

# Climate Assessment: What's Next?

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The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) (1) is a milestone for climate-change science and policy. It concludes that global greenhouse gas emissions must peak and decline within the next decade to keep the increase of global mean temperature below limits accepted by some parties. By 2009, there should be an agreement on how to proceed with emission cuts after the Kyoto Protocol's first commitment period ends in 2012. Is the IPCC still sufficiently equipped to support the United Nations Framework Convention on Climate Change (UNFCCC) in directing the required action?

The IPCC is not a UNFCCC body, but the UNFCCC's Subsidiary Body on Scientific and Technical Advice (SBSTA) considers the IPCC a main source of independent information. We believe that comprehensive IPCC reports every 5 to 6 years (which also require additional years to filter through the SBSTA) are not sufficient to adequately inform policy. In addition, key questions are likely to cut across the boundaries of the current Working Group (WG) structure of the IPCC: WG1 deals with the scientific understanding of the climate system; WG2 with climate-change impacts, adaptation, and vulnerability; and WG3 with mitigation of climate change. Topics such as large-scale biofuel use and the regional and global costs of adapting to climate change will require better integration among the natural, economic, and social sciences and, hence, among WGs.

The IPCC could learn from an assessment process that is faster and more integrated and that supports the U.N. Convention on Long-Range Transboundary Air Pollution (UNCLRTAP) (2). Both the UNFCCC and the UNCLRTAP went through an initial phase in which science was mainly used to provide the foundation for requesting action by the decision-makers. The UNCLRTAP has moved to the next stage, using science to support the identification and design of policy responses, while the UNFCCC is presently making that transition.

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The UNCLRTAP was signed in 1979 after the observation of lake acidification in Scandinavia caused by pollutants emitted elsewhere. The first Sulfur Protocol (1985) involved a flat rate 30% emissions reduction, based on economic and technical feasibility rather than on scientific. However, to justify further emission reductions, a quantitative analysis of the link between emissions and acidification was required, as well as a scientific basis for developing new targets and cost-effective measures.

A policy-oriented research and assessment community was formed around formal working groups, task forces, and centers under the UNCLRTAP, reporting annually to its subsidiary bodies. They developed simplified descriptions of atmospheric transport, ecosystem and health impacts indicators, and information on emission controls, feeding into integrated assessment models. Pragmatically, the number of models and data sources was kept limited. Cutting-edge research was not included, but procedures for review and resolution of disagreement were developed that involved scientists and relevant stakeholders. This extended peer review broadened the quality of the assessments from purely scientific to "fit-for-purpose."

During the 1990s, a parallel community in atmospheric science made advances, but without structural links to policy-making groups. As a consequence, new tools, knowledge, and alternative views were not systematically included for consideration. Now, the gap between those focusing on policy and on basic science has started to shrink. The UNCLRTAP's scientific support bodies are more open to partnering with the scientific community. In particular, the Task Force and Centre for Integrated Assessment Modeling has been key to fostering integration and stakeholder interaction. Simultaneously, basic research programs are increasingly bringing new problems to the attention of policy-makers, such as hemispheric transport of air pollution, and providing a scientific basis for addressing policy questions (3).

The IPCC does not have the same relevance to climate policy as do the scientific assessments for air pollution policies. Cross-cutting issues cannot currently be addressed comprehensively and in a timely fashion because of the divided working group structure of the

Future international scientific climate change assessments should be faster, more integrated, and more directly linked to policy questions.

IPCC. A systematic comparison of the costs and benefits of different levels of intervention was tackled outside the IPCC by the Stern review (4). However, it lacked global legitimacy, coming from only one country, and did not have the scientific credibility of IPCC's more thoroughly reviewed assessments.

The IPCC procedures already allow for special reports with a 2- to 3-year production cycle. A faster procedure might be achieved by creating a group dedicated to integrated assessment that marries the more immediate policy relevance of the UNCLRTAP scientific bodies with the scientific credibility of the IPCC. It would interact directly with the SBSTA and would address specific issues simultaneously if needed, covering the diverse priorities and concerns of all countries and stakeholders.

Fully comprehensive science updates will still be needed to inform policy, although perhaps less frequently. Here, too, it is possible to learn from other organizations. The Millennium Ecosystems Assessment developed an approach linking different geographical scales. The Technical and Economic Advisory Panel (TEAP) of the Montreal Protocol involves private-sector stakeholders better than the IPCC does.

With the emphasis shifting to response options, the IPCC could collaborate more systematically with international organizations in the area of development, economy, and technology. The scientific community has already organized itself within the Earth System Science Partnership (5) to underpin such assessments with the required integrated scientific knowledge.

## References and Notes

1. *Climate Change 2007*, Fourth Assessment Report, Working Group reports I to III (IPCC, Cambridge Univ. Press, Cambridge, 2007); www.ipcc.ch/.
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3. F. Raes, J. Hjorth, Eds., *Answers to the Urbino Questions: ACCENT's First Policy-Driven Synthesis* (ACCENT Project Office, Urbino, Italy, 2006); www.accent-network.org/portal/publications/accent-series-reports.
4. N. Stern, *The Economics of Climate Change* (Cambridge Univ. Press, Cambridge, 2007).
5. Earth System Science Partnership, www.essp.org.
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