

19th Annual Energy and Climate Change Research Seminar
May 13 & 14, 2014
Washington DC

Implications of the IPCC

5th Assessment Report

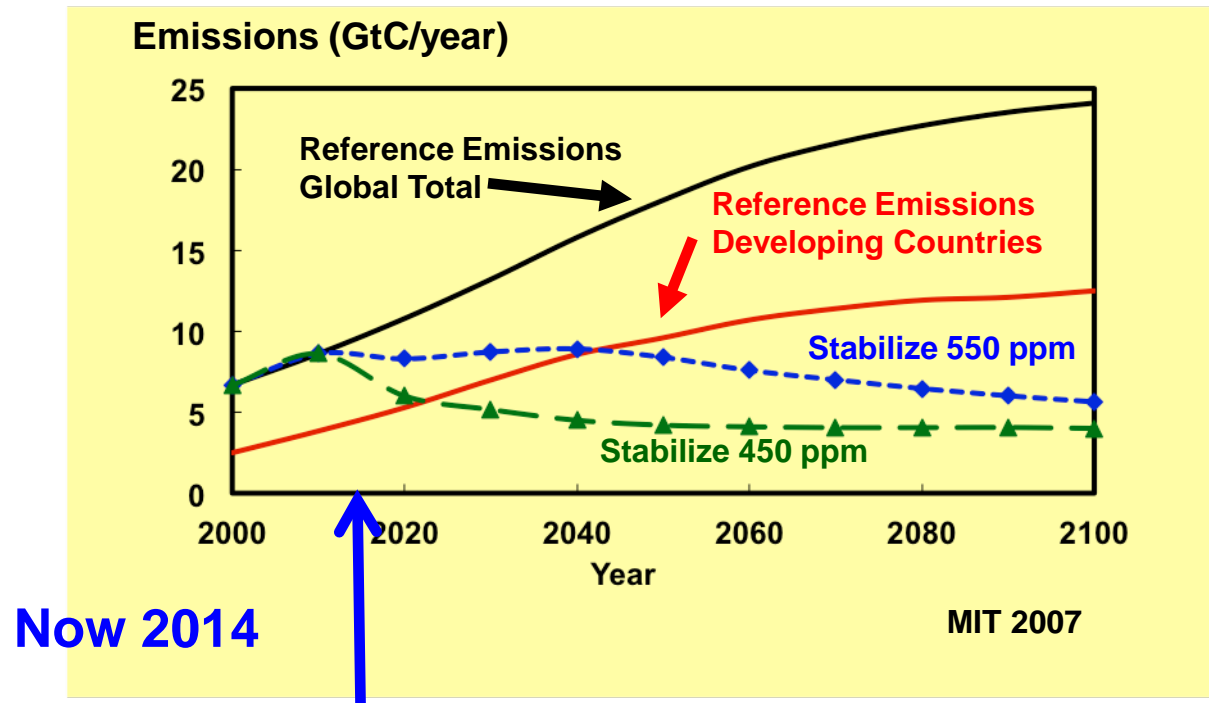
Dr. Brian P. Flannery
Resources for the Future

Outline

- IPCC Process, roles and participation
- Challenges and Critiques: uncertainty and conclusions
- Uncertainty and regulatory indices
- AR5 impact on
 - UNFCCC Post 2020 Negotiations
 - National responses

- Little change from IPCC AR4–trend continues towards more careful, nuanced language in the underlying reports
- Unlikely to result in major changes in policy and positions

The Post 2020 Framing: GHG Stabilization



Results for CO₂
not CO₂eq

- Stabilization at (450, 550) ppm requires massive effort and full global participation... soon
- Wealth transfers to halve emissions by 2050 (G8 goal) MIT 2008:
 - from A1 to Non-A1 nations
 - 400 B\$/yr by 2020
 - 3,000 B\$/yr by 2050

Have heads of state committed to an impossible goal ?

Intergovernmental Panel on Climate Change

- **Intergovernmental** organization: over 100 governments participate
 - Set the budget, elect the Bureau(s), approve assessment outlines
 - Review and negotiate Summaries for Policy Makers (line-by-line)
- Bureaus (leadership from developed and developing countries)
 - Develop assessment chapter outlines
 - Select and approve authors (CLAs, LAs) and Editors
- Products
 - Assessments in 3 WGs: Science, Impacts and Adaptation, Mitigation
 - + Policy relevant not policy prescriptive
 - Special Reports, e.g.
 - + Carbon Dioxide Capture and Storage – 2005
 - + Renewable Energy – 2011
 - + Extreme Events and Disasters – 2011
 - Guidelines for National GHG Inventories, latest 2006

Major impact on public opinion and international negotiations

IPCC Fifth Assessment Report: AR5 2014

IPCC Plenary

Bureau: Chair Pachauri (India)

Vice Chairs: Davidson (Sierra Leone), Lee (Korea), Van Ypersele (Belgium)
+ 24 Working Group Officers

I Science

Stocker Switzerland
Qin China
6 Vice Chairs

II Impacts & Adaptation

Field USA
Barros Argentina
6 Vice Chairs

III Mitigation

Edenhofer Germany
Sokona Mali
Pichs Madruga Cuba
5 Vice Chairs

Synthesis Report

Country of developed Nation co-chair hosts WG Technical Support Unit

IPCC Reports: Observations

- Engaging/retaining participation from relevant communities
 - Selection is weighted to assure geographic breadth, not excellence
 - Participation is time consuming, expensive and not highly valued by lead academic departments, especially for early career talent
- Both an assessment (catalogue?) of peer-reviewed literature and a process that shapes research, budgets and literature
 - Preparation and timing of citable publications
 - Shaping national research and budgets to match assessment needs
- Challenge of framing and communicating findings, assumptions, uncertainty
 - Room for a range of responsible views, rather than single, vague consensus?
- Public comment
 - Interacademy Council Review of IPCC (2010): process, treatment of evidence and uncertainty, governance and management
 - Recent (2014) public commentary, e.g. Stavins, Tol: role of governments in review of WG3 Summary for Policy Makers

Scientists participate in assessment but assessment is not science

Some Communication Challenges

- How to discuss uncertainty, e.g.
 - GHG concentrations
 - Aerosols and clouds
 - Climate variability on decadal and longer time scales
 - Future technology... CCS, plug-in hybrid vehicles
 - Public acceptance of carbon capture and storage
- Assumptions in Climate and Integrated Assessment Models
- Climate economics, e.g.
 - What is a large or small number ?
 - Describing technology change
 - Discounting over many decades
 - Non-market impacts
 - Distributional as well as net changes
 - Evolution of behavior and preference
- Links to other major policy agendas

Energy	Economy	Environment
Security	Agriculture	Trade
Forests	Development	...

Observations and data
Reliable physical models
Statistics
Ad hoc models
Expert judgment
Ignorance

Priorities
Risk aversion
Role of government

Public aversion to complexity and uncertainty
There may be no “correct” way to communicate risk

Business and Industry Participation in the IPCC

- Engagement in the IPCC can include: planning, nominations, authorship, review, observer input
- Expert Meetings with business (2010) to comment on 1st draft of Special Report Renewable Energy, and (2011) on 1st Draft WG 3
- More participation in Special Reports, Task Force on GHG Inventories

IPCC 5th Assessment Report Authors + Review Editors

Climate Science: 0/258

Impacts and Adaptation: 3/311

Mitigation of Emissions: ~ (4+7)/271

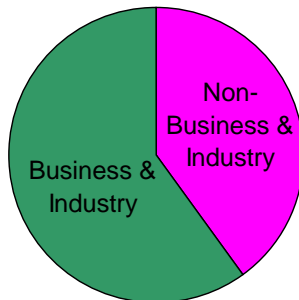
(# from Business & Industry)/total

Technology R&D and deployment will be critical to manage climate risks
Business has limited engagement with IPCC

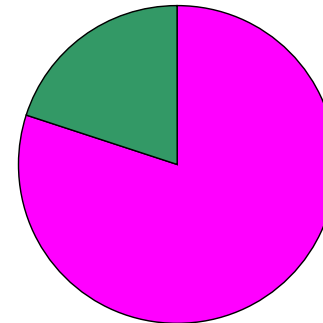
Business and IPCC Assessments: A Perspective

Haroon Khashgi, 2011

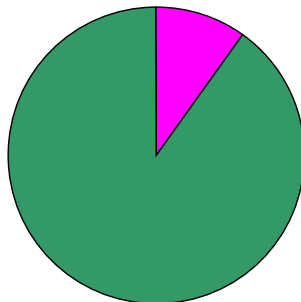
R&D



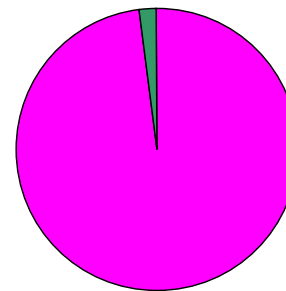
IPCC Special Report on CCS Authors



Technology Deployment



IPCC Special Report on Renewable Energy Authors



“Author teams that reflect a wide range of expertise and views and work on a voluntary basis”
IPCC, Released 4 February 2010

Regulatory Indices and Uncertainty

- Methane (CH₄) indices for cumulative warming relative to CO₂

Global Warming Potential CH ₄		
Time Horizon	No cc fb	cc fb
20 years	84	86
100 years	28	34

Global Temperature Potential CH ₄		
Time Horizon	No cc fb	cc fb
20 years	67	70
100 years	4	11

- In previous IPCC Reports 100 year CH₄ GWP was (SAR: 21), (AR4: 25)
- Kyoto 1 used 21, Kyoto 2 uses 25
- AR5 estimates GWP CH₄ uncertainties as: $\pm 30\%$ (20 year), $\pm 40\%$ (100 year)

- Social cost of carbon

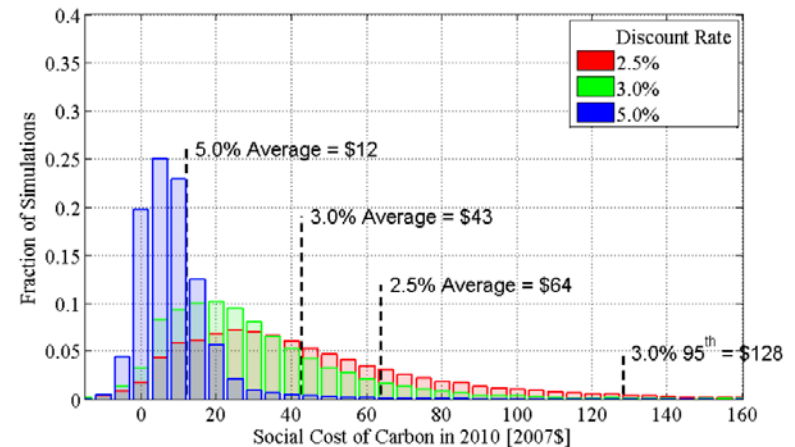
Representative OMB values

2010: 21\$

2013: 37\$

In 2007 \$ per tonne CO₂ in 2015

- Implications for Regulatory discretion?



Uncertainty and choice of index pose significant challenges for climate policies that affect major investments and that evolve over decades

AR5 and the Post 2020 Negotiations

Little fundamental has changed since AR4

- The risks are serious and require global action
- WG I reconfirms human impact on climate and expresses a more nuanced view of many aspects: e.g. storms and drought, aerosols
- WG2 and WG3: over the century estimates of damages are lower and costs of mitigation higher than in AR4; highlight aspects related to management and governance, growing evidence of impacts
- Stabilization to limit warming to 2 ° C (and even more 1.5 ° C) requires extremely ambitious assumptions concerning
 - Policy strength and participation
 - Technology availability and deployment

AR5 will have little impact on the Post 2020 negotiations, because:

- fundamental understanding is virtually unchanged
- messages have already been assimilated

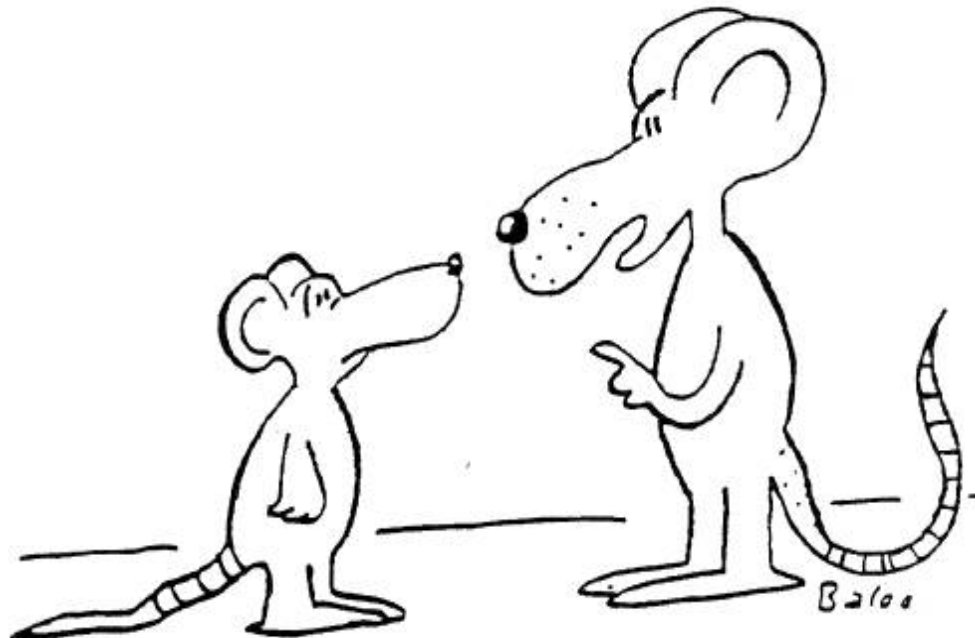
Policy Framing: Effort or Outcome ?

Narrative of the negotiation, and IPCC assessment, has shifted from near-term mitigation efforts by some to global stabilization (implying a budget)

- Efforts-based regimes align with sequential decision making under uncertainty; learning and adjusting effort based on
 - Evolving scientific understanding
 - Experience with policy
 - Advances in technology
- Stabilization, e.g. to limit warming to $< 2^{\circ}$ C, requires tight constraints now
 - Global cumulative “carbon” budgets, e.g. 1000 Gtonne Budget for emissions over the rest of the century
 - Constraints apportioned in some way, e.g. common but differentiated responsibility, equity, historical responsibility, comparable efforts ...

Budgets and constraints are unlikely to encourage broad participation and effort by all major emitting nations

Another Perspective



**“... and stay away from scientists - they
cause cancer.”**

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Thank You