

Barriers to Adaptation: What Are They Science Research Needs



Joel B. Smith

Stratus Consulting
Boulder, CO



Science for Climate Change Adaptation
Aspen Global Change Institute
Aspen, CO
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Introduction

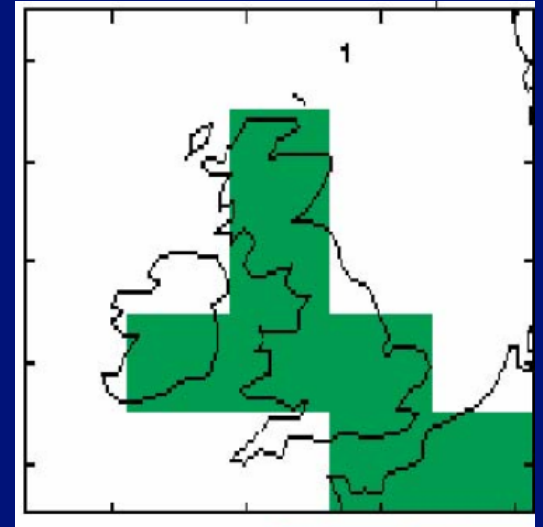
- Based on work for U.S. National Assessment – led by Rosina Bierbaum
- Adaptation team pulled this together
- *Mitigation and Adaptation Strategies for Global Change* has accepted a manuscript that includes discussion on barriers to adaptation

Barriers to Adaptation

- CC Information and Decision Making
- Divergent Perceptions, Cultures, Values
- Fragmentation of Decision Making
- Institutional Constraints
- Lack of Leadership
- Insufficient Resources to Sustain Adaptation

CC Information and Decision Making

- Two Aspects to This:
- A. Information quality
 - Many projections
 - Often do not agree on sign
 - Quite different magnitudes
 - Low Resolution
 - Disparate information
- B. Decision Making
 - How make investments given the uncertainties?



Research on Information and Decision Making

- Two parallel tracks here
- Improving Information
 - More precision and agreement on projections
 - Barriers: Emissions and Climate Sensitivity
 - Ways to organize and present projections to aid decision makers
 - For example, organize downscaled projections

Research on Information and Decision Making

- Aid Decision Making Process
 - Improve understanding of decision making process in light of uncertainty
 - Understand how to use information to inform
 - Public education
 - How to effectively communicate uncertainty to the public
 - Decision making approaches and options
 - Adaptive management, risk management, portfolio management....
 - Portfolios of adaptations

Divergent Perceptions, Cultures, Values

- A *key* barrier to adaptation
- 6 Americas; increasing polarization
 - Even adaptation is becoming politicized
- Are also key issues about perceptions and acceptance/understanding of change



Research on Perceptions, Cultures, Values

- Increasing attention on communication
 - Who presents
 - How is information presented
- How people learn
 - “Smart learning”
- How to find common ground

Fragmentation of Decision Making

- Fragmentation across levels of gov' t
 - Feds, states, municipalities, private sector
- Within gov' t
 - Different agencies
 - e.g., Army Corps, BuRec, EPA, USGS, have jurisdiction, research on water resources
 - BLM, Forest Service, Park Service, manage lands
- Differing authorities, capacities, objectives

Research on Decision Making

- Understand decision making process
 - Role of fragmentation
 - CC twist is addressing changing conditions
- Mechanisms for information sharing
- Analyze mechanisms for cooperation, coordination
 - e.g., Landscape Conservation Cooperatives; COGs, NIDES

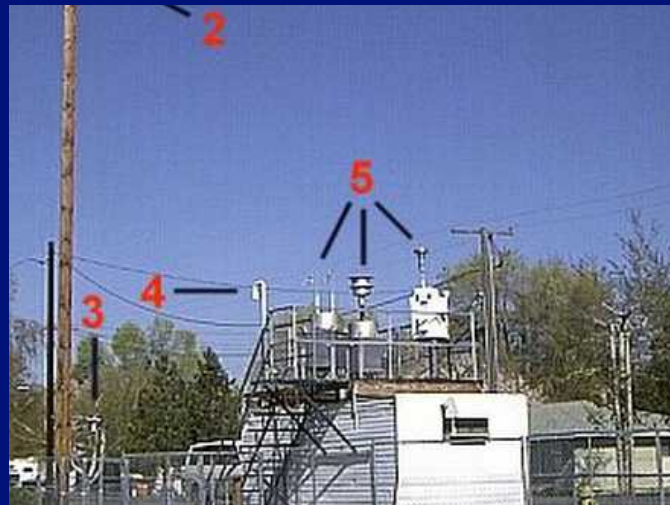


Institutional Constraints

- Institutions often impede change
 - Lock in regulated behaviors
 - Favor certain groups/organizations over others
- Can institutions enable or encourage change as conditions change?
 - Land use regulations
 - Environmental regulations

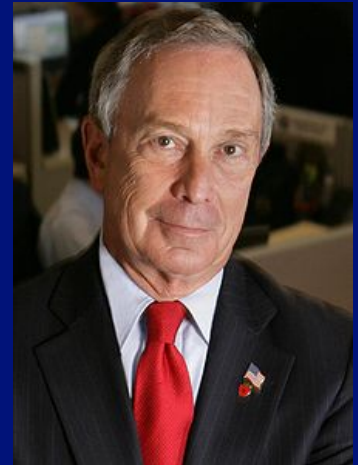
Research on Institutional Constraints

- Approaches for enabling or encouraging adaptation
 - Adaptive management
 - Allow resource management to change as climate or related conditions change
 - Effective monitoring networks
 - Be able to access and use information to support decision making



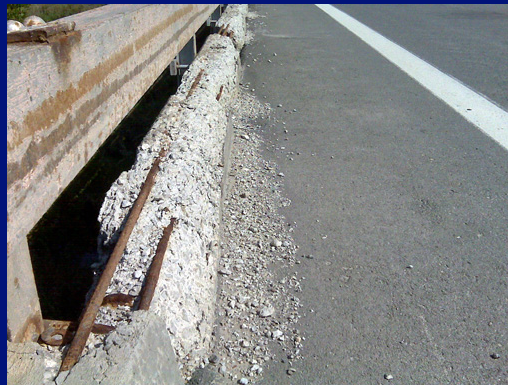
Leadership

- Adaptation has worked best where chief executive publicly committed to it
- The problem: adaptation efforts can be reversed with new administration
- The challenge is how to codify adaptation



Insufficient Resources to Sustain Adaptation

- Inadequate funding and staff to implement adaptations
 - Carmin/ICLEI survey of municipalities found this mentioned as top barrier
 - Part of larger problem
 - ASCE estimates \$2 trillion needed for US infrastructure



Resources Research

- Financing options
- Expand options e.g., demand management; not just new water supply
- Economies of scale and leveraging existing resources and mechanisms
- Increase public support for investments, e.g., infrastructure
- Low cost measures



Barriers in Developing Countries

- Poor knowledge of resource and limited data
- Development Deficit
 - 30% of metro Iloilo has water
 - Limited WWT
 - Vulnerability to flooding
- Problem of Governance



Developing Country Research Issues

- Development paths and implications for CC vulnerability
- Appropriate role for considering CC
- Are many opportunities for incorporating CC
 - Particularly where infrastructure being built

Thank you!

jsmith@stratusconsulting.com