

What is the IPCC?



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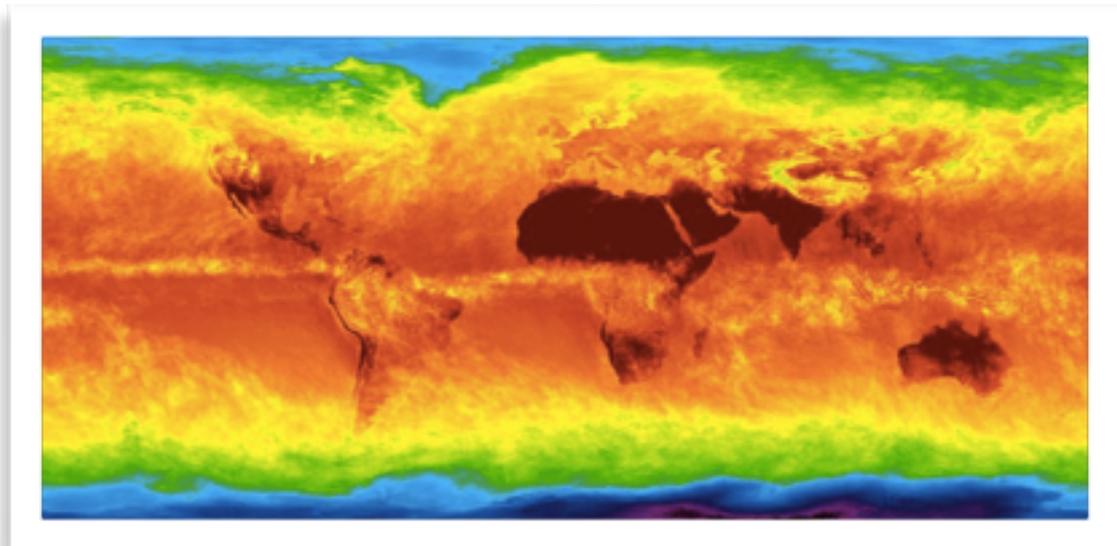
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The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body charged with assessing and collating evidence on climate change.

Its periodic Assessment Reports provide authoritative and up-to-date snapshots of the current state of knowledge on climate science, economics and policy options. The current report, the fifth (AR5), is the most confident yet about human influence on the climate system.



Evidence of climate change 'unequivocal': IPCC. Image: NASA

What is the IPCC?

The IPCC dates from 1988, when governments decided to establish a body under the World Meteorological Organization (WMO) and United Nations Environment Programme (UNEP) 'to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts'.

The IPCC is an intergovernmental body, with 195 member governments. Delegates meet in periodic plenary sessions where they decide on the programme of work.

AR5 in Numbers

WG1: 259 lead authors from 39 countries, 54677 comments from reviewers.

WG2: 308 lead authors from 70 countries, 50492 comments.

WG3: 235 lead authors from 58 countries, 38315 comments.

The IPCC commissions groups of experts, generally in three Working Groups, to carry out analysis. They do not perform their own research; instead they collate and analyse research already in the public domain, from universities and other bodies.

Its main outputs are Assessment Reports, vast tomes produced every 5-7 years, although it also issues special reports in between - the most recent on extreme weather events. Assessment Reports go through a rigorous multi-stage review process involving hundreds of expert reviewers.

Thousands of scientists, economists and policy experts from all over the world contribute to the work of the IPCC on a voluntary basis as authors, contributors and reviewers.

How does the IPCC work?

For each of the five assessment reports since 1990, there have been three working groups.

Working Group One (WG1) covers climate science, Working Group Two (WG2) looks at factors such as impacts around the world

and options for societies to adapt, and Working Group Three (WG3) covers socio-economic issues and policy options for combatting climate change.

Each working group publishes a separate report. Then, a further Synthesis Report combines output from each working group into a coherent whole.

For each of these four elements, the process culminates in a week-long meeting bringing the lead authors together with government delegates, where the draft Summary for Policymakers (SPM) is edited and approved. This gives governments ownership of the reports.

At the end of 2007, the IPCC was awarded the Nobel Peace Prize in conjunction with former US Vice-President Al Gore.

What are the IPCC's conclusions?

The IPCC released the first three elements of the Fifth Assessment Report (AR5) in September 2013, March 2014 and April 2014 respectively. The Synthesis Report was published in November 2014. Some of the principal conclusions are:

Working Group I – The Physical Science Basis

- Evidence of climate change is unequivocal
- It is more than 95% likely that human activities, particularly greenhouse gases emissions, are the dominant cause
- Concentrations of carbon dioxide (CO₂), methane, and nitrous oxide now substantially exceed the highest concentrations recorded during the past 800,000 years
- The ocean has absorbed about a third of emitted CO₂, causing ocean acidification
- If emissions continue to rise at the current rate, impacts by the end of this century are projected to include temperatures 2.6-4.8°C higher than present, and sea levels 0.45-0.82 metres higher
- We have already emitted about two-thirds of the maximum amount of CO₂ that we can emit to have a better than two-thirds chance of keeping the warming below the globally agreed target of 2°C.

Working Group II – Climate Change Impacts, Adaptation & Vulnerability

- Climate change is already having observable and meaningful impacts around the world, on crops, fresh water supplies, the ocean, nature, cities and infrastructure
- Projected future impacts include increasing risks of species extinctions, increasing risk and costs of floods, and disruption of food and water supplies. More than a billion urban dwellers could experience perennial water shortage by 2100
- Climate change will reduce yields of staple crops such as wheat, rice and maize by up to 2% per decade for the rest of the century, while demand grows by 14%
- Impacts will fall most heavily on the poor - trapping communities in poverty, undermining poverty reduction, increasing health issues such as infant malnutrition and increasing risk factors for conflict
- Past emissions have already 'locked in' decades of climate impacts. Some impacts can be adapted to; others cannot
- Controlling emissions quickly reduces the amount and cost of adaptation needed, and reduces risk of impacts that cannot be adapted to
- The risk of passing 'tipping points' where irreversible impacts are set in motion increases with warming. These include accelerating sea level rise from ice sheet loss and die-back of the Amazon rainforest.

Working Group III – Mitigation of Climate Change

- Greenhouse gas emissions are rising because of economic growth and population growth. The rate of rise accelerated in 2000; the cumulative amount of CO₂ emitted to the atmosphere doubled in the last 40 years
- The internationally agreed target of limiting global warming to 2°C is achievable, but governments' existing pledges on cutting emissions are not enough to get there
- If governments act together, reaching 2°C would reduce annual growth by about 0.06% per year to 2050. Costs increase with delay
- That cost figure does not account for economic benefits from avoiding climate impacts, or from added benefits of the low-

IPCC's confidence on man-made climate change grows:

First Assessment Report [pdf link] (1990): "with confidence", CO₂ has "been responsible for over half the enhanced greenhouse effect"

Second Assessment Report (1995): the "balance of evidence" suggests a "discernible human influence on climate"

Third Assessment Report (2001): "most of observed warming over last 50 years likely [66-90% chance]" due to human activities

Fourth Assessment Report (2007): "most of the observed increase in global average temperatures since the mid-20th Century is very likely [>90% probability]" due to emissions from human activities

Fifth Assessment Report (2013-4): "extremely likely [95% confidence] that more than half of the observed increase in global average surface temperature from 1951 to 2010" was caused by humans.

carbon transition such as improved health, employment and energy security, and lower energy price volatility

- Transforming the energy sector is a priority. Three trends are necessary: a big reduction in energy waste; a three- to four-fold increase by 2050 in low-carbon technologies such as renewables, nuclear, and fossil fuels with carbon capture and storage (CCS); and electrification of other processes that currently use fossil fuels directly, such as home heating and transport.

Synthesis Report

- Continued emission of greenhouse gases will cause further warming and long-lasting changes, increasing the likelihood of severe, pervasive and irreversible impacts for people and ecosystems.
- Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks
- There are multiple pathways likely to limit warming to below 2°C. They require substantial emission reductions over the next few decades, and near zero emissions of CO₂ and other long-lived greenhouse gases by the end of the century.