

Climate Change Policy Questions

International Summary

Q1 – How is climate change being studied world-wide?

Governments of the world have addressed climate change through the Intergovernmental Program on Climate Change (IPCC). The IPCC was jointly established by the World Meteorological Organization (WMO) and the United Nations Environmental Programme (UNEP) in 1988 to provide an assessment of the state of scientific understanding of all aspects of climate change, including how human activities might cause climate changes and be influenced by them. The IPCC consists of three working groups: Working Group I assesses the scientific basis for climate change, Working Group II focuses on the impacts of and potential adaptations to climate change, and Working Group III addresses the mitigation (prevention or slowing) of climate change. While the IPCC charter is highly relevant to public policy, the IPCC does not establish or advocate specific actions.

IPCC working groups produce assessment reports by synthesizing up-to-date information from international experts and scientific publications. The first assessment reports (FAR) were published in 1990, the second (SAR) in 1996, and the third (TAR) in 2001. The fourth assessment reports (AR4) should be published in 2007. Professionals from around the world contribute to writing assessment reports through an established, open, and peer-reviewed process. For example, the TAR was co-authored by 400+ scientists and reviewed by 2000+ scientists from around the world. Each IPCC report has a non-technical summary for policymakers, which is approved line-by-line by all governments involved in the IPCC process.

In May 2001, the Bush Administration asked the National Academy of Sciences to organize a group of prominent American climate scientists to assess the current scientific understanding of global climate change and independently evaluate the conclusions of the IPCC TAR. The resulting 2001 NAS report, "Climate Change Science: An Analysis of Some Key Questions", agreed with the IPCC TAR report stating that global warming has occurred in the last 50 years and is likely the result of increases in atmospheric greenhouse gases. The committee also said the full IPCC Working Group I report did an admirable job of reflecting research activities in climate science, and that the current state of knowledge was adequately summarized in the TAR Working Group I technical summary. IPCC assessment reports are available free of charge on the IPCC website (listed below). In addition to producing assessment reports, the IPCC develops climate modeling emission scenarios and creates an open-access archive of all climate model predictions.

Web: <http://www.ipcc.ch/>

Q2 – What international climate change treaties have been signed? Will they reduce atmospheric greenhouse gas concentrations?

The Framework Convention on Climate Change (FCCC) and the Kyoto Protocol are the two most prominent international climate change agreements. The FCCC is the international treaty guiding intergovernmental efforts to address climate change. It entered into force on 21 March 1994. In total, 189 countries have signed it, including the US on October 15, 1992. Countries ratifying the FCCC officially recognize that the climate system is a shared resource whose stability can be affected by industrial and other emissions of CO₂ and other greenhouse gases. In FCCC Article 2, signatories agreed to "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic influence with the climate system". Signatories meet yearly at Conference of the Parties (COP) meetings to discuss progress, policies, and joint actions.

At the 1997 COP held in Kyoto, Japan, the FCCC signatories adopted a specific strategy for reducing greenhouse gas emissions called the Kyoto Protocol. By ratifying the Kyoto Protocol, industrialized (or Annex I) countries must reduce their anthropogenic greenhouse gas emissions by at least 5% below 1990 levels in the commitment period 2008-2012. Ratification required adoption by at least 55 countries, including enough Annex I countries to account for at least 55% of the 1990 Annex I emissions. The Protocol entered into force on February 16, 2005 when Russia ratified. Although the US signed the Protocol, it was never ratified by Congress.

Even if the Kyoto Protocol emission reductions are attained, Bolin (1998) estimates atmospheric CO₂ will continue to increase from 353 ppm in 1990 to 382 ppm in 2010. For reference, the current (2005) atmospheric CO₂ is 375 ppm, 34% greater than the pre-industrial (1750) atmospheric CO₂. For stabilization of atmospheric CO₂ at 450 ppm, Bolin and Keshgi (2001) estimate the global per-capita emissions would have to decrease 45% by the middle of the century. In other words, everyone (including all Annex I countries) would have to have per-capita emissions similar to present-day undeveloped countries. Although the Kyoto Protocol will not prevent future increases in atmospheric greenhouse gases, it does establish an institutional framework for limiting future human greenhouse gas emissions.

Journal Articles:

1) Bolin, B., (1998). The Kyoto Negotiations on Climate Change: A Science Perspective, *Science*, Vol. 279, Issue 5349, 330-331. 2) Bolin, B., and H. S. Keshgi, (2001). Inaugural Article: On strategies for reducing greenhouse gas emissions, *Proceedings of the National Academy of Science*, 98: 4850-4854.

Climate Change Policy Questions Continued

National and Regional Summary

Q3 - What US programs and initiatives have addressed climate change science and impacts research?

Started by the Global Change Research Act of 1990, the U.S. Global Change Research Program (USGCRP) has invested almost \$20 billion towards their goals: "to increase understanding of the Earth system and to provide a sound scientific basis for national and international decision making on global change issues." More than 60% of the USGCRP program funding is dedicated for development and support of satellite technologies to observe the Earth. In June 2001, George W. Bush established the Climate Change Research Initiative (CCRI) which focuses primarily on areas with significant uncertainty and on obtaining observations in order to reduce those uncertainties. Also in 2001, Bush re-launched the Clinton Administration Climate Change Technology Initiative (CCTI) as the Climate Change Technology Program (CCTP). The CCTP helps develop and deploy technologies that could potentially achieve substantial greenhouse gas emission reductions. In 2003, the Bush Administration merged the USGCRP and CCRI forming the Climate Change Science Program (CCSP) coordinated by a new interagency Climate Change Science Program Office in the National Oceanic and Atmospheric Administration (NOAA).

Web: <http://www.climatescience.gov/>

Q4 - What has the West Coast done to address climate change research and policy?

Washington, Oregon, and California policymakers and scientists have been very active in climate change research and developing strategies to respond to climate change impacts. In September 2003, the West Coast Governors' Global Warming Initiative was launched by the then Governors of Washington, Oregon, and California. This effort is widely considered one of leading state initiatives on climate change in the United States. The Governors have committed to act individually and regionally to reduce greenhouse gas emissions through strategies that promote long-term economic growth, protect public health and the environment, consider social equity, and expand public awareness. In 2004, the executive committee of the initiative wrote a report documenting recommendations to the Governors for action.

Scientific and policy research centers have been developed in each state to provide information about climate change science and impacts. The University of Washington has hosted the Climate Impacts Group (CIG) since 1995 (see Q5). California has the California Climate Change Center. The

University of Oregon is starting a Climate Change Resources Institute to complete social science research and provide technical assistance related to climate change. Across the US-Canada border, British Columbia has started the Pacific Climate Impacts Consortium at the University of Victoria to generate, tailor and communicate relevant climate variability and climate change information to BC stakeholders in the public and private sectors.

In June 2004, the Oregon State University Consensus Statement on climate change was signed by 46 Ph.D. level scientists from the Pacific Northwest. The signatories agree that climate change is underway and that it is having global effects and that it will have significant impacts in the Pacific Northwest.

Web:

West Coast Governor's Global Warming Initiative - <http://www.climatechange.ca.gov/westcoast/>
California - <http://www.climatechange.ca.gov/research/>
Oregon - <http://cwch.uoregon.edu/programs/GWSCCR.html>
British Columbia - <http://www.cics.uvic.ca/>

Q5 - What is the Climate Impacts Group (CIG)?

The CIG is a group of interdisciplinary researchers studying the impacts of natural climate variability and global climate change on the Pacific Northwest. They are one of eight Regional Integrated Scientific Assessment (RISA) teams focusing on regional impacts of climate variability and change in the US. CIG researchers have expertise in climate dynamics, hydrology, forestry, aquatic ecosystems, coastal systems, human health, societal dimensions, and integrated assessment. Funding for the CIG comes from NOAA's Office of Global Programs with additional resources provided by the University of Washington. CIG personnel completed much of the research included in the report you are now reading.

Web:

CIG - <http://www.cses.washington.edu/cig/>
NOAA RISA - <http://www.risa.ogp.noaa.gov/>