

NOAA Science Advisory Board Social Science Review Working Group Terms of Reference

Context

NOAA is an agency focused on the natural sciences of the Earth, but it must also engage in the sciences of the social realm in order to fulfill its mission “to understand and predict changes in the Earth’s environment and conserve and manage coastal and marine resources to meet our nations’ economic, social, and environmental needs.”

Social science provides two kinds of knowledge that are explicitly tied to NOAA’s mission: how the agency affects people and how people effect their environment. NOAA must have comprehensive and precise knowledge of “our nations’ economic, social, and environmental needs” in order to meet and balance them. NOAA must also have comprehensive and precise knowledge of how human beings influence the Earth’s environment in order to “understand and predict changes” in it, as well as to “conserve and manage coastal and marine resources.” Research toward these ends is *programmatic*; it is an essential part of the normal operations of any NOAA program to achieve its stated outcomes. It includes disciplines such as economics, sociology, anthropology, demography and psychology – especially where these disciplines intersect with the Earth sciences.

There is a third type of knowledge that social science can provide and which is just as critical to accomplishing NOAA’s mission, albeit less explicit: how people affect NOAA and, as a subset of this, how NOAA affects itself. Social science of this kind would focus on questions of how NOAA, in whole or in part, operates as an organization to accomplish its mission effectively and efficiently in the context of political and economic trends, scientific discovery and technological evolution. Research toward this end is *organizational*; it takes as a subject NOAA as an organism that lives within a social environment. It would include disciplines such as public administration, business management, operations research, social psychology and political science.

NOAA-wide social science research capabilities are supported in the agency’s Strategic Plan by the Cross-Cutting Priority to Ensure Sound, State-of-the-Art Research, which states that “a strong economic and social science capability is needed so that we can analyze and understand evolving user requirements, priorities, and benefits of our information, services, and products.” Further, it states that “long-term, visionary research will be critical to recognizing emerging issues and opportunities and for managing future environmental, ecological, and societal needs.” Visionary research to support long-term strategic planning necessarily includes methods for specifying emerging customer needs and values, identifying social trends, evaluating potential products and services, and optimizing organizational processes and structures.

The future of social science research is to integrate fully with natural science research to form syntheses of research that transcend disciplinary boundaries. The Holy Grail of such endeavors has been called

“comprehensive earth system analysis and modeling” by former Assistant Secretary of Commerce for Oceans and Atmosphere, James Mahoney. It would entail linking the analytic constructs and coupling the models not only of currently distinct natural science domains, but those of the natural sciences with those of the social sciences as well. Just as significant as the impact of the natural world upon the social is the social upon the natural. Over the long term, comprehensive analyses and modeling inclusive of both natural and social science will enable more thorough and more precise understanding of causal mechanisms in both directions, and in so doing position NOAA to “meet our nation’s economic, social, and environmental needs” even better than it does today.

Background

In its March 2003 report, the Social Science Review Panel of the NOAA Science Advisory Board (SAB) defined social science as “the process of describing, explaining, and predicting human behavior and institutional structure in interaction with their environments.” The Review Panel’s general finding was that “NOAA’s capacity to meet its mandates and mission is diminished by the under-representation and under-utilization of social science.” With NOAA’s newly adopted matrix organization structure, social science is a natural component of each of the five NOAA Goal Teams: Ecosystems, Climate, Weather & Water, Commerce & Transportation, and Mission Support.

In March 2006, the NOAA Chief Economist reported on the agency’s progress in utilizing social science. His findings were in agreement with those of the SAB: NOAA executive leadership increasingly understands social science research to be a priority cutting across all NOAA activities, but it still has a very small footprint. NOAA is an operational science agency with a mission to produce explicit, strategic societal outcomes that have been identified as targets, yet social science represents less than 1% of NOAA’s budget. Where social science is supported, it remains limited in scale and scope.

The NOAA Executive Council (NEC) has endorsed the Chief Economist’s research findings and his conclusions that social science must be better integrated into the R&D portfolios of each NOAA Goal Team. Further, the NEC has endorsed the recommendation of the Physical and Social Science Task Team (PSTT) that “the Research Council should assure that social science is formally integrated into the R&D portfolios of each Goal Team through development of a social science strategic plan.” The SAB has also endorsed the recommendations of the external Ecosystems Task Team (eETT), including one stating that “The NOAA social science plan should specify more comprehensively what social science monitoring data are required for managing human activities... and develop a strategy to ensure such data are available.”

Charge

NOAA has requested the NOAA Science Advisory Board (SAB) to assemble a working group of external experts to assist NOAA in the development of a strategy to strengthen and integrate social science into corporate- and Program-level planning, analysis and evaluation, recognizing the unique needs and capabilities of each Goal Team (including Mission Support).

The SAB's recommendations for social science were framed within a management structure based upon Line Office structure. Since then, NOAA has instituted a matrix management structure and has developed a formal Planning Programming Budgeting and Execution System (PPBES). Also since then, the amount of social science performed at NOAA has increased and the need for social science has been more widely recognized. The issue at present is social science integration within NOAA's new management culture.

Objectives of the working group will be to focus on the following critical issues that will be addressed, to varying degrees, in all five Goal Teams:

- **How can NOAA better identify and measure (qualify and quantify) its programmatic outcomes?**
- **How can social science help NOAA and its partners effectively integrate natural science into decision-making?**
- **How can social science itself be integrated into decision-making of NOAA and its partners?**
- **How can social science capabilities at NOAA be strengthened where currently they are weak?**

Beneath these primary questions, each Goal Team has unique challenges to address. The Ecosystems and Climate Goal Teams, for example, have very well established and growing social science capabilities, whereas equivalent capabilities have not yet been developed in Weather & Water, Commerce & Transportation, or Mission Support. And irrespective of the relative strengths of the social science capabilities in the Goal Teams, each has specific strategic integration challenges.

Below is a descriptive account of the Goal-Team-specific challenges that NOAA has identified as particularly important:

Ecosystems. *Applying social science, commensurate with an Ecosystems Approach to Management, to the task of balancing diverse societal objectives – making tradeoffs – in coastal and marine management.*

- Standardized metrics of “ecosystems services” within EGT’s domain to establish performance measures, communicate benefits to the public, and better understand the value chain of EGT products & services.
- Collection and dissemination of coastal and marine economic, demographic, and social data sets for regional ecosystem managers, including training in concepts, definitions, and analytic methods for both internal and external users.

Weather & Water. *Applying social science for improved understanding of the value chain of weather & water information, both current and improved information.*

- Benefits and costs of improving the content of the weather & water information.
- Communicating weather & water information with associated uncertainties.

- Understanding and monitoring the structure and performance of the evolving “weather enterprise.”
- Leveraging work of the Societal Impacts Program for weather at NCAR.

Climate. *Applying social science to understand the networks of use and valuation of new climate products and services.*

- Forward looking trend analysis of markets and technology.
- Organizational research to optimize technology transfer.
- Analysis of public-private roles.
- Interdisciplinary research to characterize human-climate interactions.

Commerce & Transportation. *Applying social science to the nation’s evolving transportation system.*

- Assessing the current state and future needs of the nation’s marine transportation system (MTS) and NOAA’s unique contributions to it.

Mission Support. *Applying social science to the challenge of “guaranteeing effective delivery of needed products and services” via PPBES.*

- Analysis of external trends, alternative investments, tradeoffs, strategies.
- Internal social science education to enable managers to understand how products and services create economic benefits & how to analyze tradeoffs critical to program design.

Membership

The working group should consist of not less than eight members whose expertise, as a group, is comprehensive of the application and development of social science capabilities within organizations in the interest of improving organizational management. Members should include social scientists whose capabilities have been the focus of efforts of social science integration, managers who have had success in designing and implementing such efforts, as well as researchers who have experience in the analysis of such efforts from a more theoretical or experimental standpoint.

Term

The working group will carry out this review in approximately twelve months once the working group is convened. The working group will prepare a preliminary report of its analysis and findings within ten months of being established, and a final report, including recommendations, will be completed within twelve months. The working group will be dissolved after completing any follow-on request regarding the final report by the SAB.