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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.

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 Emi Kameyama at 202-334-2694 or [Sustainability@nas.edu](mailto:Sustainability@nas.edu) or visit our website.

## NEWS

**Network for Emerging Leaders in Sustainability, February 25, 2010: Paul Anastas, Assistant Administrator, U.S. Environmental Protection Agency**

The Network for Emerging Leaders in Sustainability (NELS) invites you to attend an upcoming meeting on Thursday, February 25th, at the Marian Koshland Science Museum at 600 E Street NW in Washington, DC, from 5:30pm to 7:30pm. Paul Anastas, Assistant Administrator, Office of Research and Development (ORD), U.S. Environmental Protection Agency, will deliver a keynote speech at this meeting. To attend this free event, please register at: <http://sustainability.nationalacademies.org/NELS.shtml>.

### **Institute of Medicine's Email Updates**

The Institute of Medicine (IOM) now offers a customizable monthly newsletter featuring information on the topics that you select, as well as news alerts so you know when we issue a new report or launch a new activity, plan meetings you may want to attend, or have important news to share.

<http://www.iom.edu/Global/Media%20Room/Updates.aspx>

## **CALL FOR NOMINATIONS**

### **The Extraordinary Stories Award Program at the NAE Grand Challenge Summit**

Nominate a student for the "Extraordinary Stories Award" at the April 21 Grand Challenges Summit in Boston, MA. We're looking for students who have made a contribution to one of the NAE Grand Challenge problem areas: Sustainability, Health, Vulnerability, Joy of Living. Your nomination should describe the project and its (potential) impact, demonstrating how the work addresses a Grand Challenge problem or area. Fill out our nomination form – including a link to your video on YouTube or an upload of your PDF file – by March 1, 2010, 11:59 p.m. Hawaii time.

<http://www.grandchallengestories.org>

## **NEW REPORTS**

### **Certifiably Sustainable?: The Role of Third-Party Certification Systems: Report of a Workshop**

Consumption of goods and services represents a growing share of economic activity globally. In the United States, consumption accounts for more than two-thirds of gross domestic product. This trend of increasing consumption has brought with it negative consequences for the environment and human well-being. Global demand for energy, food, and all manner of goods is on the rise, putting strains on the natural and human capital required to produce them. Extractive industries and production processes are prominent causes of species endangerment. Modern economies are underpinned by substantial energy consumption, a primary contributor to the current climate crisis. Expanding international trade has led to many economic opportunities, but has also contributed to unfair labor practices and wealth disparities. In order to take a step in learning from this field of practice, the National Academies' Science and Technology for Sustainability Program held a workshop to illuminate the decision making process of those who purchase and produce certified goods and services. It was also intended to help clarify the scope and limitations of the scientific knowledge that might contribute to the economic success of certified products. The workshop, summarized in this volume, involved presentations and discussions with approximately 40 invited experts from academia, business, government, and nongovernmental organizations.

[http://books.nap.edu/catalog.php?record\\_id=12805](http://books.nap.edu/catalog.php?record_id=12805)

### **Ecosystem Concepts for Sustainable Bivalve Mariculture**

With seafood consumption rising and wild stocks of marine life decreasing, mariculture – the cultivation of marine organisms in their natural environments – is becoming an increasingly important source of bivalve shellfish such as oysters, mussels, and clams. However, mariculture operations can affect the integrity of natural ecosystems where they are located,

for example, by disturbing marine flora that provide habitat for fish and invertebrates. Expanding mariculture operations will require the adoption of best management practices or performance standards to limit undesirable consequences. Analysis suggests performance standards that monitor key indicators of ecosystem health are most effective, because the scale, location, and type of mariculture operation can be taken into account.

[http://www.nap.edu/catalog.php?record\\_id=12802](http://www.nap.edu/catalog.php?record_id=12802)

### **Realizing the Energy Potential of Methane Hydrate for the United States**

Natural gas, composed mostly of methane, is the cleanest of all the fossil fuels, emitting 25-50% less carbon dioxide than either oil or coal for each unit of energy produced. In recent years, natural gas supplied approximately 20-25% of all energy consumed in the United States. Methane hydrate is a potentially enormous and as yet untapped source of methane. The Department of Energy's Methane Hydrate Research and Development Program has been tasked since 2000 to implement and coordinate a national methane hydrate research effort to stimulate the development of knowledge and technology necessary for commercial production of methane from methane hydrate in a safe and environmentally responsible way. This report evaluates the program's research projects and management processes since its congressional re-authorization in 2005, and presents recommendations for its future research and development initiatives.

[http://www.nap.edu/catalog.php?record\\_id=12831](http://www.nap.edu/catalog.php?record_id=12831)

### **Defending Planet Earth: Near-Earth Object Surveys and Hazard Mitigation Strategies: Final Report**

The United States spends approximately four million dollars each year searching for near-Earth objects (NEOs). The objective is to detect those that may collide with Earth. The majority of this funding supports the operation of several observatories that scan the sky searching for NEOs. This, however, is insufficient in detecting the majority of NEOs that may present a tangible threat to humanity. A significantly smaller amount of funding supports ways to protect the Earth from such a potential collision or "mitigation." In 2005, a Congressional mandate called for NASA to detect 90 percent of NEOs with diameters of 140 meters or greater by 2020. This report identifies the need for detection of objects as small as 30 to 50 meters as these can be highly destructive.

[http://www.nap.edu/catalog.php?record\\_id=12842](http://www.nap.edu/catalog.php?record_id=12842)

### **Travel Demand Forecasting 2009, Volume 1**

Transportation Research Board (TRB)'s Transportation Research Record: Journal of the Transportation Research Board, No. 2132 includes 16 papers that explore transit, land use, and auto pricing strategies to reduce vehicle miles and greenhouse gas emissions; how travel attributes affect planning time horizon of activities; and adding mode choice to multiagent transport simulation.

[http://www.trb.org/Main/Blurbs/Travel\\_Demand\\_Forecasting\\_2009\\_Volume\\_1\\_162864.aspx](http://www.trb.org/Main/Blurbs/Travel_Demand_Forecasting_2009_Volume_1_162864.aspx)

## **Travel Demand Forecasting 2009, Volume 2**

TRB's Transportation Research Record: Journal of the Transportation Research Board, No. 2133 includes 14 papers that explore adapting travel models and urban models to forecast greenhouse gases, intrametropolitan location of business establishments, and spatial equity analysis on expressway network development in Japan.

[http://www.trb.org/Main/Blurbs/Travel\\_Demand\\_Forecasting\\_2009\\_Volume\\_2\\_162863.aspx](http://www.trb.org/Main/Blurbs/Travel_Demand_Forecasting_2009_Volume_2_162863.aspx)

## **National Academies In Focus**

The latest issue of The National Academies In Focus, is now online. Articles feature several recent reports, including ones that examine the recommend steps to improve health worldwide, take an in-depth look at America's energy portfolio and options for the future, and assess the long-range travel of air pollutants and how to identify the sources of local pollution.

<http://infocusmagazine.org>

## **NEW PROJECTS**

### **Human and Environmental Exposure Science in the 21st Century**

An NRC committee will develop a long-range vision for exposure science and a strategy with goals and objectives for implementing the vision over the next twenty years. It will include development of a unifying conceptual framework for advancement of exposure science to study and assess human and ecological contact with chemical, biological, and physical stressors in their environments. In developing the vision and strategy, the committee will consider exposure assessment guidelines and practices used by EPA and other federal agencies, the use and development of advanced knowledge and analytic tools, and ways of incorporating more complete understanding of exposure into risk assessment, risk management, and other applications for human health and ecological services.

<http://www8.nationalacademies.org/cp/projectview.aspx?key=49180>

## **UPCOMING MEETINGS**

### **February**

**The Network for Emerging Leaders in Sustainability (NELS)**, February 25, 2010, Washington, DC

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

**Independent Scientific Review of Everglades Restoration Progress**, February 25-26, 2010, Washington, DC

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3986>

**Missouri River Recovery and Associated Sediment Management Issues**, February 25-26, 2010, Washington, DC

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingID=4214&MeetingNo=5>

**Stabilization Targets for Atmospheric Greenhouse Gas Concentrations**, February 25-26, 2010, Washington, DC

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingID=4213&MeetingNo=5>

## March

**Spatial Data Enabling USGS Strategic Science in the 21st Century**, March 1-2, 2010, Irvine, CA

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=4180>

**Panel on Materials Science and Engineering**, March 1-3, 2010, Gaithersburg, MD

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingID=4219&MeetingNo=2>

**Clean Water Act Implementation across the Mississippi River Basin**, March 2-3, 2010, New Orleans, LA

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=4189>

**Raleigh Grand Challenge Summit 2010**, March 3-5, 2010, Raleigh, NC

<http://summit-grand-challenges.pratt.duke.edu/raleigh-summit>

**NAE Regional Meeting and Seminar on Water and Health**, March 4, 2010, Boston, MA

[http://engineering.tufts.edu/1181647323867/Engineering-Page-eng2w\\_1265119987750.html](http://engineering.tufts.edu/1181647323867/Engineering-Page-eng2w_1265119987750.html)

**Economic and Environmental Impacts of Increasing Biofuels Production**, March 5-6, 2010, Washington, DC

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=4193>

**A Framework and Guidance for Health Impact Assessment** (rescheduled from 2/11/2010), March 8-9, 2010, Washington, DC

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingID=4170&MeetingNo=1>

**America's Climate Choices**, March 10-12, 2010, Washington, DC

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=4204>

**2010 Indo-America Frontiers of Engineering Symposium**, March 10-13, 2010, Agra, India

<http://www.nae.edu/Programs/FOE/IAFOE/page2010.aspx>

**Pandemics in Retrospective**, March 11, 2010, Washington, DC

<http://www.koshland-science-museum.org/events/upcomingevent.jsp?id=386>

**Offshore Wind Energy Projects**, March 25-26, 2010, Washington, DC

[http://www.trb.org/Calendar/Blurbs/Offshore\\_Wind\\_Energy\\_Projects\\_162690.aspx](http://www.trb.org/Calendar/Blurbs/Offshore_Wind_Energy_Projects_162690.aspx)

## April

**Phoenix Grand Challenges Summit 2010**, April 8-9, 2010, Phoenix, AZ

<http://summit-grand-challenges.pratt.duke.edu/phoenix-summit>

**NAE Regional Meeting and Research Expo - Igniting Innovation: America's Energy Future**, April 15, 2010, San Diego, CA

<http://www.jacobsschool.ucsd.edu/re/nae.shtml>

**Boston Grand Challenges Summit 2010 on the Educational Imperatives of the Grand Challenges**, April 21, 2010, Wellesley, MA

<http://grandchallengesummit.olin.edu>

**The Dish: Do We Need a Climate Solution for Indoors?**, April 21, 2010, Washington, DC

<http://www.koshland-science-museum.org/events/upcomingevent.jsp?id=390>

**Chicago Grand Challenges Summit 2010**, April 21-22, 2010, Chicago, Illinois

[http://www.iit.edu/grand\\_challenges](http://www.iit.edu/grand_challenges)

**2010 German-American Frontiers of Engineering Symposium**, April 22-25, 2010,  
Knoxville, TN  
<http://www.nae.edu/Programs/FOE/GAFOE/2010GAFOE.aspx>

## **PROJECTS IN DEVELOPMENT**

### **A Sustainability Challenge: Food Security for All**

The National Academies' Roundtable on Science and Technology for Sustainability proposes to convene two public workshops in 2010 to help establish the dimensions of the food security challenge and explore how to sustainably meet growing food demands during the coming decades. The first workshop, *Measuring Food Insecurity and Assessing the Sustainability of Global Food Systems*, will examine the empirical basis for past trends, the current situation and projections for the future. The second workshop, *Exploring Sustainable Solutions for Increasing Global Food Supplies*, will examine a set of issues fundamental to assuring that food supplies can be increased to meet the needs of the world's growing population--now expected to grow to 9 billion by the year 2050.

### **Regional Approaches to Urban Sustainability: Challenges and Opportunities**

The National Academies proposes to organize a series of workshops beginning in Spring 2010 to foster discussion of regional approaches to making U.S. metropolitan areas more sustainable, with an emphasis on building the evidence base upon which policies and programs might be developed. Making our communities more sustainable often requires context-specific, place-based approaches – a “cookie-cutter” approach to development will not work, given our diverse regional economies, ecosystems, and communities. Key participants in these workshops will include local and state decision-makers (mayors, city/country administrators, planning directors), academic researchers, regional NGOs, and federal agency representatives. Funding is currently being sought for this project.

### **Trends, Challenges, and Pathways to Urban Sustainability, an International Symposium**

Today's world is highly interconnected through information technologies and global commerce-cities, however, still often rely on 19th century technologies and early 20th century infrastructure. This highlights the reality that urbanizing regions are not always amenable to a quick technological fix, but a century of experience in developing metropolitan regions, combined with new tools to decipher and disseminate information, will allow us to transform the way 21st century cities develop. The National Academies and international partners propose to organize a symposium in 2010 on the challenges and opportunities of finding ways to meet the needs of an increasingly urbanized world while sustaining critical resources and natural systems for future generations. The symposium will bring together city managers and planners, urban researchers from government and academia, and leaders from the donor and finance communities. Participants will share lessons learned and discuss how to mobilize their collective knowledge on what works and why, so that this century's urban areas will become substantially more sustainable than existing cities are today, and so that urban impacts on global sustainability are recognized and minimized. This symposium will build on existing initiatives, such as the World Urban Forum V scheduled for March 2010, with an eye towards connecting and learning from these isolated activities, and catalyzing additional resources and partners to engage in this critically important issue. Cities are complex systems, and fostering sustainable urban areas



requires an integrated, cross-sectoral, and multi-disciplinary approach; the proposed effort would be a promising step along that path.

## **ONGOING ACTIVITIES**

### **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>

### **From the January 2010 Issue:**

#### **Estimating Least-developed Countries' Vulnerability to Climate-related Extreme Events over the Next 50 Years**

<http://www.pnas.org/content/107/4/1333.full>

To learn more about sustainability activities, both in the STS program and throughout the other boards and committees of the National Academies, please visit our webpage at:

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

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