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REPORTS

Expert Meeting on Climate Change, Food and Agriculture 27-29 May 2015, Dublin, Ireland

(Submitted by the Acting Secretary of the IPCC)
(Prepared by the Co-Chairs of Working Group II)

IPCC Secretariat

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REPORTS

Expert Meeting on Climate Change, Food and Agriculture
27-29 May 2015, Dublin, Ireland

1. Introduction

At its 39th Session, the IPCC considered a request from the Consultative Group on International Agricultural Research (CGIAR) for a technical report on climate change, food, and agriculture. The Panel discussed three options: preparation of a Technical Paper, organization of an Expert Meeting, and preparation of a Special Report. The IPCC Chair requested the Secretariat to approach CGIAR for more details and clarification and to consult with other UN organizations. Informed by these consultations, the Panel at its 40th Session decided to organize an IPCC Expert Meeting on Climate Change, Food, and Agriculture during 2015, with the mandate to consider existing IPCC information on climate change, food, and agriculture and to recommend to the Panel possible further action, including the options of producing a Technical Paper or a Special Report, or to address the matter otherwise in the forthcoming assessment cycle. For more detail, refer to IPCC-XL/Doc.14,Corr.1 (31 October 2014). Annex 1 to this report reflects comments received on the document IPCC-XLI/Doc.23 as to 3 March 2015 in response to discussions at the 41st Session of the IPCC (IPCC-41).

The meeting was held in Dublin, Ireland, from 27-29 May 2015, with the generous support of the government of Ireland. The Scientific Steering Committee oversaw production of a meeting report, with the draft circulated to all meeting participants (6-15 July 2015) for review and concurrence. The final Expert Meeting report was published in the IPCC web site on 24 July 2015 (<http://www.ipcc.ch/pdf/supporting-material/Food-EM_MeetingReport_FINAL.pdf>).

The Expert Meeting report summarizes the presentations and discussions held over the 3-day meeting. It includes points raised regarding future IPCC activities and other efforts to advance understanding of the many interactions among climate change, food, and agriculture, including in the context of climate change responses. The report also contains summaries of the meeting's Breakout Group discussions and abstracts for the meeting's plenary presentations, as well as a selection of recent literature on climate change, food, and agriculture suggested by meeting participants as important for consideration in future assessment of these issues. The agenda and participants listing have been excerpted from the meeting report and appended to this status report as Annexes 2 and 3, respectively.

2. Meeting Summary: Future Options for Climate Change, Food, and Agriculture

The mandate of the Expert Meeting was to consider existing IPCC information on climate change, food, and agriculture and to recommend to the Panel possible further action, including the options of producing a Technical Paper or a Special Report, or to address the matter otherwise in the forthcoming assessment cycle.

Building on the presentations and discussions throughout the Expert Meeting, participants considered several options, which are not mutually exclusive:

- A scientific literature product (e.g., perspective, review paper, journal special issue) to support scoping and assessment in the IPCC Sixth Assessment Report (AR6) cycle.
- An IPCC Technical Paper based on material in the IPCC Fifth Assessment Report (AR5).
- An IPCC Special Report early in the AR6 cycle.
- Input to the scoping process for the AR6 Working Group contributions and Synthesis Report.

Discussions emphasized the robust scientific understanding, emerging perspectives, and policy relevance of climate change, food, and agriculture. Options for next steps differ in their comprehensiveness, timeliness, potential partners, and connections to policy needs. A synopsis of points raised for each option follows.

A high profile perspective, review paper, or journal special issue in the scientific literature would lay out key research topics and encourage scientific activities to support assessment throughout the AR6 cycle. Such a product would require coordination within the scientific community and would have limited connections with policymaking.

An IPCC Technical Paper could compile material currently spread across many sections of the Working Group contributions to the AR5. A Technical Paper would not allow inclusion of post-AR5 literature, constraining opportunities to incorporate new knowledge.

An IPCC Special Report would integrate AR5 findings and new material relevant to all Working Groups, enhancing transdisciplinary assessment in the AR6. As part of a continuing series of IPCC products, a Special Report would be a timely way to assess new knowledge in a policy-relevant product.

Scoping of the AR6 could be enhanced to integrate treatment of these issues across chapters and Working Groups, including through, for example, cross-Working Group chapters. This approach offers possibilities for improving multidisciplinary assessment, over a longer timeframe and in the context of a much broader assessment report.

The topics below emerged in discussions of outlines for possible future IPCC products or efforts in the scientific community:

- Climate change, food, and agriculture
  - Food production, including agriculture, livestock, fisheries, and other food systems
  - Direct and indirect links between climate change, climate change responses, and food security
  - Interactions among climate, water, economies, nature, and food

- Adaptation, mitigation, food security, and their interactions
  - Resilient food systems
  - Healthy diets
  - Synergies and tradeoffs: production and consumption

- Managing fundamental limits: land and water resources
  - Competition for land and water: food vs. other uses
  - Policies

- Sustainable development and food security
  - Opportunities for co-benefits
  - Decision-making frameworks including robust decision making

  Cross-Cutting Themes: Socioeconomic dimensions, regional dimensions, temporal dimensions, sustainable development, inequalities (poverty, gender, and governance).

Finally, a wealth of research topics were identified during this Expert Meeting. Important gaps in knowledge discussed during the meeting include the following:

- Metrics for measuring food security across local and regional contexts, given different drivers of vulnerability.
- Climate change interactions with drivers of food demand and dietary patterns.
- Climate-agriculture interactions, including effects of climate variability, weeds, pests, and diseases.

- Effects of climate change on non-commodity crops.
- Effects of climate change on fisheries and interactions with food security and livelihoods.
- Effects of climate change on post-harvest components of food systems.
- Nutrition and production in a changing climate.
- Effectiveness of adaptation options, both incremental and transformational.
- Quantification of mitigation potential in the Agriculture, Forestry and Other land Use (AFOLU) and energy sectors, including role of greenhouse gas metric.
- Implications of biomass-based mitigation options for potential land and water competition, surface albedo, and non-CO2 greenhouse gas emissions.
- Integrated regional assessments, linking bottom-up and top-down approaches.
- Integration of food and land-use trade-offs and co-benefits in integrated assessment modeling.
- Characterizing adaptation and mitigation interactions, co-benefits, and trade-offs across scales.
- Direct and indirect consequences of policies affecting land use, supply-demand interactions, and international trade.

The meeting highlighted several opportunities where the IPCC and the scientific community can add value to ongoing discussions on one of the most important topics of the 21st century.

Annex 1

Background Information

At the 40th Session of the IPCC (IPCC-40) (Copenhagen, Denmark, 27-31 October 2014), the Panel decided to organize an Expert Meeting on Climate Change, Food, and Agriculture during 2015, with the mandate to consider existing IPCC information on this matter and to recommend to the Panel possible further action, including the options of producing a Technical Paper or a Special Report, or to address the matter otherwise in the forthcoming assessment cycle. Ireland generously offered to host the meeting in Dublin.

The Chair of the IPCC formed a planning committee consisting of Renate Christ, Chris Field (Convener), Hoesung Lee, Carlos Martin-Novella, Youba Sokona, and Thomas Stocker. After considering the topic and the necessary expertise, the planning committee expanded its membership by adding Long Cao (China), Thelma Krug (Brazil), Cheikh Mbow (Senegal), Alexander Popp (Germany), Geert Jan von Oldenborgh (Netherlands), Pete Smith (United Kingdom), and Katharine Vincent (South Africa), with Ellie Farahani (WGIII TSU), Susanne Kadner (WGIII TSU), Katharine Mach (WGII TSU), Michael Mastrandrea (WGII TSU), Jan Minx (WGIII TSU), Gian-Kasper Plattner (WGI TSU), and Melinda Tignor (WGI TSU) providing TSU support.

The planning committee has met four times by conference call, on December 17, 2014, January 7, 2015, and February 10 and 19, 2015. The focus of these calls was finalizing the goals and agenda for the meeting, the list to be submitted to the Acting Chair of IPCC of participants to be invited, and the meeting dates.

The meeting will be held May 27-29, 2015. There will be approximately 50 total participants, including 20 funded by the Trust Fund.

The expert meeting will address the following themes:

1) The food-water-energy-climate nexus.
2) Food production and food security.
3) Future demand for food: relevance of land use and lifestyles.
4) Potential impacts of mitigation scenarios on bio-energy deployment, land use, and food security.
5) Projected changes in temperature, precipitation, and climate variability.
6) Climate-change impacts/adaptation/vulnerability for crops.
7) Climate-change impacts/adaptation/vulnerability for domestic animals.
8) Climate-change impacts/adaptation/vulnerability for fisheries and aquaculture.
9) Climate-change impacts/adaptation/vulnerability for post-harvest components of food systems.
10) Greenhouse gas (GHG) emissions and emission reductions, and increasing yields in the food sector.
11) Forestry: afforestation, reducing deforestation, and REDD+.
12) Bio-energy.
13) Adaptation and mitigation responses.

The meeting structure will be approximately 50% presentations and 50% discussions over the first two days of the meeting. The presentations would follow the themes above. Each of the presentations would focus on the overall state of knowledge as reflected in the AR5, as well as the most compelling new opportunities in emerging research. Breakout groups will explore key scientific results and options for future IPCC work on this topic. During the morning of day 3, discussion will focus on developing recommendations for future IPCC work.

The planning committee has agreed on an initial list to be submitted to the Acting Chair of IPCC of participants to be invited, and invitations are to be issued in early March.

This Annex includes comments made in response to the discussion of the Expert Meeting at IPCC-41 (Nairobi, Kenya,24-27 February 2015) on February 27.

Annex 2

Expert Meeting Agenda
IPCC Expert Meeting on Climate Change, Food, and Agriculture
Dublin, Ireland • 27-29 May 2015

WEDNESDAY, 27 MAY 2015

8:00-9:00 Registration

Welcome and Introduction

Chair: Chris Field

9:00-9:25 Welcome Address
Local Hosts

9:25-9:45 Introduction
Ismail El Gizouli, Youba Sokona, Thomas Stocker

Plenary Session I: General Overview on Food Security

Chair: Katharine Mach

9:45-10:05 The Food-Water-Energy-Climate Nexus
Chris Field

10:05-10:25 Food Production and Food Security
Katharine Vincent

10:25-10:55 Coffee Break

10:55-11:15 Future Demand for Food: Relevance of Land Use and Lifestyles
Tara Garnett

11:15-11:35 Potential Impacts of Mitigation Scenarios on Bio-Energy Deployment, Land Use, and Food Security
Alexander Popp

11:35-12:15 Discussion

Plenary Session II: Climate-Change Impacts on the Food Sector and Prospects for Adaptation, Across Regions

Chair: Ramon Pichs-Madruga

12:15-12:30 Projected Changes in Temperature, Precipitation, and Climate Variability
Sonia Seneviratne

12:30-12:45 Climate-Change Impacts/Adaptation/Vulnerability for Crops
Mark Howden

12:45-13:00 Discussion

13:00-14:00 Lunch

14:00-14:15 Climate-Change Impacts/Adaptation/Vulnerability for Domestic Animals
Hongmin Dong [Presented by Henning Steinfeld]

14:15-14:30 Climate-Change Impacts/Adaptation/Vulnerability for Fisheries and Aquaculture
Hans-Otto Pörtner

14:30-14:45 Climate-Change Impacts/Adaptation/Vulnerability for Post-Harvest Components of Food Systems Jen Burney

14:45-15:05 Discussion of Plenary Session II and Introduction of Breakout Groups I

15:05-15:30 Coffee Break

Breakout Groups I

15:30-17:30 BOG I.1: Climate Change Risks to Food Production
Chair: Cynthia Rosenzweig
Rapporteur: Sithabiso Gandure

This BOG will focus on defining the state of the science on climate change and food security, with special attention to progress with model intercomparison activities, the role of extreme events, and the efficacy of technology in improving the resilience of agriculture.

BOG I.2: Consequences of Mitigation for the Food Sector
Chair: Sabine Fuss
Rapporteur: Katherine Calvin

This BOG will focus on consequences for food production and food security from a wide range of mitigation activities, including BECCS, afforestation/reforestation, and other mitigation activities with the potential to create competition for land or water. It will also ask whether policies to limit methane or nitrous oxide emissions might impact food security.

17:30 Adjourn

18:00-18:30 Flash Presentations Introducing Poster Session

18:30-20:00 Reception and Poster Session

THURSDAY, 28 MAY 2015

9:00-10:00 Breakout Groups I Reports and Plenary Discussion
Discussion Chair: Eduardo Calvo

Plenary Session III: Impacts of Mitigation Options on the Food Sector and Prospects for Responses

Chair: Thelma Krug

10:00-10:15 GHG Emissions and Emission Reductions, and Increasing Yields in the Food Sector
Pete Smith

10:15-10:30 Forestry: Afforestation, Reducing Deforestation, and REDD+
N.H. Ravindranath

10:30-10:45 Bio-Energy
Omar Masera

10:45-11:05 Discussion

11:05-11:35 Coffee Break

Plenary Session IV: Policy Instruments for Land Policies and Food Security

Chair: Youba Sokona

11:35-11:50 Adaptation and Mitigation Responses
Tom Hertel

11:50-12:15 Discussion of Plenary Session IV and Introduction of Breakout Groups II

12:15-13:30 Lunch

Breakout Groups II

13:30-15:30 BOG II.1: Food Security

Chair: Cheikh Mbow

Rapporteur: Gerald Nelson

This BOG will take a big-picture perspective on food security, looking at impacts both within and beyond food production. It will consider the challenges to food security from distribution, transportation, inappropriate appearance standards, and corruption. It will also address food quality, especially in the context of the current obesity epidemic.

BOG II.2: Adaptation and Mitigation Interactions in the Context of Food Security
Chair: Sonja Vermeulen
Rapporteur: Max Auffhammer

This BOG will focus on opportunities for enhancing food security through a wide range of adaptation and mitigation activities, recognizing that the policy landscape may include GMOs, novel crops, innovative management schemes, and activities with the potential to create competition for land or water. It will ask whether there are opportunities to combine adaptation and mitigation to yield significant co-benefits.

BOG II.3: Optional Breakout Group on Emerging Topics

15:30-16:00 Coffee Break

16:00-17:00 Breakout Group II Reports and Plenary Discussion
Discussion Chair: Jean-Pascal van Ypersele

17:00 Adjourn

18:00-20:00 Reception

FRIDAY, 29 MAY 2015

Breakout Groups III

9:00-11:00 BOG III.1: Partnerships for IPCC for Future Work

Chair: Ramon Pichs-Madruga
Rapporteur: Gian-Kasper Plattner

This BOG will evaluate the full range of actors relevant to future work on scientific assessments of climate change and food. The goal is to consider scientific capacity, operating principles, susceptibility to political influence, and historical accomplishments in evaluating ongoing projects, prospects for future projects, and prospects for future interactions with the IPCC.

BOG III.2: Future IPCC Products

Chair: Ladislaus Chang'a

Rapporteur: Michael Mastrandrea

This BOG will consider prospects for future IPCC work in the area of climate change and food. Relevant considerations include the amount and nature of new scientific information, the status of ongoing or planned assessments from other organizations, and the likely impact of various kinds of IPCC-related products, ranging from (at the informal end) journal papers written by people who participate in the expert meeting to (at the formal end) an IPCC Special Report.

11:00-11:30 Coffee Break

11:30-12:30 Breakout Groups III Reports and Plenary Discussion
Discussion Chair: Thomas Stocker

12:30-13:30 Lunch

Closing Plenary

Chair: Chris Field

13:30-15:30 Finalization of Meeting Recommendations

15:30 Adjourn

Annex 3

List of Participants

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