

**19<sup>th</sup> Annual Energy and Climate Change Research Seminar**  
**May 13 & 14, 2014**  
**Washington DC**

# **Implications of the IPCC**

## **5<sup>th</sup> Assessment Report**

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**Dr. Brian P. Flannery**  
**Resources for the Future**

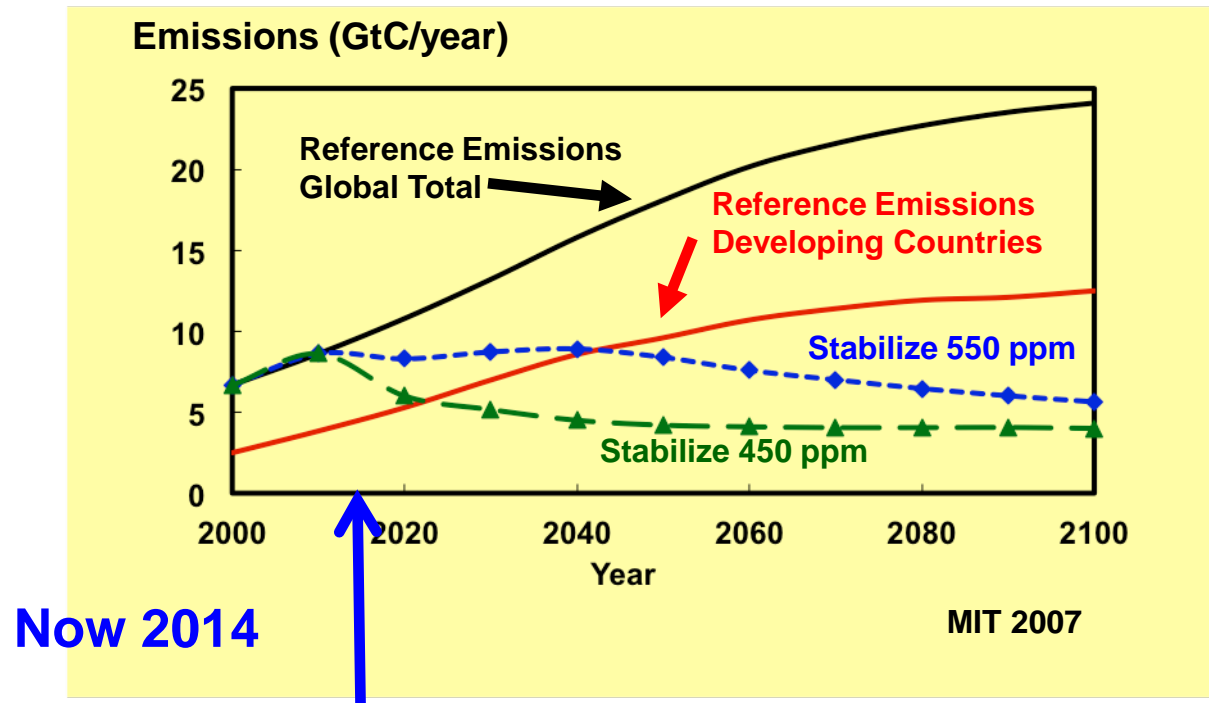
# Outline

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- 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 CO<sub>2</sub>  
not CO<sub>2</sub>eq

- 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
  - Security
  - Forests
  - Economy
  - Agriculture
  - Development
  - Environment
  - Trade
  - ...

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 1<sup>st</sup> Draft WG 3
- More participation in Special Reports, Task Force on GHG Inventories

## IPCC 5<sup>th</sup> Assessment Report Authors + Review Editors

Climate Science: 0/258

Impacts and Adaptation: 3/311

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

(# from Business & Industry)/total

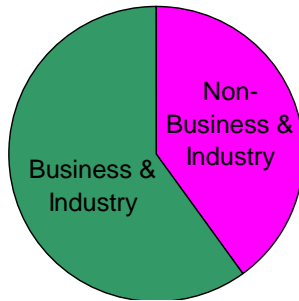
Technology R&D and deployment will be critical to manage climate risks  
Business has limited engagement with IPCC



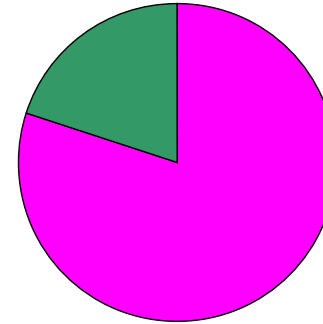
# Business and IPCC Assessments: A Perspective

Haroon Khashgi, 2011

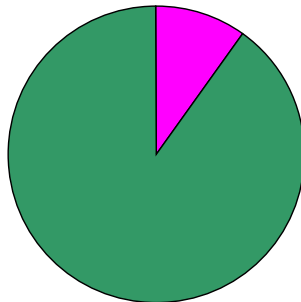
R&D



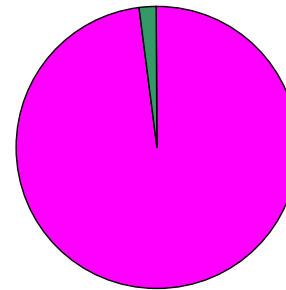
IPCC Special Report on CCS Authors



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 (CH<sub>4</sub>) indices for cumulative warming relative to CO<sub>2</sub>

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

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

- In previous IPCC Reports 100 year CH<sub>4</sub> GWP was (SAR: 21), (AR4: 25)
- Kyoto 1 used 21, Kyoto 2 uses 25
- AR5 estimates GWP CH<sub>4</sub> uncertainties as:  $\pm 30\%$  (20 year),  $\pm 40\%$  (100 year)

- Social cost of carbon

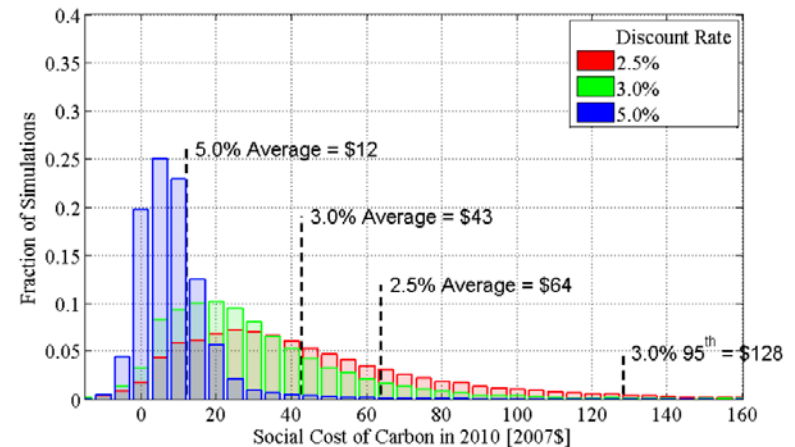
Representative OMB values

2010: 21\$

2013: 37\$

In 2007 \$ per tonne CO<sub>2</sub> 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 ?

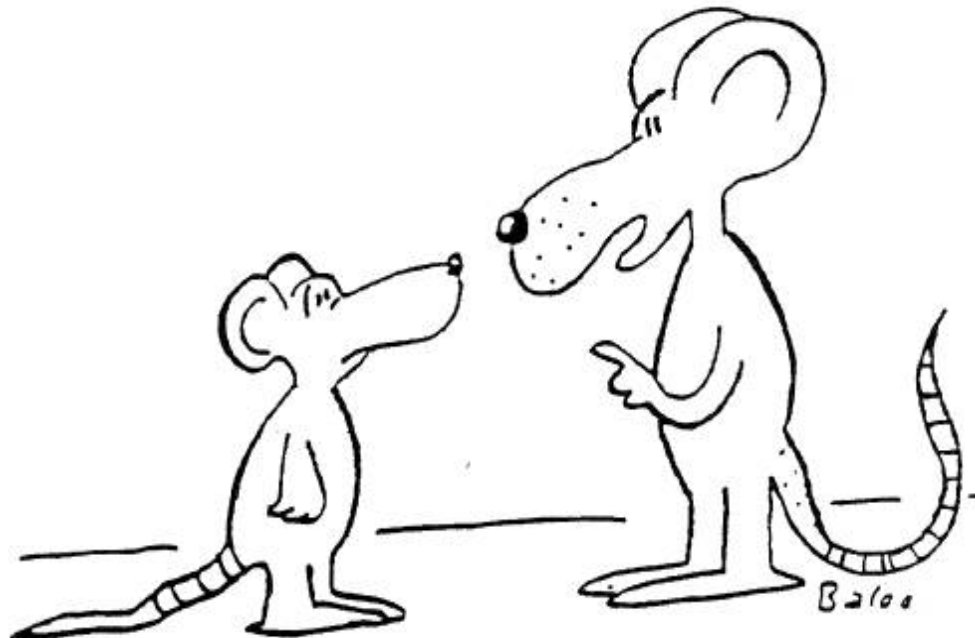
Narrative of the negotiation, and IPCC assessment, has shifted from near-term mitigation efforts by some to global stabilization (implying a budget)

- 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

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

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**Thank You**