National Ambition: INDCs and “Pledge and Review”

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Low-Emissions Pathways Workshop
Houston: 15 March 2016

http://globalchange.mit.edu/
Launching the Paris Agreement

- Interpreting the 1st pledges (INDCs)
- Progress toward temperature goals
- Implementing the new architecture
  - The ongoing diplomatic process
  - The financial challenge
- Stocktake, review & future cycles
Interpreting Complex INDCs

- **Reduction targets**
  - Below historical year
  - Emissions intensity (CO$_2$ or CO$_2$-e per GDP)
  - Below a baseline (BAU) forecast

- **Year of peak emissions**

- **Joint crediting, offsets**

- **Specific measures**
  - None
  - By sector
  - By technology

- **Conditional on financial aid**
MIT Integrated Global System Model

**Human System**

Emissions Prediction and Policy Analysis (EPPA)
National and/or Regional Economic Development, Emissions & Land Use

**Earth System**

**Atmosphere**
2-Dimensional Dynamical, Physical & Chemical Processes

**Ocean**
2- or 3-Dimensional Dynamical, Biological, Chemical & Ice Processes

**Land**
Water & Energy Budgets (CLM) Biogeochemical Processes (TEM & NEM)

**Urban Airshed**
Air Pollution Processes

**Coupled Ocean, Atmosphere, and Land**

Forcing:
- Volcanic forcing
- Solar forcing

Gases:
- CO₂, CH₄, CO, N₂O, NOₓ, SOₓ, NH₃, CFCs, HFCs, PFCs, SF₆, VOCs, BC, etc.
Expected Global Emissions (CO$_2$-e)

- Copenhagen
- 1st INDCs

Gt CO2-e

2015 2020 2025 2030 2035 2040
Uncertainty in Climate Response

2010 End, HadCRUT4 SFC + DTO

Higher Climate Sensitivity

Effective Climate Sensitivity (K)

Rate of Ocean Heat Uptake [Sqrt(Ko), (Sqrt(cm²/s))]

95%

90%

75%

50%

25%

Faster Ocean
Emissions Path to 2°C

- Path to 70% chance of 2°C in 2100
- Copenhagen
- 1st INDCs
Implementing Pledge & Review

Paris: Agreement and Decision Text
The ongoing diplomatic process

- Rules/supervision of markets & other international transfers (ITMOs)
- Accounting rules, e.g.
  - Forests (REDD)
  - Financial aid
- Review of country performance
  - Ex ante as well as ex post?
  - Procedures for “expert review”
- Launching subsequent cycles
Expected Emissions from 1st INDCs

- Rest of World
- India
- China
- Other G20
- Developed
The Financial Challenge

- Developed
- Rest of G20
- China
- India
- Other
- Africa
- India
- Other G20
- ROW

Year:
- 2015
- 2020
- 2025
- 2030
- 2035
- 2040

Gt CO2-e
“Mobilized” Climate Finance, 2013-14

- **Public Finance**: 40.7 bn
  - Bilateral Public Finance
  - Multilateral Public Finance (Attributed)

- **Export Credits**: 17.9 bn

- **Private Finance**: 14.7 bn
  - Private Co-Finance Mobilized (Attributed)

OECD, 2015
Review & Follow-On Cycles

- 2015: 1st INDCs
- 2018: Stocktake
- 2020: 1st Pledge Period
- 2025: 1st Pledge Ex-Post Review
- 2030: 2nd NDCs for 2030

Gt CO2-e
Copenhagen

1st INDCs
Oil & Gas Under 1st INDCs

Graph showing Energy (EJ) for Oil and Gas from 2015 to 2040.
Thank You

For an earlier version of this analysis, see Henry Jacoby and Y.-H. Henry Chen. 2015: Launching a New Climate Regime, MIT Joint Program on the Science and Policy of Global Change, Report No. 286.
http://globalchange.mit.edu/research/publications/2925