



Decisions Based on Sound Science Fact or Myth?

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Decisions Based on Sound Science

Use of scientific information in policy making can lead to better natural resource management decisions and more effective environmental policy;

And help avoid or mitigate the consequences of human-induced stressors on the environment.

Department of the Interior
MISSION COMPONENTS

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Resource Protection

- Improve Health of Watersheds and Landscapes
- Sustain Biological Communities
- Protect Cultural and Heritage Resources

Resource Use

- Manage Resources to Enhance Public Benefit, Promote Responsible Use, and Ensure Optimal Value
- Deliver Water and Power in an Environmentally Responsible and Cost Efficient Manner

Recreation

- Improve Access to Recreation
- Ensure Quality of Recreation
- Receive and Provide Fair Value in Recreation

Serving Communities

- Protect Lives, Resources and Property
- Advance Knowledge through Scientific Leadership
- Fulfill Indian Trust Responsibilities
- Advance Quality Communities for Tribes
- Increase Economic Self-Sufficiency for Insular Areas

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SCIENCE

Neutral Linear

Science
The Endless Frontier

Experts
Frame Questions
Decide

Why is science often ignored in important societal decisions even as the call for decisions based on sound science escalates?

Conflict
Uncertainty
Communication

Science Is Not A Panacea

“A myth has grown up in the midst of natural resource decisionmaking [that] good science can , by itself, somehow make difficult natural resources decisions for us and relieve us of the necessity to engage in the hard work of democratic deliberations that must finally shoulder the weight of those decisions.”

(Under Secretary Rey, USDA cited in Kemmis, 2002, 3)

...human dynamics and institutional behavior can either enhance or impede the benefits to society of our research achievements....

...The successful application of new knowledge and breakthrough technologies, which are likely to occur with ever-increasing frequency, will require an entirely **new interdisciplinary approach to policy-making**: one that operates in an **agile problem-solving environment** and works effectively **at the interface where science and technology meet business and public policy**. It must be rooted in a **vastly improved understanding of people, organizations, cultures, and nations** and be implemented by innovative strategies and new methods and communication. All of this can occur only by **engaging the nation's top social scientists, including policy experts, to work in collaboration with scientists and engineers from many fields and diverse institutions** on multidisciplinary research efforts that address large but well-defined national and global problems. **This will not be easy. It will require qualitative changes in research cultures and the way federal agencies consider research funding.**

Alarms Bells Should Help Us Refocus, Neal Lane, Science, v. 312, 2006

***Scientific Information
Must be:***

***Credible
Salient
Legitimate***

Science Is Not A Panacea

Basing natural resource management decisions on sound science began at the end of the nineteenth century in the belief that science would provide a means of objective and rational management. Unfortunately, the highly contentious debates that surround complex natural resource issues often marginalize the contribution of science to decisions that get made. This is in large part due to adversarial processes that are created by and often dominate regulatory disputes.

Adversarial Processes

- ***Increase conflict***
- ***Thrive on uncertainty***
- ***Exclusive (divisive)***
- ***Opaque and closed***

Adversarial Processes

- ***Dueling Scientists***
- ***Expert/lay conflict***
- ***Mistrust***
- ***Litigation***

“...in a world put at risk by the unintended consequences of scientific progress, participatory procedures involving scientists, stakeholders, advocates, active citizens, and users of knowledge are critically needed.”

Kates et al, 2001

Collaborative Processes

- ***Reduce conflict***
- ***Explain uncertainty***
- ***Inclusive (holistic)***
- ***Transparent and open***

Collaborative Processes

- ***Shared learning***
- ***Trust***
- ***Creative problem solving***
- ***Shared ownership***

***“...science the sharpener of
his sword versus science the
searchlight on his universe...”***

Leopold, The Land Ethic

Decisions *are based on* ***Values***

Science *can provide* ***Context***

“...science cannot operate independent of value judgments in making public decisions....”

McKinney and Harmon, 2004

Institutions need to change

Need to Build Capacity

***Understanding
The
Institutional Context***

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Reduction
Fragmentation
Multi-jurisdiction

Eight DOI Bureaus

U.S. Geological Survey

U.S. Fish and Wildlife Service

Bureau of Land Management

National Park Service

Bureau of Reclamation

Minerals Management Service

Office of Surface Mining

Bureau of Indian Affairs

Cultural Attributes of Bureaus

Rational Chaotic

Synthesis
Holistic
Collaborative

NEPA specifically calls for an interdisciplinary approach to planning and decision making—

“[agencies shall] utilize a systematic, interdisciplinary approach which will insure the integrated use of natural and social sciences and the environmental design arts in planning and in decision making which may have an impact on man’s environment.”

Building Capacity

***Substance
Process
Relationships***

Joint Fact Finding Links Process and Substance To Build Relationships

Joint Fact Finding is a collaborative learning procedure for involving those affected by policy decisions in the continual process of generating and analyzing the scientific and technical information used to inform value-laden decisions.

***Framing The Question
(Jointly)
Context***

Listen
Communicate effectively
Respect local knowledge

MUSIC

(MIT-USGS Science Impact Collaborative)

Committed to developing and applying tools and strategies that will contribute to the most effective use of science in environmental policy making and natural resource management decision making.

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USGS and MIT partnership to research the problems of incorporating science into value-laden decisions

Environmental Policy and Planning

Department of Urban Studies and Planning, School of Architecture and Planning, Massachusetts Institute of Technology

Science, social science, engineering and humanistic perspectives are viewed as reinforcing each other not as contradictory, while cross-cultural perspectives are woven into everything we do.

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Graduate student interns supported by Federal agencies and MIT work on projects decided in consultation with agencies

Interns, with guidance from MIT faculty and agency staff, produce reports, memoranda and other products

MIT has contributed about 37% of the funding with the remaining 63% split between USGS and sponsoring agencies

MIT matches each agency-sponsored MCP intern

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Determine which situations are appropriate for a spectrum of collaborative processes that include joint fact finding

Engage in field-based efforts to test the effectiveness of collaborative processes as approaches to improving the linkages between the use of science and management and policy decisions

Document these pilot tests through interaction with stakeholders and policy makers at the local and national levels

Encourage education of a range of interested publics regarding the role of experts and stakeholders in science-intensive environmental policy-making and natural resource management

Train a new generation of scientists and applied social scientists in the integrated tools and techniques of collaborative problem solving to advance the strategic goals of Interior

A Simple Hypothesis

The more you involve people affected by a policy decision in the framing, design, and generation of the scientific inquiry, the more likely they are to understand, value and use the scientific information.

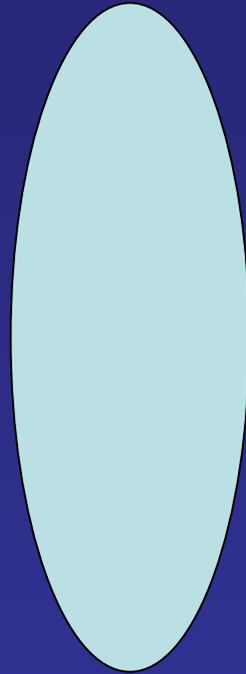
If this is true, then we would expect...

- ***More effective use of science***
- ***Less conflict***
- ***Creative solutions***
- ***Durable policy***

Our Aim is to Improve On-the-ground Outcomes

- ***Collaborative Learning (Joint Fact Finding):*** *Proactive approach of short term tactical actions within the framework of a long-term strategic plan based upon meaningful stakeholder participation;*
- ***Adaptive Management:*** *Implementation of decisions and flexibility to accommodate new information from ongoing studies;*
- ***Societal Learning:*** *Monitoring and assessment.*

Other Side of the Lens



*Keep
Challenging
Relevancy*

Challenge and Goal

Build the capacity and institutional framework to foster and enable participatory, collaborative approaches to the use of science in environmental policy decisions,

For the purpose of more effectively managing natural resources and sustaining Earth's interdependent ecosystems and human social systems.

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Train a new generation of scientists and applied social scientists in the integrated tools and techniques of collaborative problem solving and joint fact finding in science-intensive policy making

What skills should these Science Translators (Transdisciplinary) have?

1. _____

2. _____

3. _____

4. _____

5. _____

Science Translators
Commitment
Performance Standards
Reward System