April 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.

NEW REPORTS

Origin and Evolution of Earth: Research Questions for a Changing Planet

Questions about the origin and nature of Earth and the life on it have long preoccupied human thought and the scientific endeavor. Deciphering the planet's history and processes could improve the ability to predict catastrophes like earthquakes and volcanic eruptions, to manage Earth's resources, and to anticipate changes in climate and geologic processes. At the request of the U.S. Department of Energy, National Aeronautics and Space Administration, National Science Foundation, and U.S. Geological Survey, the National Research Council assembled a committee to propose and explore grand questions in geological and planetary science. This report captures, in a series of questions, the essential scientific challenges that constitute the frontier of Earth science at the start of the 21st century.

http://www.nap.edu/catalog.php?record_id=12161

Bioinspired Chemistry for Energy: A Workshop Summary to the Chemical Sciences Roundtable

Faced with the steady rise in energy costs, dwindling fossil fuel supplies, and the need to maintain a healthy environment - exploration of alternative energy sources is essential for meeting energy needs. Biological systems employ a variety of efficient ways to collect, store, use, and produce energy. By understanding the basic processes of biological models, scientists may be able to create systems that mimic biomolecules and produce energy in an efficient and cost effective manner. A group of chemists, chemical engineers, and others from academia, government, and industry participated in a workshop sponsored by the Chemical Sciences Roundtable to explore how bioinspired chemistry can help solve some of the important energy issues the world faces today. The workshop featured presentations and discussions on the current energy challenges and how to address them, with emphasis on both the fundamental aspects and the robust implementation of bioinspired chemistry for energy.

http://www.nap.edu/catalog.php?record_id=12068#description

Review of the Research Program of the FreedomCAR and Fuel Partnership: Second Report

The FreedomCAR and Fuel Partnership is a collaborative effort among the Department of Energy (DOE), the U.S. Council for Automotive Research (USCAR), and five major energy companies to manage research that will enable the vision of "a clean and sustainable transportation energy future." It envisions a transition from more efficient internal combustion engines (ICEs), to advanced ICE hybrid electric vehicles, and to enabling a private-sector decision by 2015 on hydrogen-fueled vehicle development. At the request of DOE, the NRC has undertaken an effort to provide biennial reviews of the progress of the research program. Phase I of that review was described in a report issued in 2005 (http://www.nap.edu/catalog.php?record_id=11406). This second report presents an assessment of the progress in the research program management areas as well as the responses of program management to recommendations provided in the Phase I report. Covered in this second report are major crosscutting issues; vehicle subsystems; hydrogen production, delivery, and dispensing; and an overall assessment of the program.

http://www.nap.edu/catalog.php?record_id=12113

Vector-Borne Diseases: Understanding the Environmental, Human Health, and Ecological Connections: Workshop Summary
The Institute of Medicine's Forum on Microbial Threats convened a workshop—on June 19-20, 2007, in Ft. Collins, CO—entitled Vector-Borne Diseases: Understanding the Environmental, Human Health, and Ecological Connections. The purpose of this public workshop was to examine the global burden of vector-borne diseases of humans, animals, and plants, and to discuss prospects for successful mitigation and response strategies. Workshop participants explored the biological and ecological context of vector-borne diseases; their health and economic impacts; emerging domestic and global diseases; public, animal, and plant health preparedness; prevention, control, and therapeutic measures; scientific and technological advances; and integration strategies to address current and future threats.
http://www.nap.edu/catalog.php?record_id=11950

UPCOMING MEETINGS

April

A Sustainable Vision for Water in the Twenty-first Century, April 23, 2008
http://dels.nas.edu/wstb/wolman_current.shtml
America's Energy Futures: Electric Power Transmission and Distribution Subgroup Meeting, April 24-25, 2008
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2622
America's Energy Future: Alternative Liquid Transportation Fuels: Technology Opportunities, Risks, and Tradeoffs, April 23-25, 2008
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2644
Effectiveness of International and National Measures to Prevent and Reduce Marine Debris and Its Impacts, April 28-29, 2008, Honolulu, HI
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2670
Development and Implementation of a Cleanup Technology Roadmap for DOE's Office of Environmental Management, April 28-30, 2008
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2656
The Earth System Context for Hominin Evolution, April 30, 2008
http://www8.nationalacademies.org/cp/projectview.aspx?key=48796

May

Energy Efficiency Standards: Alternative Approaches to Measurement, May 1-2, 2008
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2645
21st Century Systems Agriculture, May 1-3, 2008
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2686
Climate, Water, and Sustainability: A Visual Tour, Thursday, May 1, 2008, Koshland Science Museum
http://www.koshland-science-museum.org/events/upcomingevent.jsp?id=282
Potential Energy Savings and Greenhouse Gas Reductions from Transportation, May 2, 2008
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2583
Deep-Time Geologic Records Workshop, May 5-7, 2008, Irvine, CA
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2508

Toward Sustainable Critical Infrastructure Systems -- Framing the Challenges: A Workshop, May 7-9, 2008
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2513
National Sustainable Design Expo featuring EPA's P3 Award, May 9-11, 2008
http://www.nae.edu/nae/engenvcom.nsf/weblinks/MKEZ-6NQQFG?OpenDocument
America's Energy Future: Energy Efficiency Technologies: Opportunities, Risks, and Tradeoffs, May 13-14, 2008
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2671
Network for Emerging Leaders in Sustainability: Sustainability Across Sectors, May 19, 2008
http://sustainability.nationalacademies.org/NELS.shtml

June

Reducing Stormwater Discharge Contributions to Water Pollution, June 9-10, 2008, Woods Hole, MA
http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=2494
Partnerships for Sustainability, Examining the Evidence: A Symposium, June 18-19, 2008
http://sustainability.nationalacademies.org/Partnerships.shtml
The Roundtable on Science and Technology for Sustainability, June 19-20, 2008
http://sustainability.nationalacademies.org/roundtable.shtml

PROJECTS IN DEVELOPMENT

Pathways to Urban Sustainability Initiative
The National Academies are planning a multi-year, multi-country initiative to address one of the central challenges and opportunities of the 21st century—the use of science and technology to help transform rapidly urbanizing regions of the developing world into "sustainable cities." Over the past year, the Academies launched this ambitious program through on-the-ground planning activities in China, South Africa, Tanzania and Mexico. We are currently raising funds for the next phase of the initiative, which will include an international symposium to examine the major trends, challenges, and potential paths forward to urban sustainability in developing world cities, and a set of on-the-ground projects in China to be carried out in partnership with the Chinese Academies of Science and Engineering and other leading Chinese science and technology institutions. For more information on past urban sustainability activities, visit:
http://sustainability.nationalacademies.org/proj_dev.shtml

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/current.shtml

People and Their Communities

Public Health Decision-Making Under Uncertainty

http://www8.nationalacademies.org/cp/projectview.aspx?key=48847
Public Participation in Environmental Assessment and Decision Making
http://www8.nationalacademies.org/cp/projectview.aspx?key=34
The Committee on the Human Dimensions of Global Change
http://www7.nationalacademies.org/hdgc/
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

Advancing Desalination Technology
http://www8.nationalacademies.org/cp/CommitteeView.aspx?key=48674
A Strategy to Mitigate the Impact of Sensor Descopes and De-manifests on the NPOESS and GOES-R Spacecraft
http://www8.nationalacademies.org/cp/projectview.aspx?key=48834
Climate Change and U.S. Transportation
http://www8.nationalacademies.org/cp/projectview.aspx?key=186
Committee on Hydrology, Ecology, and Fishes of the Klamath River Basin
http://www8.nationalacademies.org/cp/projectview.aspx?key=216
Contaminated Drinking Water at Camp Lejeune
http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BEST-K-06-08-A
Developing Mesoscale Meteorological Observational Capabilities
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
Emerging Technologies in Agriculture to Benefit Farmers in Africa and South Asia
http://dels.nas.edu/banr/index.shtml
International and National Measures to Reduce Marine Debris and Its Impacts
http://www8.nationalacademies.org/cp/ProjectView.aspx?key=OSBX-U-07-02-A
Mortality Risk Reduction Benefits from Decreasing Tropospheric Ozone Exposure
http://www8.nationalacademies.org/cp/CommitteeView.aspx?key=BEST-K-06-10-A
FEMA Flood Maps: Accuracy Assessment and Cost-Effective Improvements
http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BESR-U-06-06-A
Reducing Stormwater Discharge Contributions to Water Pollution
http://www8.nationalacademies.org/cp/committeeview.aspx?key=48711
Review of CCSP Draft Synthesis and Assessment Products: 1.3 Re-analyses of historical climate data and implications for attribution
http://www8.nationalacademies.org/cp/projectview.aspx?key=48840
Based on Emissions Scenarios for Long-lived Radiatively Active Trace Gases
http://www8.nationalacademies.org/cp/ProjectView.aspx?key=BASC-U-06-06-A
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
Water Resources Activities at the U.S. Geological Survey
http://www8.nationalacademies.org/cp/projectview.aspx?key=48695

Economy and Industry

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
21st Century Systems Agriculture
http://dels.nas.edu/banr/

Natural Systems

Hydrologic Impacts of Forest Management
http://www8.nationalacademies.org/cp/projectview.aspx?key=1935
Review of Louisiana Coastal Protection and Restoration (LACPR) Program
http://www8.nationalacademies.org/cp/CommitteeView.aspx?key=WSTB-U-06-04-A
Risk of Oil Spills in the Aleutian Islands: Comprehensive Risk Assessment
http://www8.nationalacademies.org/cp/projectview.aspx?key=48853
The Importance of Deep-Time Geologic Records for Understanding Climate Change Impacts
http://www8.nationalacademies.org/cp/projectview.aspx?key=48865

Institutions and Indicators

Key National Indicators Initiative (KNII)
Currently, this project is not available on the web. As soon as a web link becomes available, it will be included in this update.

Sustainability Research and Development

Challenges and Opportunities in Earth Surface Processes
http://www8.nationalacademies.org/cp/committeeview.aspx?key=48867
Design Issues for the NOAA Sector Applications Research Program
http://webapp.nationalacademies.org/cp/projectview.aspx?key=48688
Evaluation of the Research Plan of the Dept of Housing and Urban Development
http://www8.nationalacademies.org/cp/projectview.aspx?key=48755
Grand Challenges for Engineering
http://www.engineeringchallenges.org/
Grainger Challenge Prize for Sustainability
http://www.nae.edu/nae/grainger.nsf?OpenDatabase
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
Assessment of Resource Needs for Development of Fuel Cell Hydrogen Technology
http://www8.nationalacademies.org/cp/projectview.aspx?key=48717
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
Potential Energy Savings and Greenhouse Gas Reductions from Transportation
http://www8.nationalacademies.org/cp/projectview.aspx?key=48864
Relationship of Development Patterns, Vehicle Miles Traveled, Energy Consumed
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

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

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