



November 2008

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INTRODUCTION

We are pleased to present you with *Sustainability at the National Academies*, a monthly update highlighting activities related to sustainable development from throughout the National Academies. Please visit our website for additional information on these and other activities at <http://sustainability.nationalacademies.org>.

The [Roundtable on Science and Technology for Sustainability](#) provides a unique forum for sharing views, information, and analyses related to sustainability. The goal for the Roundtable is to mobilize, encourage, and use scientific knowledge and technology to help achieve sustainability goals and to support the implementation of sustainability practices. Through its activities, the Roundtable identifies new ways in which science and technology can contribute to sustainability. What follows is a brief summary of sustainability-related activities being conducted throughout The National Academies.

You are receiving this update based on your participation in ongoing or past activities of the Roundtable. If you would prefer not to receive future monthly updates or would like to be added to the recipient list, please contact Kathleen McAllister at 202-334-2047 or Sustainability@nas.edu or visit our website.

NEWS

New Horizons in Plant Sciences for Human Health and the Environment

The National Academies have released “New Horizons in Plant Sciences for Human Health and the Environment,” a free booklet that explores the potential of the National Plant Genome Initiative – a federal multiagency project that coordinates research in plant sciences to understand and ultimately harness plants’ properties to help meet agriculture, nutrition, energy, and human health needs.

http://dels.nas.edu/plant_genome/booklet.shtml

Network for Emerging Leaders in Sustainability, December 10, 2008

The Network for Emerging Leaders in Sustainability (NELS) invites you to attend an upcoming meeting on Wednesday, December 10, at the Marian Koshland Science Museum at 600 E Street NW, from 5:30pm to 7:30pm. NELS is a new organization for early-career professionals (and professionals who are new to the topic of sustainability) who are interested in building bridges with peers in DC-area agencies and organizations. Dr. Brian Gregory (Greg) Mitchell, a Research Biologist and Senior Lecturer at the University of California, San Diego will deliver a presentation on algae and biofuels at this meeting. To attend this free event, please register at:

<http://sustainability.nationalacademies.org/NELS.shtml>

NEW REPORTS

The National Academies Summit on America’s Energy Future: Summary of a Meeting

On March 13-14, 2008, the National Academies brought together many of the most knowledgeable and influential people working on energy issues today to discuss how we can meet the need for energy without irreparably damaging Earth’s environment or compromising U.S. economic and national security – a complex problem that will require technological and social changes that have few parallels in human history. The summit is part of the ongoing project America’s Energy Future: Technology Opportunities, Risks, and Tradeoffs, which will produce a series of reports providing authoritative estimates and analysis of the current and future supply of and demand for energy; new and existing technologies to meet those demands; their associated impacts; and their projected costs (more information can be found at www.nationalacademies.org/energy). This workshop summary is an essential base for anyone with an interest in strategic, tactical, and policy issues. Federal and state policy makers will find this book invaluable, as will industry leaders, investors, and others willing to convert concern into action to solve the energy problem.

http://www.nap.edu/catalog.php?record_id=12450

Observing Weather and Climate from the Ground Up: A Nationwide Network of Networks

Detailed weather observations on local and regional levels are essential to a range of needs from forecasting tornadoes to making decisions that affect energy security, public health and safety, transportation, agriculture and all of our economic interests. As technological capabilities have become increasingly affordable, businesses, state and local governments, and individual weather enthusiasts have set up observing systems throughout the United States. However, because there is no national network tying many of these systems together, data collection methods are inconsistent and public accessibility is limited. This report

identifies short-term and long-term goals for federal government sponsors and other public and private partners in establishing a coordinated nationwide “network of networks” of weather and climate observations.

http://www.nap.edu/catalog.php?record_id=12540

Environment and Energy 2008

TRB's Transportation Research Record (TRR): Journal of the Transportation Research Board, No. 2058 includes 21 papers that explore the planning and environment linkages umbrella to streamline transportation decision making, infrastructure strategies to reduce emissions from intermodal freight movement in southern California, link-based emission factors for heavy-duty diesel trucks, and B20 biodiesel emissions compared to petroleum diesel emissions. In addition, this issue of the TRR addresses a consistent wildlife habitat classification to improve transportation and conservation planning, wireless sensor networks for assessing the environmental impact of transport noise, environmental assessment of tire-pavement noise, linking the National Environmental Policy Act and planning, behavioral response to fuel-cell vehicle fleet and hydrogen fueling infrastructure, and vehicle and E85 stations needed to achieve ethanol goals.

<http://trb.metapress.com/content/v6137625l041/?p=6a24a309865b468a85852af3447f0f71&pi=4>

Genetically Engineered Organisms, Wildlife, and Habitat: A Workshop Summary

Research is needed to help us to better understand the interactions of genetically engineered organisms (GEOs) – organisms whose genetic material has been modified to produce desirable traits – with their surrounding ecosystems. Today, most GEOs are crops that contain one or two gene traits that improve weed and insect control. However, research and testing are underway in a large variety of plants, microorganisms, and animals to introduce a much broader range of traits with potential benefits to farmers, consumers, and other users. The diversity of traits suggests that future GEOs may interact with the environment in different ways than current GEOs. A quandary for researchers is that possible interactions are best studied in natural settings, but current regulations prohibit the release of many experimental GEOs until their likely impact can be established. Therefore, alternate research approaches are needed. This workshop summarizes discussions on the kind of research that can help to understand possible GEO-ecosystem interactions.

http://www.nap.edu/catalog.php?record_id=12218

Safe and Aesthetic Design of Urban Roadside Treatments

TRB's National Cooperative Highway Research Program (NCHRP) Report 612: Safe and Aesthetic Design of Urban Roadside Treatments explores recommended design guidelines for safe and aesthetic roadside treatments in urban areas. The report also examines a toolbox of roadside treatments designed to balance pedestrian, bicyclist, and motorist safety and mobility.

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_612.pdf

NEW PROJECTS

Certification of Sustainable Products and Services: A Workshop

A steering committee will organize a weeklong public workshop in January 2009 aimed at understanding the situation of those making key decisions to purchase and produce certified goods and services, and to clarify the scope and limitations of the scientific knowledge that might contribute to the economic success of certified products. The workshop will begin with a ground-clearing discussion of certification practices and panel discussions including NGOs active in certification and advocacy, scholars of the field, and people from business with substantial experience with certification and its corporate and public politics. The workshop will involve presentations and discussions with invited experts from academia, business, government, and NGO sectors. A committee authored workshop report will be produced, summarizing what transpired at the workshop.

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48993>

Assessment of Fuel Economy Technologies for Medium and Heavy Duty Vehicles

The committee will conduct an assessment of fuel economy technologies for medium and heavy-duty vehicles. According to the Energy Independence and Security Act of 2007, Section 108, the study is to develop a report evaluating medium-duty and heavy-duty truck fuel economy standards. Based on the language in Section 108, the NRC committee formed to carry out this study will address the following tasks: to consider appropriate approaches to measuring fuel economy for medium- and heavy-duty vehicles that would be required for setting standards; to assess current and potential technologies and estimate improvements in fuel economy for medium-duty and heavy-duty trucks that might be achieved; to discuss the pros and cons of approaches to improving the fuel efficiency of moving goods as opposed to setting vehicle fuel economy standards; and to identify the potential costs and other impacts on the operation of medium-duty and heavy-duty trucks.

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48979>

America's Climate Choices

The National Academies have officially launched a new, congressionally requested study called America's Climate Choices. This suite of activities will provide policy-relevant advice, based on scientific evidence, to guide the nation's response to climate change. Experts representing various levels of government, the private sector, and research institutions will serve on four panels and an overarching committee. Five consensus reports will be released in 2009 and 2010. America's Climate Choices will examine and evaluate the actions and strategies available to limit the magnitude of future climate change, adapt to climate change impacts, advance climate change science, and inform effective decisions and actions.

<http://www.americasclimatechoices.org>

Management and Effects of Coalbed Methane Development and Produced Water in the Western United States

Coalbed methane (CBM) has accounted for an increasing proportion of total annual U.S. natural gas production over the past decade. This study will examine the effects of CBM development and produced water on water and soil resources in the western United States (Colorado, Montana, New Mexico, Utah, North Dakota, and Wyoming) including the effects of CBM produced water and its treatment, use, storage, and/or disposal. When evaluating the effects of CBM development on water resources, relevant geological, geochemical,

hydrological, ecological, environmental, social, and health factors, water rights issues, and historical and projected CBM production volumes will be considered. The project is sponsored by the U.S. Department of Interior, Bureau of Land Management.

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48996>

Review of the St. Johns River Alternative Water Supply Cumulative Impact Assessment

An NRC committee overseen by the Water Science and Technology Board of the National Academies will review the progress of the St. Johns River Alternative Water Supply Cumulative Impact Assessment (CIA). Communities in the St. Johns River watershed in east central Florida are facing future drinking water supply shortages that have prompted the St. Johns River Water Management District (the District) to evaluate the feasibility of surface water withdrawals. At the current time, drinking water is almost exclusively supplied by withdrawals from groundwater. Reliance on groundwater to meet the growing need for public supplies is not sustainable. The St. Johns River and the Lower Ocklawaha River are being considered as possible alternatives to deliver up to 262 million gallons of water per day to utilities for public supply. In January 2008, the District began an extensive scientific study to determine the feasibility of using the rivers for water supply, and it has requested the advice of the National Academies as the study progresses.

<http://www8.nationalacademies.org/cp/projectview.aspx?key=49003>

Scientific Value of Arctic Sea Ice Imagery Derived Products

The National Academy of Sciences is helping facilitate the increased involvement of scientists in answering questions related to climate, energy, and environmental change. The goal is both to advance scientific understanding of global climate and other environmental and disaster-related phenomena, and consider the implications for both fundamental scientific understanding and national security. For this particular activity, the National Academy of Sciences/National Research Council will form a small ad hoc committee of experts to assess the scientific value and usefulness of Imagery Derived Products on Arctic sea ice and identify the images that would be most valuable to Arctic ice research if publicly released.

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=PRBX-U-08-02-A>

Review of Near-Earth Object Surveys and Hazard Mitigation Strategies

The National Research Council Space Studies Board, in cooperation with the Aeronautics and Space Engineering Board, shall conduct a two-part study to address issues in the detection of potentially hazardous Near-Earth Objects (NEOs) and approaches to mitigating identified hazards. Both tasks should include an assessment of the costs of various alternatives, using independent cost estimating. Options that blend the use of different facilities (ground- or space-based), or involve international cooperation, may be considered.

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48992>

UPCOMING MEETINGS

December

Achieving Sustainable Global Capacity for Surveillance and Response to Emerging Diseases of Zoonotic Origin, December 1-2, 2008

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3066>

Climate Research Committee, December 2-3, 2008

<http://dels.nas.edu/basc/crc.shtml>

A New Biology for the 21st Century: Ensuring that the United States Leads the Coming Biology Revolution, December 3-4, 2008

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2986>

Workshop on Uncertainty Management in Remote Sensing of Climate Data, December 4, 2008

<http://dels.nas.edu/basc/Uncertainty%20Workshop.shtml>

Assessment of Fuel Economy Technologies for Medium and Heavy Duty Vehicles, December 4-5, 2008

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3064>

Assessment of the Department of Energy's Methane Hydrate Research and Development Program: Evaluating Methane Hydrates as a Future Energy Resource, December 4-5, 2008, Golden, Colorado

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3043>

The Impact of Biotechnology on Farm Economics and Sustainability, December 5-6, 2008, Irvine, CA

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3071>

Eleventh Annual Japanese-American Kavli Frontiers of Science Symposium, December 5-7, 2008, Irvine, CA

http://www.nasonline.org/site/PageServer?pagename=FRONTIERS_jafos_2008program

Meeting of the Board on Earth Sciences and Resources, December 9-10, 2008, Irvine, CA

http://dels.nas.edu/besr/news_events.php

Review of Near-Earth Object Surveys and Hazard Mitigation Strategies, December 9-11, 2008

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3038>

The Network for Emerging Leaders in Sustainability (NELS), December 10, 2008

<http://sustainability.nationalacademies.org/NELS.shtml>

Nanotechnology in Food Products: Impact on Food Science, Nutrition and the Consumer, December 10, 2008

<http://www.iom.edu/Object.File/Master/59/855/Savethedate.pdf>

Scientific Value of Arctic Sea Ice Imagery Derived Products, December 11-12, 2008, Seattle, WA

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3057>

Characterizing the Potential Human Toxicity from Low Doses of Pharmaceuticals in Drinking Water: Are New Risk Assessment Methods or Approaches Required?

December 11-12, 2008

http://dels.nas.edu/best/risk_analysis/workshops.shtml

Chemical Sciences Roundtable, December 15-16, 2008

<http://dels.nas.edu/bcst/csr.shtml>

International Conference on Integrated Transport for Sustainable Urban Development, December 15-17, 2008, Beijing, China

http://www.trb.org/news/blurb_detail.asp?id=9167

US-China Cooperation on Electricity from Renewables, December 15-19, 2008, Beijing and Guangzhou, China

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3005>

Globalization, Movement of Pathogens (and their hosts) and the revised International Health Regulations, December 16-17, 2008

<http://iom.edu/CMS/3783/3924/59320.aspx>

January

Committee on America's Climate Choices: Second Meeting, January 5-6, 2009

Irvine, California

<http://americasclimatechoices.org/meetingsandevents.shtml>

TRB 88th Annual Meeting, January 11-15, 2009

<http://www.trb.org/Meeting/2009>

Best Practices for Shellfish Mariculture and the Effects of Commercial Activities in Drake's Estero, Pt. Reyes National Seashore, California, January 15-16, 2009, Irvine, California

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3073>

Certification of Sustainable Products and Services: A Workshop, January 18-22, 2009, Irvine, California

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3049>

PROJECTS IN DEVELOPMENT

Energy Task Force Portfolio

The Energy Task Force, a subset of the Roundtable, is exploring three possible energy projects / workshops intended to complement other activities at the Academies including the study, *America's Energy Future: Technology Opportunities, Risks and Tradeoffs*. The first activity discussed would explore the transportation issues associated with biofuels and sustainability. Another possible activity includes a pilot, regional workshop examining the environmental, economic and social impacts of biofuel production and use in multiple US regions (e.g. Minnesota, Iowa and Wisconsin) with active programs supporting biofuels. The third proposed activity relates to sustainable urban energy use and would focus on a set of US cities which appear to be leading the way in planning for sustainable urban energy use. The workshop would provide a forum for analyzing the lessons learned and exploring how state and federal policies might be leveraged to accelerate progress towards sustainability.

ONGOING ACTIVITIES

Sustainability---The Issue

The Roundtable on Science and Technology for Sustainability

<http://sustainability.nationalacademies.org/index.shtml>

Partnerships for Sustainability

<http://sustainability.nationalacademies.org/Partnerships.shtml>

People and Their Communities

Achieving Sustainable Global Capacity for Surveillance and Response to Emerging Diseases of Zoonotic Origin

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48913>

Human Dimensions of Global Change

<http://www8.nationalacademies.org/cp/projectview.aspx?key=67>

Public Health Decision-Making under Uncertainty

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48847>

Ranking FDA Product Categories Based on Health Consequences

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48955>

Roundtable on Environmental Health Sciences, Research, and Medicine

<http://iom.edu/CMS/3793/4897.aspx>

The Committee on the Human Dimensions of Global Change

<http://www7.nationalacademies.org/hdgc/>

The U.S. Commitment to Global Health

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48901>

Toward Sustainable Critical Infrastructure Systems -- Framing the Challenges: A Workshop

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48850>

Life Support Systems: Atmosphere, Water, and Food

America's Climate Choices

<http://americasclimatechoices.org>

Assessment of Water Reuse as an Approach for Meeting Future Water Supply Needs

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48995>

Contaminated Drinking Water at Camp Lejeune

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BEST-K-06-08-A>

Developing Mesoscale Meteorological Observational Capabilities to Meet Multiple National Needs

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48732>

Ecological Impacts of Climate Change

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BLSX-K-07-03-A>

FEMA Flood Maps: Accuracy Assessment and Cost-Effective Improvements

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BESR-U-06-06-A>

Review of the Food Safety and Inspection Service (FSIS) Risk-Based Approach to Public Health Attribution

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48986>

Review of the Methodology Proposed by the Food Safety and Inspection Service (FSIS) for Risk-based Regulation of In-Commerce Activities

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48985>

Review of Water and Environmental Research Systems (WATERS) Network

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48784>

Strategic Advice on the U.S. Climate Change Science Program

<http://www8.nationalacademies.org/cp/projectview.aspx?key=209>

Strategies and Methods for Climate-Related Decision Support

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48846>

The Mississippi River and the Clean Water Act: Scientific, Modeling, and Technical Aspects of Nutrient Pollutant Load Allocation and Implementation

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48944>

The Significance of International Transport of Air Pollutants

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BASC-U-07-01-A>

Water Resources Activities at the U.S. Geological Survey

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48695>

Economy and Industry

Chemical Sciences Roundtable

<http://dels.nas.edu/bcst/csr.shtml>

Competitiveness and Workforce Needs of U.S. Industry

<http://www8.nationalacademies.org/cp/projectview.aspx?key=41210>

National Academies Materials Forum on Corrosion Education for the 21st Century

http://www7.nationalacademies.org/nmab/current_activities.html

Strategic Directions for the Geographical Sciences in the Next Decade

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BESR-U-06-02-A>

The Impact of Biotechnology on Farm Economics and Sustainability

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BANR-O-06-10-A>

21st Century Systems Agriculture

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48873>

Natural Systems

Best Practices for Shellfish Mariculture and the Effects of Commercial Activities in Drake's Estero, Pt. Reyes National Seashore, California

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48954>

Challenges and Opportunities in Earth Surface Processes

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48867>

Missouri River Recovery and Associated Sediment Management Issues

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48946>

Review of Louisiana Coastal Protection and Restoration (LACPR) Program

<http://www8.nationalacademies.org/cp/CommitteeView.aspx?key=WSTB-U-06-04-A>

Review of the Tsunami Warning and Forecast System and Overview of the Nation's Tsunami Preparedness

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48928>

The Importance of Deep-Time Geologic Records for Understanding Climate Change Impacts

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48865>

Institutions and Indicators

State of the USA Health Indicators

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48938>

Evaluation of the Safety and Environmental Metrics for Potential Application at Chemical Agent Disposal Facilities

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48949>

Sustainability Research and Development

A New Biology for the 21st Century: Ensuring that the United States Leads the Coming Biology Revolution

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48967>

Assessment of the Department of Energy's Methane Hydrate Research and Development Program: Evaluating Methane Hydrates as a Future Energy Resource

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48952>

Challenges and Opportunities in Earth Surface Processes

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48867>

Design Issues for the NOAA Sector Applications Research Program

<http://webapp.nationalacademies.org/cp/projectview.aspx?key=48688>

Grainger Challenge Prize for Sustainability

<http://www.nae.edu/nae/grainger.nsf?OpenDatabase>

Grand Challenges for Engineering

<http://www.engineeringchallenges.org>

Review of the Federal Strategy to Address Environmental, Health, and Safety

Research Needs for Engineered Nanoscale Materials

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BEST-K-07-02-A>

The Earth System Context for Hominin Evolution

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BESR-U-06-01-A>

Sustainable Energy

America's Energy Future: Technology Opportunities, Risks, and Tradeoffs

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48817> and

<http://sites.nationalacademies.org/energy/index.htm>

Assessment of Technologies for Improving Light-Duty Vehicle Fuel Economy

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48843>

Cleanup Technology Roadmap for DOE's Office of Environmental Management

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=NRSB-O-06-03-A>

Energy Efficiency Standards: Alternative Approaches to Measurement

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48884>

Health, Environmental, and Other External Costs and Benefits of Energy Production and Consumption

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48951>

Potential Energy Savings and Greenhouse Gas Reductions from Transportation

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48864>

Relationships among Development Patterns, Vehicle Miles Traveled, and Energy Consumption

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48808>

Review of the DOE-BES Catalysis Research Activities and their Impact

<http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BCST-L-07-02-A>

Review of the 21st Century Truck Partnership

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48722>

Transitions to Sustainable Energy

<http://www.interacademycouncil.net/?id=9481>

Transportation Research Programs to address Energy and Climate Change

<http://www8.nationalacademies.org/cp/projectview.aspx?key=48968>

US-China Cooperation on Electricity from Renewables
<http://www8.nationalacademies.org/cp/projectview.aspx?key=48987>

Other Activities

Christine Mirzayan Science and Technology Policy Fellowship Program
<http://national-academies.org/policyfellows>

PNAS Sustainability Science, Special Features

PNAS offers a series of special feature issues that highlight emerging fields in the physical, social, and biological sciences and are edited by leaders in the field. Special Features include a cluster of Perspectives and peer-reviewed research articles. As a service to readers, Special Features are freely available online from the date of publication.

<http://www.pnas.org/misc/sustainability.shtml>

Preparation of this update was supported by the National Academies' George and Cynthia Mitchell Endowment for Sustainability Science.