Engaging the Social Sciences in Global Change Research

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Three Points

1. The role of serendipity
2. Involving the social sciences in global change research: what’s working and not?
3. How political systems will respond if we are successful
1. My biography

• Learned about atmospheric chemistry and physics as a teaching assistant in college
• However, did PhD in Political Science because the most interesting college classes I took as a student were about arms control and the Soviet Union
• The collapse of the Soviet Union was a problem, but luckily I was at MIT and there were other things to do
• By accident, I did some of the first modern political science work on the politics of international environmental cooperation—initially ozone, then climate
• Because climate is mainly about fossil fuels I ended up spending a decade studying the major fossil fuel markets—oil, gas, coal—and transformation into mobility and electricity
• Because of my history I am not a normal “appointable” political scientist
• Lesson: people who work across these disciplines are accidental misfits
• Lesson for AGCI: serious integration across disciplines is a high variance activity not aligned with normal academic incentives
2. Where are we doing well?

• Where incentives align with how the social sciences are organized (rank order)
  – Macroeconomic costs and consequences of climate change impacts and mitigation
  – Induced innovation of technology
  – Valuation of extreme events
  – Political philosophy on burden sharing and intergenerational equity
  – Polling and political attitudes of the “median voter”
  – Impact of stress on conflict, migration
Where are we doing poorly?

• Where standard disciplinary questions don’t readily align with the global change debate
  – Especially severe problem in Political Science
• Where knowledge barriers to entry are high
• Where historical data are poor and where the “signal” of climate change is weak or complex
Some Illustrations...

• What I’ll talk about today:
  – Institutions I: international cooperation
  – Institutions II: technology adoption
  – Institutions III: which policies have leverage?

• Other stuff that is important:
  – Human behavior: how do social norms emerge?
  – Diffusion of best practices (e.g., adaptation)
Institutions I: Why Kyoto was Stupid

Percent World Emissions Included in Annex B of Kyoto Protocol originally (1997), as ratified (2008-2012), and as Amended in Doha (2012).

- **Original Kyoto Protocol** (% 1997 emissions): 59%
- **Countries that Ratified and Stayed Inside the Original Kyoto Protocol** (%2010 emissions): 23%
- **Amendment Agreed At Doha** (%2011 emissions): 13%
Institutions I: Why Climate Law is Fragmented

UN Legal Regimes
(UNFCCC & Kyoto Protocol, formal funding mechanisms, nonbinding political agreements [e.g., Copenhagen Accord])

Bilateral Initiatives
(e.g., Norway-Indonesia; US-India; UK-China)

Montreal Protocol
(regulation of ozone-depleting gases that also affect climate warming)

Expert Assessments
(IPCC; national assessments)

Subnational Action
(e.g., C40, California AB32 with int’l offsets; subnational procurement rules)

Adaptation Initiatives
(e.g., programs by UN agencies and multilateral development banks [MDBs])

Multilateral Development Assistance
(e.g., “mainstreaming” climate at MDBs; World Bank prototype carbon fund; clean energy & adaptation funds)

Clubs
(e.g., MEF, APP, G20, G8)

Geoengineering Governance
(e.g., ocean dumping rules for iron fertilization; possible regulation under Convention on Biological Diversity or new treaties)

Nuclear Technology
(e.g., nuclear suppliers’ group provisions to accommodate US-India nuclear partnership)

Financial Market Rules
(e.g., regulation of cross-border emission trading)

Intellectual Property and Investment Rules
(e.g., clean energy provisions in bilateral investment treaties)

International Trade Regime
(e.g., possible GATT/WTO action to accommodate border tariff adjustments)

Source: Keohane and Victor (2011)
Solution I: Use “clubs,” not just the UN

![Graph showing cumulative fractions of total Patents, R&D Spending, and CO₂ Emissions vs. rank.](image-url)
Institutions II: Technology Adoption

Note: The effect of anticipation on regulatory costs for developing countries (% deadweight loss of economic output from developing countries in our “second best” scenario). Calculated from WITCH and reported in Bosetti and Victor (2011)
Institutions II: Why This Matters

Source: IPCC WG3
Institutions III: Which Policies have Leverage?

![Graph showing 2020 Greenhouse Gas Emissions and Reductions]

- **Emissions to be Reduced:** 80 MMT
- **Remaining Emissions:** 427 MMT
- **Source of GHG Reductions (MMT):**
  - Cap & Trade: 18
  - Low Carbon Fuel Standard: 15
  - Advanced Clean Cars: 4
    - SB 375 Sustainable Communities: 3
  - Renewables Portfolio Standard: 11
  - Energy Efficiency: 12
  - High Global Warming Potential Gases: 6
  - All Other Measures: 11

CARB Concept paper, 15 Feb 2013
Ideology and Political Influence

Hafner-Burton, Kousser and Victor
2014 (draft, no cites yet)
Therefore Global Change Research has a Lamppost problem when it comes to most social phenomena
3. What Happens if we Succeed?
Rising Impact of Globalization

Source: IPCC WG3
Three Points

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Thank You
Co-benefits of Climate Policy

Source: IPCC WG3
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