

MEETINGS

Sustainability Needs the Geosciences

**Science, Innovation, and Partnerships for Sustainable Solutions:
A National Academies Symposium;
Washington, D. C., 16–18 May 2012**

PAGE 441

It is no longer disputed that humanity has drastically changed the face of the planet and its life-support systems. The sustainability challenge is to meet people's needs today and in the future while sustaining life-support systems. This grand challenge demands a new scientific approach: use-inspired, solution-driven research that consciously links scientific research to societal decision-making and action. Sustainability science may help fulfill that need if it can engage communities of expertise across a wide range of disciplines and sectors, including the geosciences.

The symposium on Science, Innovation, and Partnerships for Sustainable Solutions, held at the Pew Conference Center in Washington, D. C., examined sustainability pillars by bringing together members of industry, organizations, and federal agencies with the following objectives: (1) highlight research contributions toward sustainability goals, (2) foster partnership among federal agencies and organizations, and (3) explore ways to link science and technology with decision making.

Initial presentations covered the range of sustainability science's knowledge

base—from energy conversion using abundant metal catalysts to the adaptive capacity of small-scale socioecological agricultural systems. Most of the remaining panels and presentations considered how to link knowledge to action; examples included the Natural Capital Project's scenarios of the economic benefits of competing land management plans and the University of California, San Diego's on-campus experiment to increase energy efficiency of buildings. Breakout discussion groups on tools and methods, critical sustainability issues, and institutional issues rounded out the agenda.

Various products are expected from the well-attended symposium, including a meeting summary from the National Academy of Sciences (NAS). The symposium underscored the promise of new partnerships, highlighted ways to break down today's disciplinary silos, and emphasized the importance of knowledge coproduction. For example, one speaker showed how scientists and engineers, working with local governments and nongovernmental organizations, used urban carbon balance accounting that incorporated cross-boundary fluxes to promote low-carbon cities.

Although some science areas, such as biosciences, were well represented, the

geosciences were underrepresented. Some participants expressed concern about this limited involvement of geoscientists in the rapidly growing field of sustainability science, given their potential contributions to support society's future needs and expertise in areas such as energy, natural resources, hydrology, and hazards. Geoscientists also have an appreciation of nonlinear, dynamical systems that could help improve understanding and promote resilience in the modern era. Symposium attendees saw a compelling case for breaking down today's silo structure of governmental and academic institutions, including the separation between basic and applied research.

The symposium Web site includes presentations on federal policy (John Holdren, White House Office of Science and Technology Policy), novel funding structures (Tim Killeen, U.S. National Science Foundation), linkages (Pam Matson, Stanford University), and international dimensions (Alex Dehgan, U. S. Agency for International Development). Webcasts are available on NAS's symposium Web site, <http://sites.nationalacademies.org/PGA/sustainability/SustainabilitySymposium/index.htm>, where a NAS meeting summary will also appear shortly.

Meeting organizers hope that symposia such as these will see broader involvement in sustainability science in future years. Fundamental research spanning and integrating geoscience, bioscience, engineering, and social science are needed to advance sustainability science and to address societal challenges in the Anthropocene.

—NANCY GRIMM, School of Life Sciences, Arizona State University, Tempe; and BEN VAN DER PLUJIM, University of Michigan, Ann Arbor; E-mail: vdpluijm@umich.edu