

**Action Learning Scenario - Leadership 201 - March 2011**

**Title: The Use of Economics in the USGS as a Bridge between Science and Societal Decisions**

***How can USGS incorporate economics into its research efforts so that scientific information and research outputs most effectively inform resource managers and other decision makers?***

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**Issue:** The USGS Mission is to serve the Nation by providing reliable scientific information to address societal issues including managing water, biological, energy, and mineral resources. In many cases, decision makers are not biophysical scientists and thus look for ways to make scientific information understandable and presented in familiar terms. Economics is a science that examines scarce resources and can present results in terms understandable to many societal decision makers. To do so requires that we first translate, and then integrate across two distinct fields or “mega-disciplines” – the biophysical sciences and economics.

The challenge is to integrate economics into USGS research efforts so that scientific information is used to develop results that are presented to decision makers in dollar or other familiar terms. There are many barriers to this integration. Scientifically, economics and the biophysical sciences have different vocabularies, deal with different boundaries, and are conducted with different sets of metrics. For instance, spatial economic analyses routinely consider political boundaries while biophysical science studies are often conducted within natural boundaries such as watersheds or ecosystems. Measurements in the biophysical sciences are often stated in physical or biological terms while economics routinely measures quantities of products and dollar values.

There are also institutional challenges. USGS economics efforts cover a wide variety of issues ranging from energy and mineral assessments, information gathering, valuation of ecosystem services, to evaluations of natural resource management. Economics has not been often integrated into USGS scientific efforts and there has been some institutional resistance to including economics within USGS research activities. This resistance comes from a concern that the USGS is a natural science (Physical and biological) agency and attempting to incorporate economics requires a stretch beyond our Mission.

**Background:** *“The development of the ecosystem services paradigm has enhanced our understanding of how the natural environment matters to human societies” (Valuing Ecosystem Services, National Research Council, 2005).* In

recent years, the concept of ecosystem services has focused attention on the opportunities for integrating biophysical science with economics and the potential benefits of doing so. Ecosystem services are products produced by nature, such as clean water, storm regulation from barrier islands, and recreational services. Valuation of these services requires understanding of the ecological and physical processes required to produce them as well as the economic methods used for valuation.

The connection has precipitated a growing interdisciplinary research direction that has resulted in new methods, tools, and applications that necessarily link the biophysical sciences with economics. The December 2010, ACES (A Community on Ecosystem Services) Conference provided dramatic evidence of the extent and progress of these efforts.

**Leadership Challenge:** How can USGS provide appropriate guidance, incentives, and direction to encourage interdisciplinary efforts to effectively incorporate economics into its research portfolio? What strategies can be developed for progress in this area, given the scientific and institutional barriers described above? How can capacity be developed in the context of extremely tight budgets? How can we move forward on this issue given that it cross-cuts all of the USGS' mission areas?

The challenge is to develop broad strategies or plans for moving forward with this interdisciplinary focus, where appropriate.

USGS is convening a workshop on the role of economics in the bureau on June 1-2, 2011. The results from this action learning project will provide an important perspective for discussion at the workshop. The objective is to define future directions for economics in the USGS.

*We welcome your creative ideas!*

**Attachments:**

1. "A Road Map for Natural Capitalism," Harvard Business Review
2. "ACES 2010 Abstracts," A Community on Ecosystem Services
3. "Valuing ecosystem services from wetlands restoration in the Mississippi Alluvial Valley," W. Aaron Jenkins, Brian C. Murray, Randall A. Kramer, and Stephen P. Faulkner, Ecological Economics
4. "The Value of the World's Ecosystems and Natural Capital," Nature.