

# GLOSSARY

## Acidification

See *Ocean acidification*.

## Afforestation

Afforestation is defined under the Kyoto Protocol as the direct human-induced conversion of non-forest land to permanent forested land (for a period of at least 50 years) (Angelsen 2008).

## Archaea

Unique, single celled organisms which are genetically and metabolically distinct from bacteria.

## Autotrophic

Of or relating to an autotroph, an organism capable of making nutritive organic molecules from inorganic sources via photosynthesis (involving light energy) or chemosynthesis (involving chemical energy).

## Biofuel

Any liquid, gaseous, or solid fuel produced from plant or animal organic matter. e.g. soybean oil, alcohol from fermented sugar, black liquor from the paper manufacturing process, wood as fuel, etc. Second-generation biofuels are products such as ethanol and biodiesel derived from ligno-cellulosic biomass by chemical or biological processes (IPCC 2007a).

## Coastal ocean

The region extending from the beaches out across the continental shelf, slope, and rise (Brink, 1993).

## Carbon Capture and Storage (CCS)

A process consisting of separation of CO<sub>2</sub> from industrial and energy-related sources, transport to a storage location, and longterm isolation from the atmosphere (IPCC, 2007a).

## 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 (IPCC 2007c).

## Carbon sequestration

The process of increasing the carbon content of a reservoir other than the atmosphere (Chopra *et al.* 2005).

## Carbon sink

See *Sink*.

## Carbon source

See *Source*.

## Clean Development Mechanism (CDM)

A mechanism under the Kyoto Protocol designed to assist developed (Annex I) countries in meeting their emissions reduction targets. The mechanism reduces emissions through implementing projects in developing (Annex II) countries which are credited to the Annex I countries who finance and implement the project. The CDM aims to not only reduce emissions or increase sinks but also contribute to the sustainable development of the host country (Peskett *et al.* 2008).

## Greenhouse gases

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<sub>2</sub>O), carbon dioxide (CO<sub>2</sub>), nitrous oxide (N<sub>2</sub>O), methane (CH<sub>4</sub>) and ozone (O<sub>3</sub>) are the primary greenhouse gases in the earth's atmosphere (IPCC 2007a).

## Kyoto Protocol

An agreement made under the United Nations Framework Convention on Climate Change (UNFCCC). Countries that ratify this protocol commit to reducing their emissions of carbon dioxide and five other greenhouse gases (GHG), or engaging in emissions trading if they maintain or increase emissions of these gases. The Kyoto Protocol now covers more than 170 countries globally but only 60% of countries in terms of global greenhouse gas emissions. As of December 2007, the US and Kazakhstan are the only signatory nations not to have ratified the act. The first commitment period of the Kyoto Protocol ends in 2012, and international talks began in May 2007 on a subsequent commitment period (Peskett *et al.* 2008).

## Land Use, Land Use Change and Forestry (LULUCF)

A greenhouse gas inventory sector that covers emissions and removals of greenhouse gases resulting from direct human-

induced land use, land-use change and forestry activities (UNFCCC 2009).

### **Leakage**

In the context of climate change, carbon leakage is the result of interventions to reduce emissions in one geographical area (subnational or national) that lead to an increase in emissions in another area. For example, if curbing the encroachment of agriculture into forests in one region results in conversion of forests to agriculture in another region this is considered to be “leakage”. In the context of REDD, leakage is also referred to as ‘emissions displacement’ (Angelsen 2008).

### **Mitigation**

A human intervention to reduce the sources of or enhance the sinks for greenhouse gases (Department of Climate Change 2008).

### **Ocean acidification**

A decrease in the pH of sea water due to the uptake of anthropogenic carbon dioxide (IPCC 2007c).

### **Open ocean**

Where the water depth exceeds 200m around the boundaries of the major continental land masses. This definition excludes the marginal enclosed and semi-enclosed seas, but includes all ocean regions bordering lesser island systems regardless of water depth (UNEP and IOC-UNESCO, 2009).

### **Permanence**

The duration and non-reversibility of a reduction in GHG emissions (Angelsen 2008). This is an issue in the land use sector as carbon stored and sequestered in ecosystems is theoretically always vulnerable to release at some undetermined point in the future.

### **Reforestation**

Reforestation is “the direct human-induced conversion of non-forested land to forested land through planting, seeding and/or the human-induced promotion of natural seed sources, on land that was forested, but that has been converted to non-forested land”. In the first commitment period of the Kyoto Protocol, reforestation activities have been defined as reforestation of lands that were not forested on 31 December 1989, but have had forest cover at some point during the past 50 years (Angelsen 2008).

### **Respiration**

The process whereby living organisms convert organic matter to carbon dioxide, releasing energy and consuming molecular oxygen (IPCC 2007c).

### **Sequestration**

The removal of atmospheric carbon dioxide, either through biological processes (for example, photosynthesis in plants and trees, see Biosequestration), or geological processes (for example, storage of carbon dioxide in underground reservoirs) (Department of Climate Change 2008).

### **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 (IPCC 2007c).

### **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 (IPCC 2007c).

### **Sustainability**

A characteristic or state whereby the needs of the present and local population can be met without compromising the ability of future generations or populations in other locations to meet their needs (Chopra *et al.* 2005).

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

The United Nations Framework Convention on Climate Change (UNFCCC) is the first international climate treaty. It came into force in 1994 and has since been ratified by 189 countries including the United States. More recently, a number of nations have approved an addition to the treaty: the Kyoto Protocol, which has more powerful (and legally binding) measures (Kirby 2008).

### **UNFCCC**

*See United Nations Framework Convention on Climate Change.*