A Snapshot of the Human Dimensions of Climate Change

What Science Has Told Us and
What We Still Need to Know

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What do we mean by the human dimensions?

- Encompass research on human driving forces, vulnerability, adaptation and mitigation

- Provide a scientific basis for understanding:
  - why climate change is happening,
  - how it will impact things we care about, and
  - what can be done to adapt and mitigate

Source: Thomas Dietz, Michigan State University

Priority Research Categories:

- *Decision-making for the Environment: Social and Behavioral Science Research Priorities*, 2005 NRC report

1. Indicators of environmentally significant consumption
2. Information transmissions systems
3. Integration of information with regulatory and market based policy instruments
4. Fundamental understanding of consumer choice and constraint

Source: Brewer & Stern, 2005

IPCC states:

- A wide array of adaptation options is available, but more extensive adaptation than is currently occurring is required to reduce vulnerability to climate change. There are barriers, limits and costs, which are not fully understood.

Source: Summary for Policy Makers, 2007

Selected examples of planned adaptation by sector.

Sector	Adaptation option/strategy	Underlying policy framework	Key constraints and opportunities to implementation (Normal font = constraints; *italics = opportunities*)
Water	Expanded rainwater harvesting; water storage and conservation techniques; water re-use; desalination; water-use and irrigation efficiency	National water policies and integrated water resources management; water-related hazards management	Financial, human resources and physical barriers; *integrated water resources management; synergies with other sectors*
Infrastructure/settlement (including coastal zones)	Relocation; seawalls and storm surge barriers; dune reinforcement; land acquisition and creation of marshlands/wetlands as buffer against sea level rise and flooding; protection of existing natural barriers	Standards and regulations that integrate climate change considerations into design; land use policies; building codes; insurance	Financial and technological barriers; availability of relocation space; *integrated policies and managements; synergies with sustainable development goals*
Tourism	Diversification of tourism attractions & revenues; shifting ski slopes to higher altitudes and glaciers; artificial snow-making	Integrated planning (e.g. carrying capacity; linkages with other sectors); financial incentives, e.g. subsidies and tax credits	Appeal/marketing of new attractions; financial and logistical challenges; potential adverse impact on other sectors (e.g. artificial snow-making may increase energy use); *revenues from 'new' attractions; involvement of wider group of stakeholders*

Source: Table SPM.4. IPCC Summary for Policy Makers 2007

Why focus on these?

1. Indicators of environmentally significant consumption
2. Information transmissions systems
3. Integration of information with regulatory and market based policy instruments
4. Fundamental understanding of consumer choice and constraint

Source: Brewer & Stern, 2005

One reason:

- Paradox between US public attitudes and individual behaviors

Source: Brewer & Stern, 2005

Source: http://blog.elizabethhoward.net/2007/10/10/the-4x4s-that-ate-connecticut/

Source: http://www.homes-germantown-maryland.com/searchwhere.shtml

Source: http://www.commondreams.org/headlines06/0211-08.htm

Another reason:

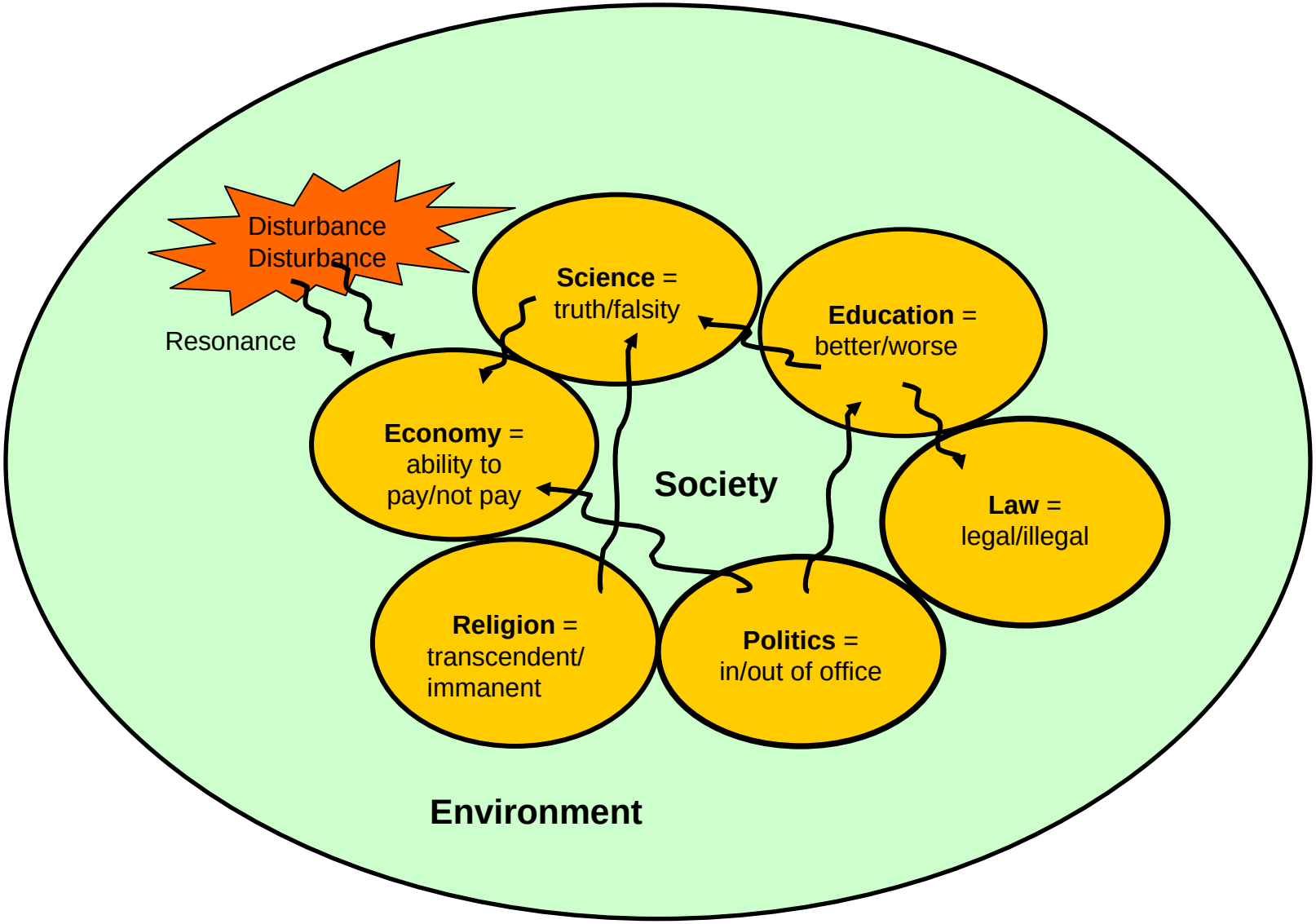
- Household and transportation CO_2 emissions are now greater than industrial emissions and account for 32-41% of total US emissions

Source: Vandebergh 2008

Why study Indicators & Information Systems?

- Assessing environmental impacts of aggregate individual behaviors is limited;
  - links between individual actions and environmental consequences are constrained by complex social, economic, institutional, and technological systems and interactions between systems

Source: Brewer & Stern, 2005



Luhmann's Ecological Communication

Why study Indicators & Information Systems? Cont.

- Can't we just put more information 'out there' so individuals can make better-informed decisions?
  - 'Deficit model' of public understanding of science
  - 'Finite pool of worry'
  - 'Single action bias'
    (Weber, 2006)
  - Must consider how information interacts with individual's values, attitudes, social norms, economic resources, incentives, and technological availability
    (Brewer & Stern, 2005)

Why study Indicators & Information Systems? Cont.

- Life cycle analysis of products
  - Can provide consumers with information to make choice between similar products (e.g. carpet vs. wood flooring)
- Comparison of carbon calculators (Padgett, et al. 2007)
  - Wide variety available on Internet: http://yosemite.epa.gov/oar/globalwarming.nsf/content/ResourceCenterToolsCalculators.html
- NEED- studies that measure actual environmental impacts of effectively delivered information on individual's choices (Brewer & Stern, 2005)

Why study integration of Information, Policy Tools, Consumer Choices & Constraints?

- Help decision-makers:
  - assess the social significance of their individual actions (e.g. carbon calculators)
  - effectively consider their policy and market options
  - alter their choices in concert with the actions of other individual and organizational actors
  - participate effectively in both markets and public-sector decision making processes

Source: Brewer & Stern, 2005

Why study integration of Information, Policy Tools, Consumer Choices & Constraints? Cont.

- Important categories of influences on consumer choice & constraint:
  - Attitudinal factors-
  - Context of choices and constraints
  - Personal capabilities
  - Habits

Source: Brewer & Stern, 2005

Better understanding of these complex, interacting social factors can help us:

- understand what can be done, and
- how to get people to make necessary changes.

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Source: Brewer & Stern, 2005

Useful Resources

- U.S. NRC Committee on the Human Dimensions of Global Change
  - Reports & Information: http://www7.nationalacademies.org/hdgc/
  - *New Tools for Environmental Protection : Education, Information, and Voluntary Measures*
  - *Decision Making for the Environment: Social and Behavioral Science Research Priorities*
- Center for Research on Environmental Decisions, Columbia University:
  - http://www.cred.columbia.edu/decisionpolicymakers/publications/
- Climate Decision Making Center, Carnegie Mellon University:
  - http://cdmc.epp.cmu.edu/
- Center for Science & Technology Policy Research, University of Colorado, Boulder:
  - Communicating urgency, facilitating social change: new strategies for climate change: http://www.isse.ucar.edu/communication/index.html
  - Science policy assessment and research on climate: http://sciencepolicy.colorado.edu/sparc/
- Southeast Climate Consortium, NOAA RISA program through Florida State University & partners
  - http://secc.coaps.fsu.edu/