

What's next for the IPCC?

AMANDA LEIGH HAAG

Now that the Intergovernmental Panel on Climate Change has spoken more clearly than ever — and policymakers are listening — it may be time to take a new direction. Amanda Leigh Haag reports on suggested ways forward.

When the Intergovernmental Panel on Climate Change (IPCC) was awarded the 2007 Nobel Peace Prize together with former US vice president Al Gore in October, it was a crowning moment on an already stellar year for the climate-change icon. The release of the IPCC's Fourth Assessment Report (AR4) in early 2007 propelled the international body's acronym to the status of a household name and reinforced its role as the definitive authority on climate change. The most recent report's message was not dissimilar to those of the preceding three reports since 1990, but it came through in richer detail and with greater degrees of confidence and consensus. The biggest difference was that this time the social climate seemed poised to receive it. "One of the reasons the Fourth Assessment was so effective was that the world was ready to hear it," says Michael Oppenheimer, a climatologist at Princeton University in New Jersey and a lead author on AR4.

But many are wondering what the foremost authority on climate change can achieve from here. Now that the world has woken up to the reality of climate change, largely thanks to the IPCC, do we really need periodic reminders of just how dangerous climate change may be, or is it time that the IPCC focused its efforts elsewhere?

SWEEPING SUMMARY

The role of the IPCC is not to carry out or design research but rather to assess the massive body of peer-reviewed, published literature relevant to climate change. Some 2,500 reviewers, 800 contributing authors and 450 lead authors from more than 130 countries contributed to the Fourth Assessment, a five-year effort that culminated in a 2,800-page, three-volume report released between February and April, three summary reports, and a final



IPCC Chairman Rajendra Pachauri, left, and United Nations Secretary-General Ban Ki-moon show the new synthesis report at a press conference. Scientists are now discussing what the focus and scope of future IPCC efforts should be.

'synthesis report' released in November after careful deliberations by the scientists at a week-long meeting in Valencia, Spain. The reports involved several years' worth of commitment on the part of the scientists, all on a voluntary basis. And hundreds more experts from various ministries and government agencies attended the sessions and approved the conclusions.

The final synthesis report is intended as an authoritative guidepost on climate change for policymakers, and rather than just cutting and pasting from the earlier summaries, it makes broader, sweeping statements on issues such as abrupt climate change, rapid sea-level rise, species extinction and the

urgent need for adaptation measures. It is also being viewed as a blueprint to kick off the United Nations Climate Change Conference in Bali, Indonesia in December, where over 10,000 delegates are now convening to discuss what will follow the Kyoto Protocol to limit greenhouse gas emissions when it expires in 2012.

DILUTED RESULTS

Like any scientific endeavour of this scale, the IPCC has not been immune to criticism from both inside and outside the establishment. On one hand, in the US some members of the right-wing media have questioned whether the IPCC's key

conclusions — namely about the human contribution to climate change — represent a consensus at all¹. On the other hand, legitimate concerns from within the scientific community have been voiced by a few lead authors on AR4, who maintain that portions of the earlier volumes of the report were diluted during the review process and therefore understate the severity of climate change². They contend that in the effort to reach consensus, some key details and high-risk scenarios were not fully explored.

Within the climate-science community, the most contentious issue, perhaps, has been the way in which the potential contribution of melting ice sheets to sea-level rise was communicated in the summary report on the science of climate change. Although most climate-change experts agree that the Fourth Assessment was an unqualified success, some scientists say that the summary documents gave a false impression that the threat of sea-level rise was less severe than previously thought, when in fact it is now known to be a much greater threat than evidence suggested back in 2001.

This resulted in part from a difference in the way the projections were calculated in the third and fourth reports, with the Fourth Assessment's summary on the science of climate change stating that sea level was likely to increase by a maximum of 59 centimetres by 2099, in contrast to the much higher estimate of 88 centimetres reported in 2001. What ensued was a great deal of confusion in the media and suggestions that the threat from sea-level rise had diminished. But such a conclusion was misplaced, and the disparity was an artefact of the way the numbers were derived, says Stefan Rahmstorf, a climate scientist from Potsdam University in Germany and a lead author on AR4, who published a paper in *Science* shortly after the release of the Fourth Assessment Report showing that the actual rate of sea-level rise could be as much as 1.4 meters by 2100 (ref. 3). "So people got the impression that things had changed when really they hadn't — in fact, they'd gotten worse," says Gavin Schmidt, a climate modeller at the NASA Goddard Institute for Space Studies in New York and a contributing author on AR4. Others believe that part of the problem is that the richness of detail found in the chapters is not always reflected adequately in the summaries, which are intended specifically for policymakers. "To some degree that's inevitable, because a summary is a summary," Oppenheimer says. "But on the other hand, there's a sense that sometimes something important is lost."

STRIKING A BALANCE

Up until now, the IPCC has remained firm that it has represented the science correctly. "I think we struck the right balance," says Susan Solomon, a senior scientist with the National Oceanic and Atmospheric Administration in Boulder, Colorado, and co-chair of the Fourth Assessment. "I think the fact that you see us being criticized by both the left and the right is probably good evidence that we did."

Solomon disagrees that the initial summaries for policymakers were remiss in their treatment of ice sheets and future sea-level rise. "We give numbers for which there is information in the literature, but we can't go beyond the literature," Solomon says. But the clarification of the effects of ice sheets on sea-level rise in the final synthesis report suggests that the IPCC is giving some ground on this issue. Those previously dissatisfied now say that the take-home message has largely been salvaged in the synthesis, which recognizes that loss of the Greenland ice sheet, and possibly the Antarctic ice sheet, could contribute to a considerable increase in sea level — even in this century — in ways that have not been considered fully in models. It also acknowledges that partial or full loss of the ice sheets could lead to several metres of sea-level rise over millennia.

Still, Rahmstorf and others contend that the IPCC does not fully explore high-impact scenarios to the degree needed to inform policymakers. He says, "In terms of risk assessment of high-impact but hopefully small-probability risks, the procedure wasn't really very good." But he also says that the limitations of the report were communicated much more clearly in the synthesis.

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Michael Oppenheimer

Solomon also concedes that there is room for improvement when it comes to the IPCC's communication, at least to the public. "Communicating to the public is hard work, but I do think it's extremely important," Solomon says. "Certainly we're always trying to do better on this." Yet communicating enough detail to satisfy scientists while at the same time conveying the messages clearly to the public is something of a tightrope act.



The IPCC has sharpened its description of impacts from ice-sheet melting, after criticism from some researchers.

"One has to realize that traditionally this has been kind of a science assessment written by scientists, mostly for scientists and maybe a few politicians," says Reto Knutti, a climate modeller with the Institute for Atmospheric and Climate Science in Zurich and a lead author on AR4. "Now everyone wants to know about climate change, and there are different audiences that we have to address."

FUTURE POSSIBILITIES

Although it remains to be determined where the IPCC will now focus its efforts, suggestions for ways forward are being vigorously discussed within the climate community. Aside from improving efforts at communicating climate change to the world at large, some climate scientists are calling for a greater focus on solutions to policy-oriented questions in future reports. In cases where regulations are needed on ozone, aerosols, black carbon and other compounds that have indirect climate effects, policymakers would find it useful to know which policies provide the greatest benefit, Schmidt says.

For instance, this could include decisions such as whether or not to cap sulphate emissions, which confer some cooling effects, or whether to cap both sulphate and black carbon at the same time. "Convincing policymakers that this is a problem is no longer the point," Schmidt says. Now, he says, the emphasis should be on "how the science can help in the search for solutions, ideas, methods, and targets that do the most efficient job".

Jeff Kiehl, a climate modeller with the National Center for Atmospheric Research in Boulder, Colorado, who was not

involved with AR4, predicts that future reports will focus to a greater degree on the policy implications of regional climate change over the next several decades.

But when a future report will surface — and what form it will take — remains an open question. Many IPCC insiders are voicing concern over the amount of time that these global-scale assessments consume. Some scientists are suggesting that the large assessments take place less frequently, perhaps every eight to ten years, in favour of smaller, more frequent topical reports. Because of ever-increasing interest in climate change on the part of the public, politicians and policymakers, the process is growing increasingly burdensome, says Knutti. Schmidt says that in the lead-up to the Fourth Assessment Report, climate modellers were spending up to half of their time on work specific to the report. And because the drafting of the reports involves an open review process, a 100-page report from a single chapter can elicit 200 pages worth of outside comments, which must be sifted through and consolidated. “I remember that there were a few

hundred comments per chapter in the previous report, and now we get a few thousand,” Knutti says. “If it’s a few tens of thousands in the next report, we’re in serious trouble.”

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Gravin Schmidt

In a recent policy perspective in *Science*, Oppenheimer called for a shift to smaller working-group-based reports to home in on issues such as climate feedbacks on the carbon cycle and ice sheets⁴. Although the pronouncement that the earth is now unequivocally warming made a big splash worldwide, “it was really a minor additional advance, if any, from a scientific point of view compared to the third assessment,” Oppenheimer says. “I think we could well afford to postpone those additional improvements a few years to give us more room to focus on a few very key questions.”

In its 20-year history, the IPCC has evolved from a little-known scientific

enterprise to a very public forum. Perhaps no other international body before it has been charged with such a daunting task: assessing the state of climate-change science and disseminating it to an eager audience, capturing the appropriate level of alarm without overstating the science, and providing concrete guidelines to policymakers while achieving buy-in from thousands of scientists and government representatives. With a Nobel Prize in hand and climate change on centre stage, one thing is certain: whatever form the future IPCC assessments take, the world will be tuned in to what they have to say.

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