The Science of Climate Change

The work of the Intergovernmental Panel on Climate Change (IPCC) represents the consensus of the international scientific community on climate change science. We recognize the IPCC as the world's most reliable source of information on climate change and its causes, and we endorse its method of achieving this consensus. Despite increasing consensus on the science underpinning predictions of global climate change, doubts have been expressed recently about the need to mitigate the risks posed by global climate change. We do not consider such doubts justified.

There will always be some uncertainty surrounding the prediction of changes in such a complex system as the world's climate. Nevertheless, we support the IPCC's conclusion that it is at least 90% certain that temperatures will continue to rise, with average global surface temperature projected to increase by between 1.4° and 5.8°C above 1990 levels by 2100.* This increase will be accompanied by rising sea levels; more intense precipitation events in some countries and increased risk of drought in others; and adverse effects on agriculture, health, and water resources.

In May 2000, at the InterAcademy Panel (IAP) meeting in Tokyo, 63 academies of science from all parts of the world issued a statement on sustainability in which they noted that "global trends in climate change ... are growing concerns" and pledged themselves to work for sustainability—meeting current human needs while preserving the environment and natural resources needed by future generations.† It is now evident that human activities are already contributing adversely to global climate change. Business as usual is no longer a viable option.

We urge everyone—individuals, businesses, and governments—to take prompt action to reduce emissions of greenhouse gases. One hundred and eighty-one governments are Parties to the 1992 United Nations Framework Convention on Climate Change, demonstrating a global commitment to "stabilising atmospheric concentrations of greenhouse gases at safe levels." Eighty-four countries have signed the subsequent 1997 Kyoto Protocol, committing developed countries to reducing their annual aggregate emissions by 5.2% from 1990 levels by 2008–2012. The ratification of this protocol represents a small but essential first step toward stabilizing atmospheric concentrations of greenhouse gases. It will help create a base on which to build an equitable agreement between all countries in the developed and developing worlds for the more substantial reductions that will be necessary by the middle of the century.

There is much that can be done now to reduce the emissions of greenhouse gases without excessive cost. We believe that there is also a need for a major coordinated research effort focusing on the science and technology that underpin mitigation and adaptation strategies related to climate change. This effort should be funded principally by the developed countries and should involve scientists from throughout the world.

The balance of the scientific evidence demands effective steps now to avert damaging changes to Earth's climate.

A joint statement issued by the Australian Academy of Sciences, Royal Flemish Academy of Belgium for Sciences and the Arts, Brazilian Academy of Sciences, Royal Society of Canada, Caribbean Academy of Sciences, Chinese Academy of Sciences, French Academy of Sciences, German Academy of Natural Scientists Leopoldina, Indian National Science Academy, Indonesian Academy of Sciences, Royal Irish Academy, Accademia Nazionale dei Lincei (Italy), Academy of Sciences Malaysia, Academy Council of the Royal Society of New Zealand, Royal Swedish Academy of Sciences, Turkish Academy of Sciences, and Royal Society (UK).

**Climate Change 2001: The Scientific Basis* [contribution of Working Group 1 to the IPCC Third Assessment Report (www.ipcc.ch)]. The average global surface temperature is predicted to increase by between 1.4° and 3°C above 1990 levels by 2100 for low-emission scenarios and between 2.5° and 5.8°C for higher emission scenarios. †*Transition to Sustainability in the 21st Century: The Contribution of Science and Technology* [A Statement of the World's Scientific Academies (May 2000) (http://interacademies.net/intracad/tokyo2000.nsf)].

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