# 06 CLIMATE CHANGE FAQs

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062, INDIA
Ph: +91-11-29956110 - 5124 - 6394- 6399 Fax: +91-11-29955879
E-mail: cse@cseindia.org Website: www.cseindia.org



## What is climate change?

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

## What causes climate change?

When fossil fuels—coal, oil and natural gas—are burnt, they release carbon dioxide ($CO_2$) into the atmosphere. Because of this, the layer of greenhouse gas is getting thicker, which is in turn making the earth warmer. The ongoing unlimited burning of fossil fuels is the cause of climate change.

## What are greenhouse gases (GHGs)?

GHGs are gases in an atmosphere that absorb and emit radiation within the thermal infrared range—this process is the fundamental cause of the greenhouse effect. The six main greenhouse gases are carbon dioxide ($CO_2$), methane ($CH_4$), nitrous oxide ($N_2O$), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride ($SF_6$).

## What is the difference between global warming and climate change?

Global warming refers to the overall warming of the planet, based on average temperature over the entire surface of the earth while climate change refers to changes in climate characteristics, including temperature, humidity, rainfall, wind and severe weather events over long term periods.

## What is the difference between weather and climate?

Observation can show changes in weather, and the statistics of changes in weather over time identify climate change. A common confusion between weather and climate arises when scientists are asked how they can predict climate 50 years later when they cannot predict the weather a few weeks from now. The chaotic nature of weather makes it unpredictable beyond a few days. Projecting changes in climate (i.e. long-term average weather) due to changes in atmospheric composition or other factors is much more manageable. As an analogy, while it is impossible to predict the age at which a specific man will die, we can say with high confidence that the average age of death for men in industrialized countries is about 75.

## How are temperatures on earth changing?

Instrumental observations over the past 157 years show that temperatures at the surface have risen globally, with important regional variations. For the global average, warming in the last century has occurred in two phases, from the 1910s to the 1940s (0.35°C), and more strongly from the 1970s to the present (0.55°C). An increasing rate of warming has taken place over the last 25 years, and 11 of the 12 warmest years on record have occurred in the past 12 years.

## Is sea level rising?

Yes, there is strong evidence that global sea level rose gradually in the 20th century and is currently rising at an increased rate. The two major causes of global sea-level rise are thermal expansion of the oceans (water expands as it warms) and the loss of land-based ice due to increased melting.

## What are the impacts of climate change on human health?

Climate change makes many existing diseases and conditions worse, but it may also help introduce new pests and pathogens into new regions or communities. As the planet warms, oceans expand and the sea level rises, floods and droughts become more frequent and intense, and heat waves and hurricanes become more severe. The most vulnerable people—children, the elderly, the poor and those with underlying health conditions—are at increased risk for health effects from climate change. Climate change also stresses our healthcare infrastructure and delivery systems.

## Which human activities contribute the most greenhouse gases to the atmosphere?

The burning of fossil fuels—primarily coal, oil and natural gas—currently accounts for 70–90 per cent of all human emissions of $CO_2$. Fossil fuels are used for transportation, manufacturing, heating, cooling,

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062, INDIA
Ph: +91-11-29956110 - 5124 - 6394 6399 Fax: +91-11-29955879
E-mail: cse@cseindia.org Website: www.cseindia.org



electricity generation and other applications. The remainder of the $CO_2$ emissions comes from human land-use activities—ranching, agriculture and the clearing and degradation of forests. For other greenhouse gases, primary sources include the production and transport of fossil fuels, agricultural activities, waste management and industrial processes.

## What is an extreme weather condition?

Extreme weather is a weather event that is significantly different from the average or usual weather pattern. Examples are heatwaves, tornadoes and tropical cyclones.

## What is the difference between 1.5°C and 2°C?

It is well known that the risks of climate change can be significantly reduced if warming is below 2°C. The difference in projected risks between warming of 1.5°C and 2°C is particularly important for highly temperature-sensitive systems, such as the polar regions, high mountains, tropics and low-lying coastal regions.

At 2°C warming, and consequent rising sea levels, the very existence of some atoll nations is threatened. Limiting warming to 1.5°C may restrict the rise in sea level to below one metre.

Yet even at 1.5°C warming, regional food security risks are significant. Some countries in Africa are particularly vulnerable, with significant reduction in staple-crop yields.

## What are anthropogenic emissions?

Anthropogenic emissions are emissions of GHGs gases, GHG precursors and aerosols associated with human activities, including burning of fossil fuels, deforestation and changes in land use, leading to higher carbon dioxide concentrations in the air.

## What is sustainable development?

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

## What is Urban Heat Island (UHI)?

An urban heat island (UHI) is a city or metropolitan area that is significantly warmer than its surrounding rural areas due to human activities.

## What is the United Nations Framework Convention on Climate Change (UNFCCC)?

UNFCCC) is an international environmental treaty (currently the only international climate policy venue with broad legitimacy, due in part to its virtually universal membership) negotiated at the United Nations Conference on Environment and Development (UNCED), informally known as the Earth Summit, held in Rio de Janeiro in 3–14 June 1992.

## Basic principles of the UNFCCC

Article 3 of UNFCCC highlights the principles of the document as the following:

- Equity and Common but Differentiated Responsibility and Respective Capability (CBDR-RC): The Convention recognizes that developed countries should lead in combating climate change.
- Accordingly, countries are divided broadly into Annex I (representing the developed world) and Non-Annex I (representing the developing world), with disproportionate responsibilities for both groups.
- The developed world to help and support the developing countries in their efforts to address climate change.
- The climate change regime to be a rule-based and multilateral regime.
- All Parties to adopt measures and policies towards sustainable development.

## Common but Differentiated Responsibilities and Respective Capabilities (CBDR-RC)

CBDR-RC is a principle within the UNFCCC that acknowledges differing capabilities and responsibilities of individual countries in addressing climate change. According to it, the Parties should, on the basis of equity and in accordance with common but differentiated responsibilities and respective capabilities, protect the climate system for the benefit of present and future generations.

## What is 'equity' in climate change?

'Equity' initially came to be a criteria, used together with CBDR-RC, to make a distinction between developed and developing countries, their respective burdens and privileges. For developed countries, equity is about all countries taking a fair share of mitigation burden in the global quest to stop climate change from becoming an unmanageable disaster.

## What is the Intergovernmental Panel on Climate Change (IPCC)?

The Intergovernmental Panel on Climate Change (IPCC) is a scientific intergovernmental body set up at the request of member governments under the auspices of the United Nations.

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062, INDIA
Ph: +91-11-29956110 - 5124 - 6394- 6399 Fax: +91-11-29955879
E-mail: cse@cseindia.org Website: www.cseindia.org



## What is the Conference of Parties (COP)?

The COP is the supreme decision-making body of the Convention. All States that are Parties to the Convention are represented at the COP. It reviews the implementation of the Convention and any other legal instruments that the COP adopts.

## What is loss and damage?

As part of the Cancun Adaptation Framework, the COP initiated in 2010 consideration on approaches to address loss and damage associated with climate change impacts in developing countries that are particularly vulnerable to the adverse effects of climate change.

## What is the Kyoto Protocol?

The Kyoto Protocol is an international agreement linked to the UNFCCC, which commits its Parties by setting internationally binding emission reduction targets. It was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. The Protocol's first commitment period started in 2008 and ended in 2012. A second commitment period, known as the Doha Amendment to the Protocol, was agreed on in 2012.

## What is Base Year?

Targets for reducing GHG emissions are often defined in relation to a base year. In the Kyoto Protocol, 1990 is the base year for most countries for the major GHGs. Each country uses a different base year from which to measure its reductions: the EU-28 uses 1990, Canada and the US use 2005, and Japan uses 2013.

## What is Intended Nationally Determined Contribution (INDC)?

Countries that have committed to create a new international climate agreement have agreed to publicly outline the post-2020 climate actions they intend to take under a new international agreement, known as their Intended Nationally Determined Contributions (INDCs).

## What is climate change mitigation?

Climate change mitigation refers to efforts to reduce or prevent the emission of greenhouse gases. Mitigation can comprise the use of new technologies and renewable energies, making older equipment more energy efficient or changing management practices or consumer behaviour. It involves reducing the flow of heat-trapping greenhouse gases into the atmosphere, either by reducing the burning of fossil fuels for electricity, heat or transport.

## What is climate change adaptation?

Climate change adaptation means anticipating the adverse effects of climate change, taking appropriate action to prevent or minimize the damage they can cause, or taking advantage of opportunities that may arise. The goal is to reduce vulnerability to the harmful effects of climate change (like rising sea level, extreme weather events or food insecurity). It also encompasses making the most of any potential beneficial opportunities associated with climate change (for example, longer growing seasons or increased yields in some regions).

## What is the Green Climate Fund (GCF)?

The GCF was established, at Conference of Parties 16 in Cancun, within the framework of the UNFCCC as a mechanism to assist developing countries in projects, programmes, policies and other activities to counter climate change. The Fund is governed by the GCF Board.

## What is the Adaptation Fund (AF)?

The AF was established in 2001 to finance concrete adaptation projects and programmes in developing-country Parties to the Kyoto Protocol that are particularly vulnerable to the adverse effects of climate change. The Adaptation Fund is supervised and managed by the Adaptation Fund Board (AFB).

## What is a business-as-usual (BaU) scenario?

A scenario used for projections of future emissions assuming no action, or no new action, is taken to mitigate the problem. Some countries are pledging not to reduce their emissions but to make reductions compared to a business as usual scenario. Their emissions, therefore, would increase but less than they would have done.

## Other commonly used terms

### Carbon sink

A carbon sink is a natural or artificial reservoir that accumulates and stores carbon-containing chemical compounds for an indefinite period. The process by which carbon sinks remove carbon dioxide ($CO_2$) from the atmosphere is known as carbon sequestration.

### Carbon footprint

A carbon footprint is historically defined as a measure of the environmental impact of a particular individual or organization, measured in units of carbon doxide. It is composed of two parts: a primary and secondary

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062, INDIA
Ph: +91-11-29956110 - 5124 - 6394 - 6399 Fax: +91-11-29955879
E-mail: cse@cseindia.org Website: www.cseindia.org



footprint. Primary footprint is direct $CO_2$ emissions from the burning of fossil fuels, furnaces, water heaters and transport. Secondary footprint is indirect emissions from the manufacture and breakdown of all products, services and food.

**Reducing Emissions from Deforestation and Degradation (REDD)**

REDD is the collection of policies policymakers have developed to provide a financial incentive to governments, agribusinesses and communities to maintain rather than reduce forest cover.

**Land use, land-use change and forestry (LULUCF)**

LULUCF is defined as 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.

**Climate Market Accelerator (CMA)**

Organizations that want to improve their climate performance often don't have the internal know-how to develop solutions. Innovators developing climate solutions, on the other hand, struggle to find the right buyers or opportunities to trial or demonstrate their solutions. CMA is a mechanism that aims to speed up market opportunities for innovations in climate change adaptation and mitigation and thereby shorten their time-to-market.

**Tipping point**

A tipping point is a threshold for change that when reached results in a process that is difficult to reverse.

**Technology transfer**

Technology transfer is the process whereby technological advances are shared between different countries. Developed countries could, in an effort to lower global greenhouse gas emissions, for example, share up-to-date renewable energy technologies with developing countries.

**Party groupings**

Parties are organized into five regional groups mainly for the purposes of electing the Bureau, namely African States, Asian States, Eastern European States, Latin American and the Caribbean States, and the Western European and Other States ('Other States' include Australia, Canada, Iceland, New Zealand, Norway, Switzerland and the US, but not Japan, which is in the Asian Group).

The five regional groups, however, are not usually used to present the substantive interests of Parties and several other groupings are more important for climate negotiations.

**G77**

G77 is the main negotiating bloc for developing countries, allied with China (G77 plus China). The G77 comprises 130 countries, including India and Brazil, most African countries, the grouping of small island states (the Alliance of Small Island States, AOSIS), the Gulf States and many others, from Afghanistan to Zimbabwe. The G77 advocates CBDR, equity and historical responsibility and inclusion of loss and damage.

**Small Island Developing States (SIDS)**

SIDS are low-lying coastal countries that tend to share similar sustainable development challenges, including small but growing populations, limited resources, remoteness, susceptibility to natural disasters, vulnerability to external shocks, excessive dependence on international trade, and fragile environments. SIDS demands an international mechanism to address loss and damage.

**Least Developed Countries (LDCs)**

The LDCs comprise 48 nations that are especially vulnerable to climate change but have done the least to cause it. They work together at the intergovernmental negotiations under the UNFCCC to demand that wealthier nations act in accordance with their responsibility for creating the problem and their capability for addressing it. The LDC Group demanded greater financial transparency and requests each industrialized country to provide information on the levels of finance they will have provided and how much they will provide in future years. The group also requests this information to include precise allocations for adaptation specifically, along with a breakdown of how much finance is for the LDCs.

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

AOSIS is a coalition of 43 low-lying and small island countries, most of which are members of the G77, which are particularly vulnerable to the potential adverse consequences of climate change such as sea-level rise, coral bleaching and increased frequency and intensity of tropical storms.

**European Union (EU)**

The 28 members of the European Union meet in private to agree on common negotiating positions. As a regional economic integration organization, the European Union itself can be, and is, a Party to the

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062, INDIA
Ph: +91-11-29956110 - 5124 - 6394 - 6399 Fax: +91-11-29955879
E-mail: cse@cseindia.org Website: www.cseindia.org



Convention. This group informally maintains that emerging economies commit to emission reductions as part of the new 2015 deal and also contribute substantially to emission reductions before 2020, when the 2015 deal is supposed to kick in. It advocates that parties with the greatest responsibilities and capabilities take on the most ambitious mitigation commitments in the form of economy-wide targets.

**The Umbrella Group**

The Umbrella Group is a loose coalition of non-EU developed countries which formed following the adoption of the Kyoto Protocol. Although there is no formal list, the Group is usually comprises Australia, Canada, Japan, New Zealand, Kazakhstan, Norway, the Russian Federation, Ukraine and the US. This group does not believe that difference between Annex I (developed) and Non-Annex I (developing) countries created by the Kyoto Protocol should exist. It holds that responsibility for emission reduction ought to be determined on the basis of emissions of the day rather than on historic levels of emissions.

**Environmental Integrity Group (EIG)**

Formed in 2000, the EIG comprises Mexico, Liechtenstein, Monaco, the Republic of Korea and Switzerland.

**BASIC**

The BASIC countries are a bloc of four large newly industrialized countries—Brazil, South Africa, India and China. It demands equitable access to sustainable development (EASD) with access to carbon space, sustainability and time for development.

**BRIC**

The BRIC is a grouping acronym that refers to Brazil, Russia, India and China, which are all deemed to be at a similar stage of newly advanced economic development.

Several other groups also work together in the climate change process, including countries from the Organization of Petroleum Exporting Countries (OPEC), a group of countries of Central Asia, Caucasus, Albania and Moldova (CACAM), the Cartagena Dialogue and the Independent Alliance of Latin America and the Caribbean (AILAC).