of the *climate system* to *emission* or concentration *scenarios* of *greenhouse gases* and *aerosols*, or *radiative forcing scenarios*, often based upon simulations by *climate models*. Climate projections are distinguished from *climate predictions* in order to emphasize

[3] Definition taken from http://www.cdc.gov/nceh/airpollution/copd/copdfaq.htm visited on November 21, 2007.

that climate projections depend upon the emission/concentration/radiative forcing scenario used, which are based on assumptions, concerning, for example, future socio-economic and technological developments that may or may not be realized, and are therefore subject to substantial *uncertainty*.

Climate scenario

A plausible and often simplified representation of the future *climate*, based on an internally consistent set of climatological relationships, that has been constructed for explicit use in investigating the potential consequences of *anthropogenic climate change*, often serving as input to impact models. *Climate projections* often serve as the raw material for constructing climate scenarios, but climate scenarios usually require additional information such as about the observed current climate. A "climate change scenario" is the difference between a climate scenario and the current climate.

Climate system

The climate system is the highly complex system consisting of five major components: the *atmosphere*, the *hydrosphere*, the *cryosphere*, the land surface and the *biosphere*, and the interactions between them. The climate system evolves in time under the influence of its own internal dynamics and because of external forcings such as volcanic eruptions, solar variations, and human-induced forcings such as the changing composition of the atmosphere and *land-use change*.

Climate variability

Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the *climate* on all *temporal and spatial scales* beyond that of individual weather events. Variability may be due to natural internal processes within the *climate system* (internal variability), or to variations in natural or *anthropogenic external forcing* (external variability). See also *climate change*.

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 sides of the benefits. See also *ancillary benefits*.

Communicable Disease

An *infectious disease* caused by transmission of an infective biological agent (virus, bacterium, protozoan, or multicellular macroparasite).

Confidence

In this Report, the level of confidence in a statement is expressed using a standard terminology defined in the Introduction. See also *uncertainty*.

Coping range

The variation in climatic *stimuli* that a system can absorb without producing significant impacts.

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.

D

DALY (Disability-adjusted life years)[4]

The sum of years of life lost due to premature death and illness, taking into account the age of death compared with natural life expectancy and the number of years of life lived with a disability. The measure of number of years lived with the disability considers the duration of the disease, weighted by a measure of the severity of the disease.

Dengue Fever

[4] Definition from the glossary of the Millenium Ecosystem Assessment, 2005.

An infectious viral disease spread by mosquitoes often called breakbone fever because it is characterized by severe pain in joints and back. Subsequent infections of the virus may lead to dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS), which may be fatal.

Desert
An *ecosystem* with less than 100 mm precipitation per year.

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

Detection and attribution
Climate varies continually on all *time scales*. Detection of *climate change* is the process of demonstrating that climate has changed in some defined statistical sense, without providing a reason for that change. Attribution of causes of climate change is the process of establishing the most likely causes for the detected change with some defined level of confidence.

Disturbance regime
Frequency, intensity, and types of disturbances, such as fires, inspect or pest outbreaks, floods, and *droughts*.

Diurnal temperature range
The difference between the maximum and minimum temperature during a day**.**

Dose-response function[5]
A mathematical relationship is established which relates how much a certain amount of exposure impacts on production, capital, ecosystems, human health etc.

Downscaling
A method that derives local- to regional-scale (10 to 100 km) information from larger-scale models or data analyses.

Drought
The phenomenon that exists when precipitation has been significantly below normal recorded levels, causing serious hydrological imbalances that adversely affect land resource production systems.

E

Ecosystem
A system of interacting living organisms together with their physical environment. The boundaries of what could 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.

Ecosystem processes
The processes that underpin the integrity and functioning of ecosystems, such as decomposition, carbon cycling, or soil renewal, etc.

Ecosystem services
Ecological processes or functions that have monetary or non-monetary *value* to individuals or society. There are (i) supporting services such as productivity or *biodiversity* maintenance, (ii) provisioning services such as food, fibre, or fish, (iii) regulating services such as climate regulation or *carbon sequestration*, and (iv) cultural services such as tourism or spiritual and aesthetic appreciation.

El Niño Southern Oscillation (ENSO)

[5] Definition modified from http://stats.oecd.org/glossary/detail.asp?ID=6404 visited on November 21, 2007.

El Niño, in its original sense, is a warm water current that periodically flows along the coast of Ecuador and Peru, disrupting the local fishery. This oceanic event is associated with a fluctuation of the intertropical surface pressure pattern and circulation in the Indian and Pacific Oceans, called the Southern Oscillation. This coupled atmosphere-ocean phenomenon is collectively known as El Niño Southern Oscillation, or ENSO. During an El Niño event, the prevailing trade winds weaken and the equatorial countercurrent strengthens, causing warm surface waters in the Indonesian area to flow eastward to overlie the cold waters of the Peru current. This event has great impact on the wind, sea surface temperature, and precipitation patterns in the tropical Pacific. It has climatic effects throughout the Pacific region and in many other parts of the world. The opposite of an El Niño event is called *La Niña*.

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.

Endemic
Restricted or peculiar to a locality or region. With regard to human health, endemic can refer to a disease or agent present or usually prevalent in a population or geographical area at all times.

Epidemic
Occurring suddenly in numbers clearly in excess of normal expectancy, said especially of *infectious diseases* but applied also to any disease, injury, or other health-related event occurring in such outbreaks.

Eutrophication
The process by which a body of water (often shallow) becomes (either naturally or by pollution) rich in dissolved nutrients with a seasonal deficiency in dissolved oxygen.

Evaporation
The process by which a liquid becomes a gas.

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

Exotic species
See *introduced species*.

Exposure
The nature and degree to which a system is exposed to significant climatic variations.

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.

Extinction
The complete disappearance of an entire species.

Extirpation
The disappearance of a species from part of its range; local extinction.

Extreme weather event
An extreme weather event is an event that is rare within its statistical reference distribution at a particular place. Definitions of "rare" vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile.
By definition, the characteristics of what is called extreme weather may vary from place to place. An extreme *climate* event is an average of a number of weather events over a certain period of time, an average which is itself extreme (e.g., rainfall over a season).

F

Food security

A situation that exists when people have secure access to sufficient amounts of safe and nutritious food for normal growth, development and an active and healthy life. Food insecurity may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution, or inadequate use of food at the household level.

Foodborne illness[6]

An illness caused by consuming foods or beverages contaminated with any of many different disease-causing microbes, or pathogens, or poisonous chemicals, or other harmful substances.

Footprint (ecological)[7]

An index of the area of productive land and aquatic ecosystems required to produce the resources used and to assimilate the wastes produced by a defined population at a specified material standard of living, wherever on Earth that land may be located.

Forecast

See *climate prediction* and *climate projection*.

G

General circulation

The large scale motions of the *atmosphere* and the ocean as a consequence of differential heating on a rotating Earth, aiming to restore the *energy balance* of the system through transport of heat and momentum.

General Circulation Model (GCM)

See *climate model*.

GIS (Geographic Information Systems)[8]

A computerized system organizing data sets through a geographical referencing of all data included in its collections.

Global surface temperature

The global surface temperature is the area-weighted global average of (i) the sea surface temperature over the oceans (i.e., the sub-surface bulk temperature in the first few meters of the ocean), and (ii) the surface air temperature over land at 1.5 m above the ground.

Globalization

The growing integration and interdependence of countries worldwide through the increasing volume and variety of crossborder transactions in goods and services, free international capital flows, and the more rapid and widespread diffusion of technology, information and culture.

Greenhouse effect

Greenhouse gases effectively absorb *infrared radiation*, emitted by the Earth's surface, by the *atmosphere* itself due to the same gases, and by clouds. Atmospheric radiation is emitted to all sides, including downward to the Earth's surface. Thus greenhouse gases 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*, whereas 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 of the temperature of the surface-troposphere system. This is the "enhanced greenhouse effect."

Greenhouse gas

Greenhouse gases are those gaseous constituents of the *atmosphere,* both natural and *anthropogenic*, that absorb and emit radiation at specific wavelengths within the

[6] Definition modified from the Centers for Disease Control and Prevention website: http://www.cdc.gov/ncidod/dbmd/diseaseinfo/foodborneinfections_g.htm, viewed on November 21, 2007.

[7] From the glossary of the Millenium Ecosystem Assessment, 2005.

[8] From the glossary of the Millenium Ecosystem Assessment, 2005.

spectrum of *infrared radiation* emitted by the Earth's surface, the atmosphere, and clouds. This property causes the *greenhouse effect*. Water vapor (H2O), *carbon dioxide* (CO2), *nitrous oxide* (N2O), *methane* (CH4), and *ozone* (O3) are the primary greenhouse gases in the Earth's atmosphere. Moreover there are a number of entirely human-made greenhouse gases in the atmosphere, such as the *halocarbons* and other chlorine- and bromine-containing substances, dealt with under the *Montreal Protocol*. Besides CO2, N2O, and CH4, the *Kyoto Protocol* deals with the greenhouse gases *sulfur hexafluoride* (SF6), *hydrofluorocarbons* (HFCs), and *perfluorocarbons* (PFCs).

Gross Domestic Product

Gross Domestic Product (GDP) is the monetary value of all goods and services produced within a nation.

Gross National Product

Gross National Product (GNP) is the monetary value of all goods and services produced in a nation's economy, including income generated abroad by domestic residents, but without income generated by foreigners.

Groundwater Recharge

The process by which external water is added to the zone of saturation of an *aquifer*, either directly into a formation or indirectly by way of another formation.

H

Habitat

The particular environment or place where an organism or species tend to live; a more locally circumscribed portion of the total environment.

Hantavirus

A virus in the family *Bunyaviridae* that causes a type of haemorrhagic fever. It is thought that humans catch the disease mainly from infected rodents, either through direct contact with the animals or by inhaling or ingesting dust that contains aerosolized viral particles from their dried urine and other secretions.

Healthy Cities Program[9]

The WHO Healthy Cities programme engages local governments in health development through a process of political commitment, institutional change, capacity building, partnership-based planning and innovative projects. It promotes comprehensive and systematic policy and planning with a special emphasis on health inequalities and urban poverty, the needs of vulnerable groups, participatory governance and the social, economic and environmental determinants of health. It also strives to include health considerations in economic, regeneration and urban development efforts.

Heat exhaustion[10]

Heat exhaustion is a phenomenon caused by fluid loss, which in turn causes decreased blood flow to vital organs. Reduced blood flow from heat exhaustion can result in a form of shock. Victims of heat exhaustion often complain of flu-like symptoms hours after exposure.

Heat index[11]

The heat index (HI), given in degrees F, is a measure of how hot it feels when relative humidity (RH) is combined with the actual air temperature.

Heat island

An area within an urban area characterized by ambient temperatures higher than those of the surrounding area because of the absorption of solar energy by materials like asphalt.

Heat stroke[12]

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[9] Definition taken directly from http://www.euro.who.int/healthy-cities on November 21, 2007.

[10] Definition from the U.S. Environmental Protection Agency's Heat Island Glossary, http://www.epa.gov/hiri/resources/glossary.html #h, visited on November 21, 2007.

[11] Defintion modified from NOAA's Heat Index website, http://www.crh.noaa.gov/jkl/?n=heat_index_calculator, visited on November 21, 2007.

[12] Definition from the U.S. Environmental Protection Agency's Heat Island Glossary, http://www.epa.gov/hiri/resources/glossary.html #h, visited on November 21, 2007.

Heat stroke occurs when the body's heat regulating mechanisms – including convection, sweating, and respiration – fail. The likelihood of heat stroke increases when air temperatures are higher than skin temperature, and when individuals are low on fluids. Body temperatures can be raised to the point at which brain damage and death can result unless cooling measures are quickly taken.

Human settlement
A place or area occupied by settlers.

Human system
Any system in which human organizations play a major role. Often, but not always, the term is synonymous with "society" or "social system" (e.g., agricultural system, political system, technological system, economic system).

Hydrological systems
The systems involved in movement, distribution, and quality of water throughout the Earth, including both the hydrologic cycle and water resources.

Hyperthermia[13]
Unusually high body temperature.

I

Ice sheet
A mass of land ice that is sufficiently deep to cover most of the underlying bedrock topography, so that its shape is mainly determined by its internal dynamics (the flow of the ice as it deforms internally and slides at its base). An ice sheet flows outward from a high central plateau with a small average surface slope. The margins slope steeply, and the ice is discharged through fast-flowing ice streams or outlet *glaciers*, in some cases into the sea or into *ice shelves* floating on the sea. There are only two large ice sheets in the modern world, on Greenland and Antarctica, the Antarctic ice sheet being divided into East and West by the Transantarctic Mountains; during glacial periods there were others.

Ice shelf
A floating *ice sheet* of considerable thickness attached to a coast (usually of great horizontal extent with a level or gently undulating surface); often a seaward extension of ice sheets.

(Climate) Impact assessment
The practice of identifying and evaluating the detrimental and beneficial consequences of *climate change* on natural and *human systems*.

(Climate) Impacts
Consequences of *climate change* on natural and *human systems*. Depending on the consideration of *adaptation*, one can distinguish between potential impacts and residual impacts. Potential impacts: All impacts that may occur given a projected change in *climate*, without considering adaptation. Residual impacts: The impacts of climate change that would occur after adaptation. See also a*ggregate impacts*, *market impacts*, and *non-market impacts*.

Indicator[14]
Information based on measured data used to represent a particular attribute, characteristic, or property of a system.

Indigenous peoples
People whose ancestors inhabited a place or a country when persons from another culture or ethnic background arrived on the scene and dominated them through conquest, settlement, or other means and who today live more in conformity with their own social, economic, and cultural customs and traditions than those of the country of which they now form a part (also referred to as "native," "aboriginal," or "tribal" peoples).

Industrial Revolution
A period of rapid industrial growth with far-reaching social and economic consequences, beginning in England during the second half of the 18th century and spreading to Europe and later to other countries including the

[13] *The American Heritage® Dictionary of the English Language, Fourth Edition*. Retrieved November 21, 2007, from Dictionary.com website: http://dictionary.reference.com/browse/hyperthermia

[14] Definition taken from the Millenium Ecosystem Assessment, Current State and Trends Assessment Glossary, 2005

United States. The invention of the steam engine was an important trigger of this development. The Industrial Revolution marks the beginning of a strong increase in the use of *fossil fuels* and emission of, in particular, fossil *carbon dioxide*. In this report, the terms "pre-industrial" and "industrial" refer, somewhat arbitrarily, to the periods before and after the year 1750, respectively.

Inertia

Delay, slowness, or resistance in the response of the *climate*, biological, or *human systems* to factors that alter their rate of change, including continuation of change in the system after the cause of that change has been removed.

Infectious diseases

Any disease that can be transmitted from one person to another. This may occur by direct physical contact, by common handling of an object that has picked up infective organisms, through a disease carrier, or by spread of infected droplets coughed or exhaled into the air.

Infrastructure

The basic equipment, utilities, productive enterprises, installations, institutions, and services essential for the development, operation, and growth of an organization, city, or nation. For example, roads; schools; electric, gas, and water utilities; transportation; communication; and legal systems would be all considered as infrastructure.

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.

Introduced species

A species occurring in an area outside its historically known natural range as a result of accidental dispersal by humans (also referred to as "*exotic species*" or "alien species").

Invasive species

An *introduced species* that invades natural *habitats*.

IPCC[15]

A panel set up by the United Nations in 1988 to review scientific information on climate change. This panel involves over 2,000 of the world's climate experts. Many of the climate change facts and future predictions we read about come from information reviewed by the IPCC.

K

Kyoto Protocol

The Kyoto Protocol was adopted at the Third Session of the Conference of the Parties (COP) to the *UN Framework Convention on Climate Change (UNFCCC)* 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 member countries of the Organisation for Economic Cooperation and Development (OECD) and those with economies in transition) agreed to reduce their *anthropogenic greenhouse gas* emissions (CO2, CH4, N2O, HFCs, PFCs, and SF6) by at least 5% below 1990 levels in the commitment period 2008 to 2012. The Kyoto Protocol entered into force on 16 February 2005.

L

La Niña

See *El Niño Southern Oscillation*.

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).

Land-use change

[15] Definition taken from the Climate Change North Glossary at http://www.climatechangenorth.ca/H1_Glossary.html on November 21, 2007.

A change in the use or management of land by humans, which may lead to a change in land cover. Land cover and land-use change may have an impact on the *albedo*, *evapotranspiration*, *sources*, and *sinks* of *greenhouse gases*, or other properties of the *climate system*, and may thus have an impact on *climate*, locally or globally.

Landslide
A mass of material that has slipped downhill by gravity, often assisted by water when the material is saturated; rapid movement of a mass of soil, rock, or debris down a slope.

Likelihood
The likelihood of an occurrence, an outcome or a result, where this can be estimated probabilistically, is expressed in this Report using a standard terminology, defined in the Introduction. See also *uncertainty* and *confidence*.

Lyme disease
A vector-borne disease caused by the spirochete Borrelia burgdorferi and transmitted by Ixodes ticks, commonly known as deer ticks. Symptoms include skin lesions, fatigue, fever, and chills, and if left untreated may later manifest itself in cardiac and neurological disorders, joint pain, and arthritis.

M

Maladaptation
Any changes in natural or *human systems* that inadvertently increase *vulnerability* to climatic *stimuli*; an *adaptation* that does not succeed in reducing vulnerability but increases it instead.

Malaria
Endemic or *epidemic* parasitic disease caused by species of the genus Plasmodium (protozoa) and transmitted by mosquitoes of the genus Anopheles; produces high fever attacks and systemic disorders, and kills approximately 2 million people every year.

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 impacts
Impacts that are linked to market transactions and directly affect *Gross Domestic Product* (a country's national accounts)—for example, changes in the supply and price of agricultural goods. See also *non-market impacts*.

Mitigation
An *anthropogenic* intervention to reduce the *sources* or enhance the *sinks* of *greenhouse gases*.

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

Morbidity
Rate of occurrence of disease or other health disorder within a population, taking account of the age-specific morbidity rates. Health outcomes include chronic disease incidence/prevalence, rates of hospitalization, primary care consultations, disability-days (i.e., days when absent from work), and prevalence of symptoms.

Mortality
Rate of occurrence of death within a population within a specified time period; calculation of mortality takes account of age-specific death rates, and can thus yield measures of life expectancy and the extent of premature death.

N

Nitrogen oxides[16]
Compounds of nitrogen and oxygen produced by the burning of fossil fuels.

No-regrets opportunities
See *no-regrets policy*.

No-regret options

[16] Definition from www.eia.doe.gov/oiaf/1605/95report/glossary.html visited on November 21, 2007.

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*.

Non-linearity

A process is called "non-linear" when there is no simple proportional relation between cause and effect. The *climate system* contains many such non-linear processes, resulting in a system with a potentially very complex behavior. Such complexity may lead to *rapid climate change*.

Non-market impacts

Impacts that affect *ecosystems* or human welfare, but that are not directly linked to market transactions—for example, an increased risk of premature death. See also *market impacts*.

North Atlantic Oscillation (NAO)

The North Atlantic Oscillation consists of opposing variations of barometric pressure near Iceland and near the Azores. On average, a westerly current, between the Icelandic low pressure area and the Azores high pressure area, carries cyclones with their associated frontal systems towards Europe. However, the pressure difference between Iceland and the Azores fluctuates on *time scales* of days to decades, and can be reversed at times. It is the dominant mode of winter *climate variability* in the North Atlantic region, ranging from central North America to Europe.

O

Ocean conveyor belt

The theoretical route by which water circulates around the entire global ocean, driven by wind and the *thermohaline circulation*.

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 costs

The cost of an economic activity forgone by the choice of another activity.

Ozone (O3)

Ozone, the triatomic form of oxygen (O3), is a gaseous atmospheric constituent. In the *troposphere* it is created both naturally and by photochemical reactions involving gases resulting from human activities (photochemical "smog"). In high concentrations, tropospheric ozone can be harmful to a wide-range of living organisms. Tropospheric ozone acts as a *greenhouse gas*. In the *stratosphere*, ozone is created by the interaction between solar ultraviolet radiation and molecular oxygen (O2). Stratospheric ozone plays a decisive role in the stratospheric *radiative balance*. Its concentration is highest in the *ozone layer*. Depletion of stratospheric ozone, due to chemical reactions that may be enhanced by *climate change*, results in an increased ground-level flux of *ultraviolet-B radiation*. See also *Montreal Protocol* and *ozone layer*.

P

Parameterization

In *climate models*, this term refers to the technique of representing processes, that cannot be explicitly resolved at the spatial or temporal resolution of the model (sub-grid scale processes), by relationships between the area- or time-averaged effect of such sub-grid-scale processes and the larger scale flow.

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.

Particulates
Very small solid exhaust particles emitted during the combustion of fossil and biomass fuels. Particulates may consist of a wide variety of substances. Of greatest concern for health are particulates of less than or equal to 10nm and 2.5 nm in diameter, usually designated as PM10 and PM2.5, respectively.

Pathogen[17]
An agent that causes disease, especially a living microorganism such as a bacterium or fungus.

Permafrost
Perennially frozen ground that occurs wherever the temperature remains below 0°C for several years.

Photochemical smog
A mix of photochemical oxidant air pollutants produced by the reaction of sunlight with primary air pollutants, especially hydrocarbons.

Point-source pollution
Pollution resulting from any confined, discrete source, such as a pipe, ditch, tunnel, well, container, concentrated animal feeding operation, or floating craft. See also *non-point-source pollution*.

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

Projection (generic)
A projection is a potential future evolution of a quantity or set of quantities, often computed with the aid of a model. Projections are distinguished from "predictions" in order to emphasize that projections involve assumptions concerning, for example, future socio-economic and technological developments that may or may not be realized, and are therefore subject to substantial *uncertainty*. See also *climate projection* and *climate prediction*.

Proxy
A proxy *climate* indicator is a local record that is interpreted, using physical and biophysical principles, to represent some combination of climate-related variations back in time. Climate-related data derived in this way are referred to as proxy data. Examples of proxies are tree ring records, characteristics of corals, and various data derived from ice cores.

Q

QALY (Quality Adjusted Life Year)[18]
A measure of the outcome of actions (either individual or treatment interventions) in terms of their health impact. If an action gives a person an extra year of healthy life expectancy, that counts as one QALY. If an action gives a person an extra year of unhealthy life expectancy (partly disabled or in some distress), it has a value of less than one. Death is rated at zero.

Quality of Life[19]
A scientific measure of personal well-being. Categories used to define place-specific quality of life include the inter-related categories of economic conditions; natural resources, environment, and amenities; human health; public and private infrastructure; government and public safety; and social and cultural resources.

R

Radiative forcing
Radiative forcing is the change in the net vertical irradiance (expressed in 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

[17] *The American Heritage® Dictionary of the English Language, Fourth Edition*. Retrieved November 21, 2007, from Dictionary.com website: http://dictionary.reference.com/browse/pathogen

[18] Definition taken from http://www.aihw.gov.au/publications/health/ah96/ah96-x04.html visited on November 21, 2007.

[19] Definition modified from text within Chapter 5 of this document.

for stratospheric temperatures to readjust to radiative equilibrium, but with all tropospheric properties held fixed at their unperturbed values.

Range shifts
Climate change-induced changes in the geographical distributions of plants, animals and ecosystems

Rapid climate change
The *non-linearity* of the *climate system* may lead to rapid *climate change*, sometimes called abrupt events or even surprises. Some such abrupt events may be imaginable, such as a dramatic reorganization of the *thermohaline circulation*, rapid deglaciation, or massive melting of *permafrost* leading to fast changes in the *carbon cycle*. Others may be truly unexpected, as a consequence of a strong, rapidly changing, forcing of a non-linear system.

Reference scenario
See *baseline/reference.*

Reinsurance
The transfer of a portion of primary insurance risks to a secondary tier of insurers (reinsurers); essentially "insurance for insurers."

Relative sea level
Sea level measured by a *tide gauge* with respect to the land upon which it is situated. See also *Mean Sea Level*.

Revealed preference[20]
The use of the value of expenditure to "reveal" the preference of a consumer or group of consumers for the bundle of goods they purchase compared to other bundles of equal or smaller value.

Reservoir
A component of the *climate system*, other than the *atmosphere*, that has the capacity to store, accumulate or release a substance of concern (e.g., carbon or a *greenhouse gas*). Oceans, soils, and forests are examples of carbon reservoirs. The term also means an artificial or natural storage place for water, such as a lake, pond or *aquifer*, from which the water may be withdrawn for such purposes as irrigation or water supply.

Resilience
Amount of change a system can undergo without changing state.

Response time
The response time or adjustment time is the time needed for the *climate system* or its components to re-equilibrate to a new state, following a forcing resulting from external and internal processes or *feedbacks*. It is very different for various components of the climate system. The response time of the *troposphere* is relatively short, from days to weeks, whereas the *stratosphere* comes into equilibrium on a *time scale* of typically a few months. Due to their large heat capacity, the oceans have a much longer response time, typically decades, but up to centuries or millennia. The response time of the strongly coupled surface-troposphere system is, therefore, slow compared to that of the stratosphere, and mainly determined by the oceans. The *biosphere* may respond fast (e.g., to *droughts*), but also very slowly to imposed changes. See *lifetime* for a different definition of response time pertinent to the rate of processes affecting the concentration of trace gases.

Rodent-borne disease[21]
Disease that is transmitted between hosts by a rodent (e.g. bubonic plague, hantavirus).

Runoff
That part of precipitation that does not *evaporate* and is not *transpired*.

S

Salinization
The accumulation of salts in soils.

Salmonella[22]

[20] Definition http://www-personal.umich.edu/~alandear/glossary/r.html visited on November 21, 2007.

[21] Definition modified from definition of vector-borne disease.

[22] Definition modified from information on the CDC's website: http://www.cdc.gov/ncidod/dbmd/diseaseinfo/salmonellosis_g.htm#What%20sort%20of%20germ%20is%20Salmonella visited on November 21, 2007.

There are many different kinds of Salmonella bacteria. They pass from the feces of people or animals to other people or other animals and can cause diarrheal illness in humans. Salmonella has been known to cause illness for over 100 years. They were discovered by a American scientist named Salmon, for whom they are named.

Saltwater intrusion/encroachment
Displacement of fresh surface water or ground water by the advance of saltwater due to its greater density, usually in coastal and estuarine areas.

Scenario (generic)
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. Scenarios are neither predictions nor forecasts and sometimes may be based on a "narrative storyline." Scenarios may be derived from *projections*, but are often based on additional information from other sources. See also *SRES scenarios*, *climate scenario*, and *emission scenarios*.

Sea-level rise
An increase in the mean level of the ocean. Eustatic sea-level rise is a change in global average sea level brought about by an alteration to the volume of the world ocean. *Relative sealevel* rise occurs where there is a net increase in the level of the ocean relative to local land movements. Climate modelers largely concentrate on estimating eustatic sea-level change. *Impact* researchers focus on relative sea-level change.

Seawall
A human-made wall or embankment along a shore to prevent wave *erosion*.

Semi-arid regions
Ecosystems that have more than 250 mm precipitation per year but are not highly productive; usually classified as *rangelands*.

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

Sequential decision making
Stepwise decision making aiming to identify short-term strategies in the face of long-term uncertainties, by incorporating additional information over time and making mid-course corrections.

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- and carbon dioxide-rich fractions and longterm storage in underground in depleted oil and gas reservoirs, coal seams, and saline *aquifers*. See also *uptake*.

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

Smog[23]
Air pollution typically associated with oxidants.

Snowpacks
A seasonal accumulation of slow-melting snow.

Social cost
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

[23] Definition from The U.S. EPA's Terms of Environment Glossary at http://www.epa.gov/OCEPAterms/sterms.html visited on November 21, 2007.

resources that makes up the social cost. See also *private cost* and *total cost*.

Social indicators[24]

Broad, standardized measures of the quality of life or other socio-economic conditions of geographic areas such as nations, metropolitan areas, or other areas; used to assess health conditions, educational levels, food availability, violence, and other conditions.

Socio-economic scenarios

Scenarios concerning future conditions in terms of population, *Gross Domestic Product* and other socio-economic factors relevant to understanding the implications of *climate change*. See *SRES scenarios.*

Source

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

Southern Oscillation

See *El Niño Southern Oscillation*.

Spatial and temporal scales

Climate may vary on a large range of spatial and temporal scales. Spatial scales may range from local (less than 100,000 km2), through regional (100,000 to 10 million km2) to continental (10 to 100 million km2). Temporal scales may range from seasonal to geological (up to hundreds of millions of years).

SRES scenarios

SRES scenarios are *emissions scenarios* developed by Nakicenovic *et al*. (2000) and used, among others, as a basis for the *climate projections* in the IPCC WGI contribution to the Third Assessment Report (IPCC, 2001a). The following terms are relevant for a better understanding of the structure and use of the set of SRES scenarios:

(Scenario) Family: Scenarios that have a similar demographic, societal, economic, and technical-change *storyline*. Four scenario families comprise the SRES scenario set: A1, A2, B1, and B2.

(Scenario) Group: Scenarios within a family that reflect a consistent variation of the storyline. The A1 scenario family includes four groups designated as A1T, A1C, A1G, and A1B that explore alternative structures of future energy systems. In the Summary for Policymakers of Nakicenovic *et al* (2000), the A1C and A1G groups have been combined into one "Fossil-Intensive" A1FI scenario group. The other three scenario families consist of one group each. The SRES scenario set reflected in the Summary for Policymakers of Nakicenovic *et al*. (2000) thus consist of six distinct *scenario groups*, all of which are equally sound and together capture the range of uncertainties associated with driving forces and emissions.

Illustrative Scenario: A scenario that is illustrative for each of the six *scenario groups* reflected in the Summary for Policymakers of Nakicenovic *et al*. (2000). They include four revised *scenario markers* for the *scenario groups* A1B, A2, B1, B2, and two additional scenarios for the A1FI and A1T groups. All *scenario groups* are equally sound.

(Scenario) Marker: A scenario that was originally posted in draft form on the SRES website to represent a given *scenario family*. The choice of markers was based on which of the initial quantifications best reflected the storyline, and the features of specific models. Markers are no more likely than other scenarios, but are considered by the SRES writing team as illustrative of a particular storyline. They are included in revised form in Nakicenovic *et al*. (2000). These scenarios have received the closest scrutiny of the entire writing team and via the SRES open process. Scenarios have also been selected to illustrate the other two *scenario groups*.

(Scenario) Storyline: A narrative description of a scenario (or family of scenarios) highlighting the main scenario characteristics, relationships between key driving forces, and the dynamics of their evolution.

Stabilization

[24] Definition from http://srmdc.net/glossary.htm#s visited on November 21, 2007.

The achievement of stabilization of atmospheric concentrations of one or more *greenhouse gases* (e.g., *carbon dioxide* or a *CO2-equivalent* basket of greenhouse gases).

Stakeholder
A person or an organization that has a legitimate interest in a project or entity, or would be affected by a particular action or policy.

Stated preference[25]
Stated preference approaches, sometimes referred to as direct valuation approaches, are survey methods that estimate the value individuals place on particular non-market goods based on choices they make in hypothetical markets

Stimuli (climate-related)
All the elements of *climate change*, including mean *climate* characteristics, *climate variability*, and the frequency and magnitude of extremes.

Storm surge
The temporary increase, at a particular locality, in the height of the sea due to extreme meteorological conditions (low atmospheric pressure and/or strong winds). The storm surge is defined as being the excess above the level expected from the tidal variation alone at that time and place.

Storyline
See *SRES scenarios*.

Streamflow
Water within a river channel, usually expressed in m3 sec-1.

Stratosphere
The highly stratified region of the *atmosphere* above the *troposphere* extending from about 10 km (ranging from 9 km in high latitudes to 16 km in the tropics on average) to about 50 km.

Submergence
A rise in the water level in relation to the land, so that areas of formerly dry land become inundated; it results either from a sinking of the land or from a rise of the water level.

Subsidence
The sudden sinking or gradual downward settling of the Earth's surface with little or no horizontal motion.

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).

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

T

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

Thermal erosion
The *erosion* of ice-rich *permafrost* by the combined thermal and mechanical action of moving water.

Thermal expansion
In connection with sea level, this refers to the increase in volume (and decrease in density) that results from warming water. A warming of the ocean leads to an expansion of the ocean volume and hence an increase in sea level.

Thermohaline circulation
Large-scale density-driven circulation in the ocean, caused by differences in temperature and salinity. In the North Atlantic, the thermohaline circulation consists of warm surface water flowing northward and cold deepwater flowing southward, resulting in a net poleward transport of heat. The surface water sinks in highly restricted sinking regions located in high latitudes.

Threshold
The level of magnitude of a system process at which sudden or rapid change occurs. A point or level at which new properties

[25] Definition taken from SAP 4.6.

emerge in an ecological, economic or other system, invalidating predictions based on mathematical relationships that apply at lower levels.

Time-series studies[26]
Studies done using a set of data that expresses a particular variable measured over time.

Top-down models
The terms "top" and "bottom" are shorthand for aggregate and disaggregated models. The top-down label derives from how modelers applied macro-economic 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*.

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.

Transient climate response
The globally averaged surface air temperature increase, averaged over a 20-year period, centered at the time of CO2 doubling (i.e., at year 70 in a 1% per year compound CO2 increase experiment with a global coupled *climate model*).

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

Tundra
A treeless, level, or gently undulating plain characteristic of arctic and subarctic regions.

U

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 behavior. 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 judgment of a team of experts). See Moss and Schneider (2000). See also *confidence* and *likelihood.*

Unique and threatened systems
Entities that are confined to a relatively narrow geographical range but can affect other, often larger entities beyond their range; narrow geographical range points to *sensitivity* to environmental variables, including *climate*, and therefore attests to potential *vulnerability* to *climate change*.

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 Community. Its ultimate objective is the 'stabilization of *greenhouse gas* concentrations in the *atmosphere* at a level

[26] Definition modified from the definition of time-series data from the Millennium Ecosystem Assessment, 2005.

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 emissions not controlled by the Montreal Protocol to 1990 levels by the year 2000. The Convention entered in force in March 1994. See also *Kyoto Protocol*.

Urban Heat Island Effect[27]

The urban heat island effect is a measurable increase in ambient urban air temperatures resulting primarily from the replacement of vegetation with buildings, roads, and other heat-absorbing infrastructure. The heat island effect can result in significant temperature differences between rural and urban areas.

Urbanization

The conversion of land from a natural state or managed natural state (such as agriculture) to cities; a process driven by net rural-to-urban migration through which an increasing percentage of the population in any nation or region come to live in settlements that are defined as "urban centers".

V

Valley Fever (Coccidiomycosis)[28]

An infectious respiratory disease of humans and other animals caused by inhaling the fungus Coccidioides immitis. It is characterized by fever and various respiratory symptoms. Also called coccidiomycosis.

Valuation[29]

The process of expressing a value for a particular good or service in a certain context (e.g., of decision-making) usually in terms of something that can be counted, often money, but also through methods and measures from other disciplines (sociology, ecology, and so on). See also Values.

Value added

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

Value of a statistical life (VSL)[30]

The sum of what people would pay to reduce their risk of dying by small amounts that, together, add up to one statistical life.

Values

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.

Vector

An organism, such as an insect, that transmits a pathogen from one host to another. See also *vector-borne diseases*.

Vector-borne diseases

Disease that is transmitted between hosts by a *vector* organism such as a mosquito or tick (e.g., *malaria*, *dengue fever*, and leishmaniasis).

Volatile Organic Compounds (VOCs)[31]

Organic compounds that evaporate readily into the air. VOCs include substances such as benzene, toluene, methylene chloride, and methyl chloroform.

Vulnerability

The degree to which a system is susceptible to, or unable to cope with, adverse effects of *climate change*, including *climate variability* and extremes. Vulnerability is a function of the character, magnitude, and rate of climate

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[27] Definition from the U.S. Environmental Protection Agency's Heat Island Glossary, http://www.epa.gov/hiri/resources/glossary.html#h, visited on November 21, 2007.

[28] *The American Heritage® Dictionary of the English Language, Fourth Edition*. Retrieved November 21, 2007, from Dictionary.com website: http://dictionary.reference.com/browse/valley fever.

[29] Definition taken from the glossary of the Millenium Ecosystem Assessment, 2005.

[30] Definition taken from SAP4.6.

[31] Definition from ATSDR's Glossary of Terms at http://www.atsdr.cdc.gov/glossary.html#G-T- visited on November 21, 2007.

variation to which a system is exposed, its *sensitivity*, and its *adaptive capacity*.

W

Water consumption
Amount of extracted water irretrievably lost during its use (by *evaporation* and goods production).Water consumption is equal to water withdrawal minus return flow.

Water stress
A country is water-stressed if the available freshwater supply relative to water withdrawals acts as an important constraint on development. Withdrawals exceeding 20% of renewable water supply has been used as an indicator of water stress.

Water-use efficiency
Carbon gain in *photosynthesis* per unit water lost in *evapotranspiration*. It can be expressed on a short-term basis as the ratio of photosynthetic carbon gain per unit transpirational water loss, or on a seasonal basis as the ratio of *net primary production* or agricultural yield to the amount of available water.

Water withdrawal
Amount of water extracted from water bodies.

Waterborne diseases[32]
Diseases contracted through contact with water that is infected with any of numerous pathogens including *Vibrio cholerae*, *Campylobacter*, *Salmonella, Shigella,* and the diarrheogenic *Escherichia coli.*

Watershed[33]
The land area that drains into a particular watercourse or body of water. Sometimes used to describe the dividing line of high ground between two catchment basins.

Welfare
An economic term used to describe the state of well-being of humans on an individual or collective basis. The constituents of well-being are commonly considered to include materials to satisfy basic needs, freedom and choice, health, good social relations, and security.

Well-being [34]
A context- and situation-dependent state, comprising basic material for a good life, freedom and choice, health and bodily well-being, good social relations, security, peace of mind, and spiritual experience.

West Nile virus[35]
West Nile virus (WNV) is a single-stranded RNA virus of the family Flaviviridae, genus Flavivirus. The main lifecycle of WNV is between birds and insects. Humans are most often infected by a bite from an infected mosquito. Most people infected with WNV don't show any symptoms, whereas those that do are often diagnosed with West Nile Fever which can last up to two weeks.

Z

Zoonoses
Diseases and infections which are naturally transmitted between vertebrate animals and people. See also *zoonotic disease.*

Zoonotic disease
A disease that normally exists in other vertebrates but also infects humans, such as dengue fever, avian flu, west Nile virus and bubonic plague.

[32] Definition modified from information on CDC's website http://www.cdc.gov/ncidod/dbmd/diseaseinfo/waterbornediseases_t.htm visited on November 21, 2007.

[33] Definition taken from the glossary of the Millenium Ecosystem Assessment, 2005.

[34] Definition modified from the Millenium Ecosystem Assessment, Current State and Trends Assessment Glossary, 2005

[35] Definition modified from information on http://www.cdc.gov/ncidod/dvbid/westnile/index.htm

6.2 Acronyms

AAG	Association of American Geographers
AAP	American Academy of Pediatrics
AIACC	Assessment of Impacts and Adaptations to Climate Change
AMR-A	North American Region
CCP	ICLEI's Cities for Climate Protection
CCSP	Climate Change Science Program
CDC	Center for Disease Control
CLIMB	Climate's Long-Term Impacts on Metro Boston
CO_2	Carbon Dioxide
CVD	Cardiovascular Disease
DHS	Department of Homeland Security
ECHAM4	A model named after the European Centre for Medium Range Weather Forecasts (ECMRWF), (giving it the first part of the name – EC), which was developed in Hamburg (HAM)
ENSO	El Niño/Southern Oscillation
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
GCM	General Circulation Model
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GISS	NASA Goddard Institute for Space Studies
ICLEI	International Council for Local Environmental Initiatives
IPCC	Intergovernmental Panel on Climate Change
MA	Millennium Assessment
MM5	Mesoscale Model
MSA	Metropolitan Statistical Areas
NAAQS	National Ambient Air Quality Standards
NACC	U.S. National Assessment of Climate Change
NAS	National Academy of Sciences
NAST	National Assessment Synthesis Team
NEG/ECP	New England Governors and Eastern Canadian Premiers
NGO	Non-Governmental Organization
NO	Nitric oxide
NOAA	National Oceanic and Atmospheric Administration
NRC	National Research Council
NYCHP	New York Climate and Health Project
PM	Particulate Matter
PM2.5	Particulate Matter (smaller than 2.5 micrometers)
PTSD	Post-Traumatic Stress Disorder
RADM2	Regional Acid Deposition Model, Version 2
RCM	Regional Climate Model
RMNP	Rocky Mountain National Park
SAP	Synthesis and Assessment Products
SRES	Special Report on Emissions Scenarios
TBE	Tick-borne Encephalitis

UHI	Urban Heat Island Effect
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
U.S. BEA	United States Bureau of Economic Analysis
USDA	U.S. Department of Agriculture
USGCRP	United States Global Change Research Program
VBZ	Vector Born and Zoonotic
VEMAP	Virtual Earth Map
VOC	Volatile Organic Matter
VSL	Value of Statistical Life
WHO	World Health Organization
WTP	Willingness to Pay