Building California's Decision Support Capacity & Increasing Social Science Contributions to Climate Change

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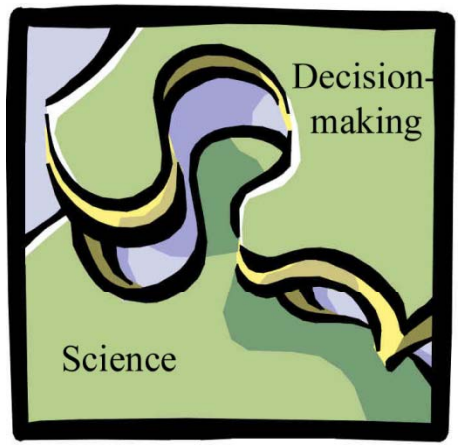
What is Decision Support?

Source: edweek.org

- NOT a research topic in the narrow sense
- BUT a complex hybrid of
  - a different kind of *science* and
  - a different kind of *practice* in science, decision-making, and at the interface of science and decision-making
- NOT an activity focused on providing *products* (data, tools and other types of information) allegedly useful for decision-makers
- BUT *processes*, activities, *products*, and services that cause decision-relevant knowledge and information to be produced and to be considered in decision-making

What is Decision Support? (cont.)

- Decision support involves
  - (a) ongoing communication among producers and users of decision support products and services
  - (b) production of decision-relevant information
  - (c) creation of products and tools based on this information
  - (d) dissemination of these products and tools
  - (e) efforts to encourage the use of decision-relevant information and tools
  - (f) development of organizations, networks, and institutions for the above purposes
- Decision support services include
  - various communication services
  - mediation and information brokering
  - use-inspired research
  - basic research
  - decision structuring and problems-solving assistance
  - evaluations



Decision Support Effectiveness

Source: City of Austin, TX

- The foundation:
  - good relationship building skills
  - a basic interest, desire and openness to mutual education and learning
  - effective leadership
  - often a persistent institutional home
  - skilled and effective communication among all involved
- Lessons from effective DS efforts:
  - collaborative problem definition and ongoing reassessment of support needs
  - Active managing of science-practice boundary
  - multi- or interdisciplinary (science), cross-agency (practice), cross-scale
  - inform each other of, respect, and creatively work with the wider decision and scientific context
  - Use of social networks for access to expertise and stakeholders, learning, exchange of information, and spread of innovations in technology, practice
  - Relationships take time to build, need ongoing maintenance, be ready when windows of opportunity for policy-/decision-making arise
  - Effective, empowering communication to multiple stakeholders and audiences

Climate-related Decisions

- Choices made by individuals, businesses, governments and other organizations, the results of which are likely to affect and be affected by climate variability and change
  - Mitigation and adaptation decisions
    - In all climate-sensitive and -relevant sectors
    - Public and private sectors
    - Organizations and individuals
    - Multiple scales (local, regional, state, national, international, and cross-scale)
    - Different decision-making stages
  - Requiring climate, but also social, policy, engineering, economic, ecological information
  - Requiring different types, formats, specificity of information
  - The rapidly growing need for decision support is not currently and cannot easily or quickly be met

Sources: aboutmyplanet.com, US FWS, AP

Past, Ongoing, Future PIER Research and Accomplishments

- Past Accomplishments
  - Decision Support for Mitigation Decisions
    - Sathaye and Murtishaw, 2004 – decision influences on individual's purchase of energy efficient appliances
  - Decision Support for Adaptation Decisions
    - Georgakakos et al., 2005 – INFORM project Phase I&II: development and testing of decision analysis and forecasting tool for N.CA reservoir management
    - Luers & Moser, 2005 – The AAA of adaptation: framework for assessing resource managers' preparedness for climate change
    - Moser & Tribbia, 2007a,b,c, - assessment of coastal sector preparedness, information needs, barriers to adaptation
  - Study of the Science-Policy Interface
    - Franco et al., 2008 – history of science-policy interaction in California

Source: DWR

- Future Research Commitments
  - Adaptation decisions
    - Continuation of INFORM project – testing it as a decision support tool for adaptation to climate change
    - Stockholm Environment Institute (weADAPT/Google Earth)

Others' Efforts and Opportunities in Decision Support

- Scripps' California Applications Program (NOAA-funded RISA center)/ California Climate Change Center
- Cooperative extension services at University of California Division of Agriculture and Natural Resources
- Consulting services from the private sector to state and local agencies
- Academic research centers, some not yet focused on climate and/or connected to decision-makers

Lessons Learned

Source: WAS*IS, NCAR

- Climate-related decision support requires climate science, but also other social, natural and engineering science information
- Ongoing engagement between researchers and decision-makers needed for learning about each others' capabilities, limits, and needs, developing and perfecting useful tools and information, mutual education, and establishing of trust
- Decision context (laws, regulations, procedures, tools, expertise, etc.) may impose barriers to using new types of information
- Mandates create strong information demands, critical focal points around which scientists must deliver information, and essential windows of opportunity
- Capacity to use sophisticated models among operational staff can be quite limited
- Decision-makers need not just certain types of information, but a wider set of services (trainings, education, two-way communication, capacity building, technical assistance, implementation help, etc.)
- Presence and engagement of local scientists is critical
- At state level some DS capacity, less so and quite variable at the local level

The Landscape of Social Science Contributions to Climate Change

<u>Why have the social sciences been relatively absent from CA climate change research?</u>

- **Characteristics of social science research**
- **Lack of social science coordination or programmatic support**
- **Framing of climate change as a (physical) science issue rather than a social problem**
- **Lack of support for social science research on climate change**
- **Perceptions of the policy climate around climate and related issues**

Source: acr.net.au

Gaps and Needed Changes in Science and Decision-making

<u>Overview</u>

- Promoting a Different Way of Doing Research
- Supporting Specific Types of Research
  - Research <u>on</u> decision support
  - Research <u>for</u> decision support

- A different way of making decisions
- Building and fostering a network of decision support institutions
- Engaging the wider social science community

Gaps and Needed Changes in Science and Decision-making (cont.)

- **Promoting a Different Way of Doing Research**
  - Work with tenured and untenured faculty, willing to take professional risks and engage them in use-inspired research
  - Feature successes
  - Respect and work with scientists' constraints (scientific norms, culture)
  - Work with intermediary organizations that allow scientists and practitioners to do what each does best, but still inform each other
  - Highest CEC leadership to engage UC leadership
  - Develop prestigious rewards from independent and state sources for scientists engaging on important policy questions

Gaps and Needed Changes in Science and Decision-making (cont.)

- **Supporting Specific Types of Research**
  - **Preliminaries**
    - Reframe climate change as a social problem
    - RFPs for well integrated, multi-disciplinary projects
    - Demand stakeholder involvement from the start
    - Define RFPs and research projects <u>with</u> practitioners
  - **Research <u>on</u> decision support**
    - Comparative research of the RISA and extension models of decision support
    - Changes in extension service and DS effectiveness over time
    - Interface of decision support and decision-making institutions with very different cultures
    - Need for, characteristics and effectiveness of intermediary (boundary) organizations
    - Building and/or adapting knowledge networks
    - Identification of decision support needs in all sectors and decision contexts
    - Inventory of decision support providers in California
    - Incentives for establishing learning culture and orientation in agencies
    - Communication of uncertainty and elicitation of appropriate response
    - Citizen engagement in monitoring, research and impact on decision-making

Source: deq.virginia.gov

Gaps and Needed Changes in Science and Decision-making (cont.)

- **Supporting Specific Types of Research (cont.) : Research <u>for</u> decision support**
  - Design, structure, implementation, and accompanying behavioral changes on most mitigation and adaptation decisions
  - Synergistic (positive/negative) interactions between mitigation and adaptation, incl. development of a "mitigation-adaptation interaction assessment" protocol
  - Identification of robust management strategies in the face of significant uncertainties (climate and otherwise)
  - Exploration of the institutional (e.g., regulatory, statutory, governance structures) opportunities and constraints to adaptation decisions in various sectors
  - Identification of gaps, needs, barriers in multi-level governance of resources and areas
  - "Decision maps" of actual decision procedures to identify mainstreaming opportunities
  - Identification of ways to increase demand for and effective implementation of new technologies and practices through policy
  - Attitudes, beliefs, opinions of powerful stakeholders affected by mitigation and adaptation policies
  - Risk communication research related to climate change

Sources:Environment, www.slocounty.ca.gov

Gaps and Needed Changes in Science and Decision-making (cont.)

- **Fostering a Different Way of Decision-Making (beyond PIER)**
  - Mandates that require the consideration of climate change in ongoing and long-term decision-making and planning
  - Redefining professional success for decision-makers (job descriptions, professional development expectations, agency missions)
  - Fostering of a learning culture in the institutions (elimination of disincentives for adaptive learning)
  - Bringing climate and social science expertise into agencies
    - post-docs in agencies
    - ongoing and repeated education of existing personnel through invited outside experts, training workshops, or web-based courses
    - clearinghouses of information and case studies
  - Identification of skills, knowledge and qualifications of employers and employees for effectively dealing with climate change
  - Funding interns to gather local-level information and make it digitally accessible, searchable, and useable for research and decision-making

Gaps and Needed Changes in Science and Decision-making (cont.)

- **Building and Fostering a Network of Decision Support Providers**
  - Baseline: Inventory climate decision support institutions at various levels and for all climate sensitive sectors
  - Build distributed network of decision support providers with a central coordinating function in an apolitical state-level institution
  - Fill gaps (collaboratively) for different sectors, different levels
  - Ensure stable funding
    - incentives to collaborate among DS providers
    - avoid underfunding or stop-and-go-funding
    - consider broad range of funding mechanisms (public-private)
  - Core leadership and coordination to provide vision and integration, but also ample flexibility in distributed implementation
  - Promotion of DS services and centers through agencies and universities
  - Start small, build trust through projects, develop bigger vision, strategy and network

Gaps and Needed Changes in Science and Decision-making (cont.)

- **Wider Engagement of the Social Sciences**
  - At annual climate change conference, explicit and growing focus on social science contributions, build research agenda
  - Specific funding mechanisms for social scientists, widely advertised in the state and beyond
  - Call for well-integrated multi-disciplinary research projects
  - Standing social science advisory committee for PIER and other state climate change research efforts
  - Involvement of social scientists on agency task forces and advisory committees
  - Broadening of the consultancy basis for state agencies
  - A California Research Council, with its own research staff , but drawing on wider expertise
  - A California Human Dimensions Program, coordinating, integrative, focusing and facilitating functions
  - Multi-campus research projects to bring together social science research strengths from across the UC system and private universities

Prioritization: Considerations

- PIER prioritization criteria do not sufficiently address needs to build decision support capacity
  - Changes in science and research needs
  - Changes in practice
  - Institution building
- Researchers, sponsors and decision-makers have different criteria, assign different weights; criteria <u>not</u> weighed
- Policy-relevance in Sacramento ≠ decision- relevance at other levels of government, in different sectors
- Criteria for achieving programmatic balance ?
- Decision support needs must be collaboratively defined with decision-makers

Final Thoughts

- Novelty – Challenge – Perceived Importance
- Critical initiatory and facilitating role for PIER
- Need for collaboration with other state institutions and leaders to bring social sciences into climate change discussion

Thank you!

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