

## Thomas F Stocker: A recipe to keep the IPCC relevant

**The Intergovernmental Panel on Climate Change will need to communicate complex scientific findings effectively, enhance scientific rigour and provide more regional climate information**

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All eyes are on Paris, where this December the conference of the parties to the United Nations Framework Convention on Climate Change (UNFCCC) seeks to conclude a legally binding agreement to combat climate change, one of the greatest challenges of our time. The task is formidable but I am optimistic. This optimism comes from my observation of a situation that is distinctly different from the run-up to previous conferences. First, never before have policymakers disseminated such detailed and robust scientific information on the causes and the serious consequences of climate change, and about the

options to confront it; second, never before has the business and financial world acknowledged that climate change is a threat to economic well-being; and third, never before did we have a combination of a top-down and bottom-up approach: the goal of keeping the global warming below 2°C is now combined with the declarations by countries of their own ambitions in contributing to reducing greenhouse gas emissions.

My optimism is nurtured by the historic joint declaration of China and the US regarding their greenhouse gas emissions, the announcement by the G7 of a long-term goal of decarbonisation, and India's announcement of ambitious renewable energy targets, especially with emphasis on solar energy. Clear and profound words by religious leaders - the encyclical "Laudato Si" by Pope Francis and the Islamic Declaration on Global Climate Change - add a completely new dimension to the discussion.

Science has been crucial to establish the understanding of the serious consequences that continued greenhouse gas emissions from burning of fossil fuels and deforestation have on our planet and our livelihoods. Since the foundation of the Intergovernmental Panel on Climate Change (IPCC) in 1988 we have delivered scientific knowledge to policymakers in the form of comprehensive assessment reports that were created through an open and transparent process by thousands of scientists around the world. Generations of scientists have given their expertise and time voluntarily, which is indeed a unique contribution of the scientific community to all.

After the successful completion of the fifth assessment cycle, the new leadership of the IPCC will be elected in four weeks at its 42nd plenary. How can we make sure that the IPCC continues to assist the policy process of the UNFCCC in as successful a way as it has done over the past 27 years? Do we still need scientific knowledge to make progress in the political negotiations that seek solutions to the challenge of climate change?

I see three priorities that I regard as essential to ensure the continued usefulness and success of the IPCC.

The first relates to communication. In the IPCC we need to embark on continuous communication activity. To be effective, communication of complex scientific findings on climate change should be concise and understandable. Statements such as, for example, "human influence on the climate system is clear", succinctly and faithfully summarise complex scientific assessment results. Such headline statements, that we have pioneered in Working Group I and which were much welcomed by all countries, should become a standard element of all IPCC products. This will facilitate communication not only with policymakers but also with the media and the public.

The second priority is maintaining and enhancing scientific rigour, robustness and objectivity in all areas of the assessment. This is important in times where the climate change discussion becomes increasingly political. Only with the authority and credibility of the voice of science will the IPCC be in a position to contribute usefully and effectively to the UNFCCC process.

Third, the IPCC needs to provide more regional climate information. This includes more detailed projections of changes in the water cycle, particularly the monsoon systems delivering water to hundreds of millions of people, and regional projections of sea-level rise that threaten coastal settlements around the world. More robust estimates of the intensity and frequency of extreme events such as drought, flooding, tropical cyclones, and high-sea-level events are urgently needed. This information should be absorbed by impact studies and vulnerability analyses in order to provide quantitative estimates of climate change risks. A much closer interaction between the Working Groups will be required to achieve the regionalisation of information. And an essential element of this third priority must be mentioned: we will not be able to deliver this information successfully without the involvement of the scientists who live and work in these regions. This means that by necessity scientists from all regions, particularly from those that are most exposed to climate change and from developing countries, should become authors and lead authors in the next assessment. Capacity building that targets young experts is the best investment for the future, and will secure a new generation of scientists ready to help in the forthcoming assessments of the IPCC.

The IPCC's work should be recognised in a greater context. By the end of this month, the countries will agree on the 17 Sustainable Development Goals formulated by the UN. The IPCC has concluded in its last Synthesis Report: "Climate change is a threat to sustainable development". Addressing climate change through actions informed by science will send us in the right direction to achieve many of these important goals. However, continued emissions of greenhouse gases and deforestation - in short, business-as-usual - will result in unchecked climate change, creating a world that will be fundamentally different from the one we are now living in. In many regions adaptation will now no longer be possible due to the pervasive changes and worldwide impacts caused by warming and by ocean acidification. This will make reaching most of the Sustainable Development Goals impossible.

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