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## **PROGRESS REPORTS**

### **Joint Expert Meeting on Scenarios**

(Submitted by the Co-Chairs of Working Group II and Working Group III)

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### Joint Expert Meeting on Scenarios

At its 39<sup>th</sup> Session (IPCC-39), the Panel approved an Expert Meeting on Scenarios based on a joint proposal by the IPCC Working Groups and allocated the required budget of the IPCC Trust Fund. At IPCC-40, this budget line was shifted to 2015. The meeting will take place from 18-20 May, 2015 at the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria, which has kindly offered to host the meeting. Working Group III volunteered to lead the facilitation of the meeting preparations together with the host and the Scientific Steering Committee.

### **Background**

Long-term scenarios of future societal development, climate change, and other environmental change are an essential part of IPCC reports. They serve as the basis for evaluating potential climate change impacts as well as socio-economic mitigation and adaptation pathways. In 2006, the Panel decided to implement a new institutional setup for the development of long-term scenarios for the preparation of the Fifth Assessment Report (AR5): Rather than coordinating and approving new scenarios itself, the process of new scenario development is coordinated by the research community. The IPCC has catalyzed this development and assessed the new scenarios in AR5.

At the IPCC expert meeting in Noordwijkerhout in 2007, the community identified four Representative Concentration Pathways (RCPs) as an initial step to jump-start the scenario process for the integrated assessment of climate change, adaptation, mitigation and related impacts. The research community designed the “parallel process” (Moss et al., 2010) for the development of new scenarios, comprising three main phases: 1) the development of climate projections based on the RCPs; 2) the provision of Shared Socioeconomic Pathways (SSPs); and 3) an integration phase to combine information from the climate models with the socio-economic pathways for the integrated analysis of future climate change.

So far, the RCPs were completed (van Vuuren et al., 2011) and climate projections have been developed in the multi-model project CMIP5 and assessed in the IPCC WGI AR5. A series of workshops and meetings led to the design of a new scenario framework (O’Neill et al., 2013) and the identification of main characteristics of the Shared Socioeconomic Pathways (SSPs). While the new scenario framework has been firmly established and published in a special issue of the journal “Climatic Change” (Ebi et al., 2014), various streams of activities are still underway (or near completion) to provide qualitative and quantitative information on the SSPs. Furthermore, the development of Integrated Assessment Model (IAM) scenarios based on the SSPs is currently being completed. A number of different impact assessments have used preliminary versions of the SSPs for impact studies.

Despite enormous efforts and measurable progress in the development of new scenarios for climate change analysis, the objective of using them as an integrating element of the assessment reports of the three IPCC Working Groups was not fully realized. The RCPs were produced in time for use in the new climate change projections (CMIP5) to be assessed by Working Group I, while associated socio-economic scenarios had not been published for inclusion in the Working Groups’ II and III respective contributions to AR5.

### **Expert Meeting Objectives**

After completion of the Fifth Assessment Report, and reflecting the division of labor in the development of long-term scenarios, the IPCC intends to continue the dialogue with the research communities in a timely manner. This expert meeting on scenarios serves to facilitate this dialogue, to take stock on the achievements of the process during the AR5 cycle, to share available information across scientific communities, and to discuss the role of scenarios in future IPCC assessments.

With the organization of the meeting, the IPCC intends to bring together scientific groups with diverse expertise and backgrounds to share their experiences and expectations related to the scenario community's activities.

The three main objectives of this expert meeting are:

1. To assess the use of scenarios of climate change and/or societal development in the three Working Groups' contributions to AR5 and the Synthesis Report, to identify needs for improving the use of common scenarios in climate change research to allow a more integrated assessment of mitigation, adaptation, and climate change impacts in the future.
2. To evaluate progress and research achievements from the scenario framework activities around the RCPs and the SSPs. The meeting will focus on the current status of the development of new socio-economic scenarios, including the development of narratives, quantifications of SSPs, related IAM scenarios and early applications to mitigation, adaptation, and climate change impacts analysis. The meeting provides the opportunity for sharing information on recently completed scenario products that are ready for use by the research community and for identifying gaps and needs for producing the relevant literature in order to allow a more integrated assessment of scenarios in future work of the IPCC.
3. Based on above stock-taking, the experts will discuss the possible role of scenarios in future IPCC products, and particularly, how the IPCC can facilitate the community scenario process to make progress towards new and fully integrated scenarios.

## Process

In liaison with the Chairman of the IPCC, the IPCC Secretariat and the Co-Chairs of all three Working Groups a Scientific Steering Committee (SSC) was formed consisting of Jean-Francois Lamarque (USA), Tianjun Zhou (China), Brian O'Neill (USA), Mercedes Bustamente (Brazil), Elmar Kriegler (Germany), Ritu Mathur (India), and Keywan Riahi (Austria, host representative on the SSC). In addition, Dahe Qin (WGI Co-Chair), Thomas Stocker (WGI Co-Chair), Chris Field (WGII Co-Chair), Vicente Barros (WGII Co-Chair), Ramón Pichs-Madruga (WGIII Co-Chair), Ottmar Edenhofer (Convenor, WGIII Co-Chair) and Timothy Carter (TGICA), Renate Christ (Secretary of the IPCC). IPCC representatives on the SSC are supported by members of the respective Technical Support Units.

The SSC has met in three conference calls during 2015, on January 13, February 9, and February 13. The calls focused on the finalization of the meeting goals; discussing the main elements of the meeting agenda; identifying an initial list of participants to be invited (and their expertise) as well as the meeting dates.

The meeting is intended to have approximately 80 participants, including 30 funded by the Trust Fund.

While the agenda is still under development, there is currently an intention by the SSC to roughly have six sessions, which could cover the following topics:

- 1) Use of scenarios in IPCC AR5
- 2) The RCP/SSP framework for integrated climate change research
- 3) CMIP6 – the use of SSPs in future climate projections by Earth System Models
- 4) Ongoing community activities, sectoral and regional extensions of the SSPs
- 5) The scenario user perspective: Assessment of needs of future scenario-based research activities
- 6) Possible role of scenarios in future IPCC products, and of the IPCC in the continuing scenario process

The three-day meeting will comprise a mix of plenary talks, plenary discussions and break-out sessions. The planning committee has agreed on an initial list of participants to be invited, and the intention is to finalize the invitation process in continued consultation with the Chairman of the IPCC by the end of February. Particular focus is given to the balance of the participants with respect to gender, regions, and expertise of participants.