

Climate Change Science (Source: US EPA, European Commission)

For over the past 200 years, the burning of fossil fuels, such as coal and oil, and deforestation have caused the concentrations of heat-trapping "greenhouse gases" to increase significantly in our atmosphere. These gases prevent heat from escaping to space, somewhat like the glass panels of a greenhouse.

Greenhouse gases are necessary to life as we know it, because they keep the planet's surface warmer than it otherwise would be. But, as the concentrations of these gases continue to increase in the atmosphere, the Earth's temperature is climbing above past levels. The Fourth Assessment Report (AR4) of the Intergovernmental Panel on Climate Change (IPCC) shows that the Earth's average surface temperature has risen by 0.76° C since 1850. Most of the warming over the past 50 years is very likely to have been caused by emissions of carbon dioxide (CO₂) and other 'greenhouse gases' from human activities.

Without action to reduce these emissions, the global average temperature is likely to rise by a further 1.8-4.0°C this century, and by up to 6.4°C in the worst case scenario, the IPCC projects. Even the lower end of this range would take the temperature increase since pre-industrial times above 2°C - the threshold beyond which many scientists believe irreversible and possibly catastrophic changes would become more likely.

The Intergovernmental Panel on Climate Change (IPCC) is an international group of experts formed in 1988 reviews scientific research and offers assessments of climate change and its effects.

United Nations Framework Convention on Climate Change (UNFCCC) (Source: UNFCCC)

192 countries around the world have joined an international treaty that sets general goals and rules for confronting climate change. The UNFCCC was one of three conventions adopted at the 1992 "Rio Earth Summit." The others -- the Convention on Biological Diversity and the Convention to Combat Desertification -- involve matters strongly affected by climate change. Attempts are being made to coordinate the work of the three agreements.

The UNFCCC has the goal of preventing "dangerous" human interference with the climate system. The UNFCCC Secretariat is based in Bonn, Germany. Parties of the Convention meet multiple times per year with the Conference of Parties (COP)/Meetings of Parties (CMP) being held in November-December.

Kyoto Protocol (Source: UNFCCC)

The Kyoto Protocol is an international agreement linked to the United Nations Framework Convention on Climate Change. The major feature of the Kyoto Protocol is that it sets binding targets for 37 industrialized countries and the European community for reducing greenhouse gas (GHG) emissions. These amount to an average of 5.2% against 1990 levels over the five-year period 2008-2012.

The major distinction between the Protocol and the Convention is that while the Convention **encouraged** industrialized countries to stabilize GHG emissions, the Protocol **commits** them to do so.

Recognizing that developed countries are principally responsible for the current high levels of GHG emissions in the atmosphere as a result of more than 150 years of industrial activity, the Protocol places a heavier burden on developed nations under the principle of “common but differentiated responsibilities.”

The Kyoto Protocol was adopted in Kyoto, Japan, on 11 December 1997 and entered into force on 16 February 2005. The detailed rules for the implementation of the Protocol were adopted at COP 7 in Marrakesh in 2001, and are called the “Marrakesh Accords.”

The Kyoto Protocol is in effect until the end of 2012. Currently, negotiations are ongoing about an international agreement for post-2012. At the 2010 CMP in Copenhagen, the Copenhagen Accord, a non-binding document, was agreed upon. The 16th COP and 6th CMP will take place in Cancun, Mexico from 29 November – 10 December 2011.

The Kyoto mechanisms

Under the Treaty, countries must meet their targets primarily through national measures. However, the Kyoto Protocol offers them an additional means of meeting their targets by way of three market-based mechanisms.

The Kyoto mechanisms are:

- Emissions Trading
- Clean Development Mechanism (CDM)
- Joint Implementation (JI).

The mechanisms help stimulate green investment and help Parties meet their emission targets in a cost-effective way.