

Climate Change Impacts and Integrated Assessment (CCI/IA)

July 27 – August 6, 2009

AGENDA

Monday, July 27: URBAN IAV PROGRAM

Background and Critical Context

- 8:30 **Welcoming Remarks** • John Weyant, Stanford University
- 8:40 Context: Major Trends and New Initiatives
- Tom Wilbanks, Oak Ridge National Laboratory (ORNL)
- 9:00 Overview of Sectors and Interactions
- Kristie Ebi, IPCC
- 9:15 Introduction of Cases
- Gary Yohe, Wesleyan University
- 10:00 Agency Perceived Needs/Initiatives • Bob Vallario - Moderator
- Anne Grambsch, EPA
 - Richard Eckmann, NASA
 - Roger Pulwarty, NOAA
 - Bob O'Connor, NSF
 - Bob Vallario, DOE

Sectors & Infrastructure : Energy, Coastal, Transportation (Tom Wilbanks-Chair)

- 1:00 Framing the session
- Tom Wilbanks, ORNL
- 1:20 Energy
- Guido Franco, California Energy Commission
- 1:55 Coastal
- Virginia Burkett, USGS
- 3:00 Transportation
- Gerry Schwartz, National Academy of Sciences

Tuesday, July 28:

Sectors & Infrastructure (Continued)

Water Resources, Sanitation, and Health (Kristie Ebi-Chair)

- 8:30 Introduction
- Kristie Ebi, IPCC
- 8:45 Air pollution
- Pat Kinney, Columbia University
- 9:30 Water
- Ken Strzepek, MIT/University of Colorado
- 10:15 Water, Adaptation, and Food
- Richard Tol, Economic and Social Research Institute
- 11:00 Sanitation
- Kristie Ebi, IPCC

Case Studies (Gary Yohe-Chair)

- 1:30 Introduction
- Karen Seto, Yale University
- 2:15 New York/London

- Gary Yohe, Wesleyan University
- 3:45 Seattle
- Steve Nicholas, Institute for Sustainable Communities
- 4:30 Asia (ADB)
- Kristie Ebi, IPCC

Wednesday, July 29

Case Studies Continued

- 8:30 Phoenix
- Nancy Grimm, Arizona State University
- 9:15 Boston
- Paul Kirshen, Battelle
- 10:30 California
- Guido Franco, California Energy Commission
- 11:15 Panel: Lead Off Summary, Karen Seto, Yale University

Crosscutting Issues and Integration (Anne Grambsch-Chair)

(Reports from Sectors and Case Studies From Assigned Cross-Cut/Integrators)

- 1:15 Introduction
- Anne Grambsch, U.S. Environmental Protection Agency
- 1:45 Issues With 10-15 Minute Lead Off Presentations:
- Extreme Events/Fat Tails - Chris Field, Carnegie Institution
 - Co-Benefits – Kristie Ebi, IPCC
 - Vulnerabilities/Tipping Points – Gary Yohe, Wesleyan University
 - Complex Interactions: Multiple stressors and responses in an urban landscape (mitigation, impacts, and adaptation), Tom Wilbanks, ORNL
 - Integrated Assessment Perspective, Tony Janetos, Joint Global Change Research Institute /PNNL

Thursday, July 30: INTEGRATED ASSESSMENT SESSION

- 8:30 Welcome and session overview (introductions, goals, agenda, & ground rules)
- Richard Richels, Electric Power Research Institute
- 9:00 Overview of Integrated Assessment (historical overview, current status/issues)
- John Weyant, Stanford University
- 9:45 Clarifying questions/discussion
- 10:45 No silver bullets: need for systems analysis
- Henry Jacoby, MIT
- 11:30 Unforeseen complications: Biofuels to CCS
- Jae Edmonds, Joint Global Change Research Institute /PNNL
- 1:15 EMF: factors influencing emissions pathways
- Leon Clarke, Joint Global Change Research Institute /PNNL
- 1:50 Link between emission scenarios and GCMs (including RCP)
- Kathy Hibbard, National Center for Atmospheric Research (NCAR)
- 2:20 Panel discussion: Jerry Meehl (UCAR), Blanford (EPRI), Rose (EPRI)
- 3:05 Open discussion: Hibbard, NCAR (Moderator)
- 4:00 Link between GCMs and IAVs
- Yohe, Wesleyan University

- 4:30 Panel discussion: Janetos (Joint Global Change Research Institute/PNNL),
Linda Mearns (UCAR), Richard Tol (Economic and Social Research Institute)
- 5:00 Open discussion: Yohe (Moderator)

Friday, July 31

- 8:00 Recap and announcements
- Richard Richels, EPRI
- 8:15 Panel 1: Domestic user needs
- Albert Carnesale (UCLA), Kathy Jacobs (U of Arizona), Howard Gruenspecht (U.S. DOE)
- 9:00 Open discussion: Wilbanks, ORNL, (Moderator)
- 10:15 Panel 2: IPCC User Needs
- Ottmar Edenhofer (PIK), Chris Field (Carnegie Institution)
- 11:00 Open discussion: Wilbanks (Moderator)
- 11:45 Comparing the EU and the US Experience
- Diana Liverman (University of Arizona/Environmental Change Institute, Oxford University)
- 1:00 Panel 3: Enhancing responsiveness
- J. Edmonds, H. Jacoby, T. Janetos, G. Yohe
- To user needs (Responding to Panels 1 & 2)
- 1:45 Open discussion: Weyant (Moderator)
- 3:00 Issues in Analyst/User interface: Mearns, UCAR
- 3:30 Open discussion: Ian Kraucunas, The National Academies, (Moderator)
- 4:15 Wrap-up: Richels

Monday, August 3

THE ECONOMICS OF TECHNOLOGIES TO COMBAT GLOBAL WARMING

Organizers: William Nordhaus and Nebojsa Nakicenovic

August 3 – 4, 2009

A major set of unresolved issues in global warming is to develop and deploy new technologies, promote entrepreneurship, and induce innovation. The need to make a smooth transition from existing technologies to new low-carbon technologies will be a major challenge in coming decades. Understanding the dynamics of technological change is one of the least understood parts of the global warming nexus.

The purpose of the conferences is to prepare, present, discuss, and publish studies that can form a basis for both improving our understanding as well as helping policy makers improve the tools for developing technologies that will ease the transition to a low-cost and environmentally acceptable set of technologies.

Morning (9am – 12pm)

Opening Remarks: William Nordhaus and Nebojsa Nakicenovic

Session I: Basic science and engineering of new technologies, energy, CO₂ fundamentals

Chair: William Nordhaus

Papers:

Doug Arent (NREL) - *“The Status and Prospects of Renewable Energy for Combating Global Warming”*

John Ahearne (SigmaXi) - *“Is there a nuclear renaissance? Will there be a nuclear renaissance? Should there be a nuclear renaissance?”*

Howard Herzog (MIT) - *“Scaling-up Carbon Dioxide Capture and Storage (CCS) - from Megatonnes to Gigatonnes”*

Discussants:

- John Steinbruner (University of Maryland)
- Brian Flannery (Exxon Mobil)
- Elmar Kriegler (PIK)

Afternoon (1 – 5pm)

Session II: Theory of induced innovation, economics of R&D, government policies and instruments

Chair: Nebojsa Nakicenovic

Papers:

William Nordhaus (Yale) - *“Designing a Friendly Space for Technological Change to Slow Global Warming”*

John Weyant (Stanford) and Bob Vallario (DOE) – *“Understanding, Modeling, and Accelerating the Development and Diffusion of New Energy Technologies – “Beyond the ‘Valley of Death’ ”*

Gernot Klepper (Kiel) - *“The Future of ETS and CDM in a post-Kyoto World”*

Discussants:

- Roger Noll (Stanford University)
- Paul Romer (Stanford University)
- Rob Lempert (RAND)

Short Presentations of Themes

- As may arise on the occasion

General Discussion on the First Day (remaining time until 5)

Tuesday, August 4

Morning (9am – 12pm)

Session III: Diffusion of new technologies, policies and uncertainty

Chair: Nebojsa Nakicenovic

Papers:

David Popp (Syracuse), Ivan Hascic (OECD), and Neelakshi Medhi (Syracuse), *“Technology and the Diffusion of Renewable Energy”*

David L. Greene (ORNL), *“Uncertainty, Loss Aversion and Markets for Energy Efficiency”*

Thomas J. Wilbanks (ORNL), *“Inducing Transformational: Energy Technological Change”*

Discussants:

- Adam Jaffe (Brandeis)
- Larry Goulder (Stanford)
- Jim Sweeney (Stanford)

Afternoon (1 – 5pm)

Session IV: Modeling issues, integrated assessment, modeling technological change, R&D and investment requirement

Chair: William Nordhaus

Papers:

Haewon Chon, Leon Clarke, Page Kyle, Marshall Wise, Jae Edmonds (Joint Global Change Research Institute /PNNL), and Rob Lempert (RAND), “*Technology Interactions for Low Carbon Energy Technologies*”

Nebojsa Nakicenovic (IIASA and TU-Wien) – “*How much R&DD is enough?*”

Graham Pugh (DOE), Leon Clarke (Joint Global Change Research Institute /PNNL), Robert Marlay, Page Kyle, Marshall Wise, Haewon Chon, and Gabriel Chana, “*Energy R&D Portfolio Analysis Based on Climate Change Mitigation*”

Discussants:

- Valentina Bosetti (FEEM)
- Detlef van Vuuren (NethEAA)
- Massimo Tavoni (FEEM)

Wednesday, August 5: MODELING RENEWABLE ENERGY TECHNOLOGIES IN IAMs FOR MITIGATING FUTURE CLIMATE CHANGE

Purpose of the Workshop: Bring together energy economic modelers and IAM modelers to discuss the state of the art and research area needs for improving the representation of RE technologies for climate modeling.

Morning (9am- 12pm)

9:00 **Introductions, Goals of the Workshop and overview of multiyear concept**

- Doug Arent and John Weyant

10:15 Overview of IAM treatment of RETs

Session/Discussion Leader: J. Weyant (Stanford)

Presenters:

- Detlef VanVuuren (Netherlands Environmental Assessment Agency)
- Keywan Riahi (IIASA)
- Leon Clark (Joint Global Change Research Institute /PNNL)
- Elmar Kreigler (PIK)

Afternoon (1:00pm-5:30 pm)

1:00 **Status of RE Resource Assessment Globally**

Session/Discussion Leader: David Kline (NREL)

Presenters:

- Hans Ejsing Jørgensen—wind (Risø/DTU)
- Dave Renne,—solar (NREL)
- Ralph Overend- BioResources

2:30 Modeling the integration of RETs into utility operations

Session/Discussion Leader: P. Denholm (NREL)

- US Studies: Erik Ela (NREL)
- EU Studies: Kenneth Karlsson, (DTU/Risø)

4:00 Case study: Modeling RETs in the expansion of electric sector capacity – Geospatial Electric Sector Capacity Expansion Modeling and High Penetration Scenario results
Session/Discussion Leader: Rob Lempert (RAND)

Presenters:

- P. Denholm, and W. Short, (NREL)
- W. Krewitt (DLR)

Thursday, August 6

Morning (9am- 12:45pm)

9:00 Recap of Day one and feedback/questions

- D. Arent, J. Weyant

9:30 Ray Schmidt - Woodshole Oceanographic Institute; *Assessing Ocean Thermal Energy Conversion*

10:00 Status of RE Scenario/Capacity Expansion/Integration Modeling
Session/Discussion Leader: W. Short

Presenters:

- Wolfram Krewitt (DLR)
- C. Namovicz (EIA)
- Dan Loughlin (EPA)
- Qimin Chai, (Stanford University)

11:45 Case Study Results: How much can the representation of RE technologies be improved in IAMs? - Present results from initial work performed by NREL and PNNL for Minicam.

Session/Discussion Leader: G. Pugh (U.S. DOE)

Presenters:

- L. Clarke (Joint Global Change Research Institute /PNNL)
- W. Short (NREL)

Afternoon (1:30-5:00pm)

1:30 Modeling RE and EE technologies II of II

Biomass Competition: biomass resources are poised as solutions for liquid transport fuels, but can also be used for power generation. Land use, food vs. energy and other issues complicate the net climate and economic impacts. This session will address various approaches to how biomass resource may be optimally utilized to address the complex policy goals.

Discussion Leader: M. Mann, NREL

Presenters:

- D. Lobell (TBD)
- Detlef Van Vuuren (Netherlands Environmental Assessment Agency)
- John Reilly (MIT)
- J. Edmonds (Joint Global Change Research Institute /PNNL)

3:30 Discussions and Action Plan

Leaders: D. Arent, J. Weyant.

- Have we identified the key issues?
- Who should be engaged to ensure excellence in each country/region?
- What approach should be pursued to support a global community of practice and integration with IAM community?
- How best to proceed to secure participation and necessary support? Structure? Operations? Communications?