



September 2009

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

## NEWS

### **2010 TRB 89th Annual Meeting Registration is Open: Register Now!**

The registration and hotel reservations processes are now open for the Transportation Research Board (TRB) 89th Annual Meeting, January 10-14, 2010 in Washington, DC. Register before November 30th to take advantage of the lower fees, to obtain a hotel guest room, and to gain access to the Interactive Program which contains full session and individual presentation information that will be available on the website in November. The

spotlight theme for 2010 is Investing in Our Transportation Future – BOLD Ideas to Meet BIG Challenges.

<http://www.trb.org/AnnualMeeting2010/Public/AM2010Registration.aspx>

## CALL FOR APPLICATIONS

### **Christine Mirzayan Science and Technology Policy Graduate Fellowship Program**

The deadline for applications to the Christine Mirzayan Science and Technology Policy Graduate Fellowship Program of the National Academies is November 1. Graduate students and postdoctoral scholars and those who have completed graduate studies or postdoctoral research within the last five years are eligible to apply.

<http://sites.nationalacademies.org/PGA/policyfellows/index.htm>

### **Research Associateship Programs of the National Research Council**

The Research Associateship Programs are accepting electronic applications for graduate, postdoctoral, and senior research opportunities at U.S. government laboratories and affiliated institutions. Submission deadline is November 1.

<http://sites.nationalacademies.org/pga/rap>

### **Ford Foundation Diversity Fellowships Program**

The Ford Foundation Diversity Fellowships Program will offer awards in 2010 for research-based study in the sciences and humanities at the predoctoral, dissertation, and postdoctoral levels. Applications due November 2.

<http://sites.nationalacademies.org/PGA/FordFellowships/index.htm>

## NEW REPORTS

### **Global Sources of Local Pollution: An Assessment of Long-Range Transport of Key Air Pollutants to and from the United States**

Recent advances in atmospheric monitoring and modeling indicate that air pollution can be transported across oceans and continents, affecting air quality and ecosystems in locations far from the original pollution source. Characterizing the magnitude and impacts of transported pollution remains difficult, but these impacts could be considered ‘significant’ from a regulatory and public health perspective. This National Research Council report assesses the long-range atmospheric transport of four key types of pollutants: ozone, particulate matter, mercury, and persistent organic pollutants, to help policymakers and air quality managers better understand the issues associated with transported pollution. The report recommends the creation of an integrated pollution source attribution system, which will help to better quantify and predict future impacts of transported pollution and design effective response strategies.

[http://www.nap.edu/catalog.php?record\\_id=12743](http://www.nap.edu/catalog.php?record_id=12743)

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

Now more than ever, biology has the potential to contribute practical solutions to many of the major challenges confronting the United States and the world. This report recommends that a “New Biology” approach – one that depends on greater integration within biology, and closer collaboration with physical, computational, and earth scientists, mathematicians

and engineers – be used to find solutions to four key societal needs: sustainable food production, ecosystem restoration, optimized biofuel production, and improvement in human health. The approach calls for a coordinated effort to leverage resources across the federal, private, and academic sectors to help meet challenges and improve the return on life science research in general.

[http://www.nap.edu/catalog.php?record\\_id=12764](http://www.nap.edu/catalog.php?record_id=12764)

### **Uncertainty Management in Remote Sensing of Climate Data: Summary of a Workshop**

Satellites and other remote sensing tools have gathered a great deal of useful data on the Earth's climate system. Much of this data is complex, with multiple components and sources of uncertainty. This summary highlights discussions at a workshop, held on December 4, 2008, which brought statisticians, climate scientists, and experts in remote sensing together to confer on managing uncertainties in remotely sensed climate data. Attendees raised issues for researchers to consider in the future, including improvements in spatial and temporal autocorrelation, and increased physical knowledge in statistical modeling. Participants discussed the need for further collaborations between earth scientists and statisticians to develop a comprehensive statistical framework for analyzing remotely sensed climate data and aid in communicating uncertainties.

[http://www.nap.edu/catalog.php?record\\_id=12677](http://www.nap.edu/catalog.php?record_id=12677)

### **Global Issues in Water, Sanitation, and Health: Workshop Summary**

As the human population grows – tripling in the past century while, simultaneously, quadrupling its demand for water – Earth's finite freshwater supplies are increasingly strained, and also increasingly contaminated by domestic, agricultural, and industrial wastes. Recognizing that water availability, water quality, and sanitation are fundamental issues underlying infectious disease emergence and spread, the Institute of Medicine held a two-day public workshop, summarized in this volume. Through invited presentations and discussions, participants explored global and local connections between water, sanitation, and health; the spectrum of water-related disease transmission processes as they inform intervention design; lessons learned from water-related disease outbreaks; vulnerabilities in water and sanitation infrastructure in both industrialized and developing countries; and opportunities to improve water and sanitation infrastructure so as to reduce the risk of water-related infectious disease.

[http://books.nap.edu/catalog.php?record\\_id=12658](http://books.nap.edu/catalog.php?record_id=12658)

### **Guidance for Establishing Crisis Standards of Care for Use in Disaster Situations: A Letter Report**

The influenza pandemic caused by the 2009 H1N1 virus underscores the immediate and critical need to prepare for a public health emergency in which thousands, tens of thousands, or even hundreds of thousands of people suddenly require and seek medical care in communities across the United States. At the request of the Office of the Assistant Secretary for Preparedness and Response in the Department of Health and Human Services, the Institute of Medicine convened a committee to develop guidance for crisis standards of care that should apply in disaster situations – both naturally occurring and manmade – under scarce resource conditions. This report is focused on articulating current concepts and guidance that can assist state and local public health officials, healthcare facilities, and

professionals in the development of systematic and comprehensive policies and protocols for crisis standards of care in disasters where resources are scarce.

[http://www.nap.edu/catalog.php?record\\_id=12749](http://www.nap.edu/catalog.php?record_id=12749)

### **Sustaining Global Surveillance and Response to Emerging Zoonotic Diseases**

Recent outbreaks of pandemic H1N1 (so-called “swine flu”), avian influenza H5N1 (“bird flu”), and severe acute respiratory syndrome (SARS) are examples of how zoonotic diseases – those transmissible between humans and animals – can threaten health and economies around the world. Zoonotic diseases have caused more than 65 percent of emerging infectious disease events in the past six decades, and increasing global interconnectedness means that humans, animals, and animal products can circumnavigate the globe in hours, making virtually all locations vulnerable to the diseases they may carry. This report assesses global disease surveillance capacity and makes recommendations for improving that capacity for early detection and response to zoonotic diseases outbreaks.

[http://www.nap.edu/catalog.php?record\\_id=12625](http://www.nap.edu/catalog.php?record_id=12625)

### **Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO2 Emissions – Special Report 298**

Transportation Research Board (TRB) Special Report 298: Driving and the Built Environment: Effects of Compact Development on Motorized Travel, Energy Use, and CO2 Emissions examines the relationship between land development patterns and vehicle miles traveled (VMT) in the United States to assess whether petroleum use, and by extension greenhouse gas (GHG) emissions, could be reduced by changes in the design of development patterns. The report estimates the contributions that changes in residential and mixed-use development patterns and transit investments could make in reducing VMT by 2030 and 2050, and the impact this could have in meeting future transportation-related GHG reduction goals.

[http://www.nap.edu/catalog.php?record\\_id=12747](http://www.nap.edu/catalog.php?record_id=12747)

### **Critical Issues in Aviation and the Environment 2009**

TRB’s Transportation Research Circular E-C138: Critical Issues in Aviation and the Environment 2009 explores the major environmental media affected by aviation activities and the key processes that link aviation and the environment, including climate change, alternative fuels, and sustainability. The circular focuses on the state of science, rather than on policy, and the authors of various portions of the circular identify research that has the potential to yield benefits for both aviation and the environment during the next several years to several decades.

<http://onlinepubs.trb.org/onlinepubs/circulars/ec138.pdf>

### **Frontiers in Soil Science Research: Report of a Workshop**

On December 12-14, 2005, the National Academies convened the Frontiers in Soil Science Research Workshop, summarized in this volume, to identify emerging areas for research in soil science by addressing the interaction of soil science subdisciplines, collaborative research with other disciplines, and the use of new technologies in research. The workshop focused around seven key questions addressing research frontiers for the individual soil science disciplines, and also addressing the need for integration across soil science with other disciplines.

[http://www.nap.edu/catalog.php?record\\_id=12666](http://www.nap.edu/catalog.php?record_id=12666)

## NEW PROJECTS

### **An Ocean Infrastructure Strategy for U.S. Ocean Research in 2030**

For more information, please visit:

<http://www8.nationalacademies.org/cp/projectview.aspx?key=49139>

### **The Effect of Climate Change on Indoor Air Quality and Public Health**

For more information, please visit:

<http://www8.nationalacademies.org/cp/projectview.aspx?key=49138>

### **Underground Geoen지니어ing for Sustainable Development**

For more information, please visit:

<http://dels.nas.edu/dels/sot.php?pin=BESR-U-08-06-A>

### **Developing Metrics for Department of Homeland Security Science and Technology Research: A Study**

For more information, please visit:

<http://www8.nationalacademies.org/cp/projectview.aspx?key=49084>

## UPCOMING MEETINGS

### **October**

**Review of the St. Johns River Water Supply Impact Study**, September 30, 2009 - October 2, 2009, Orlando, FL

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3799>

**“I’ve Looked at Clouds That Way” – Weaving American Indian Perspectives into the Study of Weather and Climate**, October 1, 2009, Woods Hole, MA

[http://www.nasonline.org/site/PageServer?pagename=Jonsson\\_Upcoming\\_Events](http://www.nasonline.org/site/PageServer?pagename=Jonsson_Upcoming_Events)

**TRB Webinar: State and Local Government Responses to Climate Change**, October 6, 2:00pm to 3:30pm EDT

[http://www.trb.org/Main/Public/Blurbs/TRB\\_Webinar\\_State\\_and\\_Local\\_Government\\_Responses\\_t\\_162233.aspx](http://www.trb.org/Main/Public/Blurbs/TRB_Webinar_State_and_Local_Government_Responses_t_162233.aspx)

**Progress and Priorities of US Weather Research and Research-to-Operations Activities**, October 6-7, 2009, Boulder, CO

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3827>

**Waste Form Technology and Performance**, October 7-9, 2009, Idaho Falls, ID

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3843>

**Out and About at the Green Festival**, October 10-11, 2009, Washington, DC

<http://www.koshland-science-museum.org/events/upcomingevent.jsp?id=365>

**Assessment of Water Reuse as an Approach for Meeting Future Water Supply Needs**, October 11-13, 2009, Orlando FL

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3844>

**2009 IOM Annual Meeting, Sustainably Healthy Environments: Water, Cities, Climate**, October 12, 2009, Washington, DC

<http://iom.edu/CMS/73421.aspx>

**Meeting of the Committee on Earth Resources**, October 12-13, 2009, Washington, DC

[http://dels.nas.edu/besr/cer\\_events\\_Oct09.shtml](http://dels.nas.edu/besr/cer_events_Oct09.shtml)

**The Great Warming**, October 14, 2009, Irvine, CA

[http://www.nasonline.org/site/PageServer?pagename=Beckman\\_DV\\_Fall2009](http://www.nasonline.org/site/PageServer?pagename=Beckman_DV_Fall2009)

**2009 China-America Frontiers of Engineering Symposium**, October 17-21, 2009, Beijing and Changsha, China

<http://www.nae.edu/Programs/FOE/CAFOE/page200912230.aspx>

**Diminishing Natural Resources: Recognizing Limitations, Responding to the Challenges**, October 20-21, 2009, Washington, DC

<http://sites.nationalacademies.org/pga/guirr/index.htm>

**TRB Webinar: Driving and the Built Environment: The Effects of Compact Development on Motorized Travel, Energy Use, and CO<sub>2</sub> Emissions**, October 21, 2:00pm to 3:00pm EDT

<https://www1.gotomeeting.com/register/606169224>

**Infectious Disease in the Age of Google**, October 22, 2009, Washington, DC

<http://www.koshland-science-museum.org/events/upcomingevent.jsp?id=363>

**Review of the FreedomCAR and Fuel Research and Development Partnership, Phase 3**, October 26-27, 2009, Washington DC

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3795>

**America's Climate Choices**, October 27-28, 2009, Washington DC

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3848>

**National Earthquake Resilience - Research, Implementation, and Outreach**, October 28-30, 2009, Chicago, IL

<http://www8.nationalacademies.org/cp/meetingview.aspx?MeetingId=3771>

**Providing Healthy and Safe Foods as We Age**, October 29-30, 2009, Washington, DC

<http://iom.edu/CMS/3788/4598/70939.aspx>

## November

**2009 Japan-America Frontiers of Engineering Symposium**, November 9-11, 2009, Irvine, CA

<http://www.nae.edu/Programs/FOE/JAFOE/2009JAFOE.aspx>

**Fifth Annual Meeting of the African Science Academy Development Initiative, Improving Maternal, Newborn, and Child Health in Sub-Saharan Africa**, November 10-11 2009, Accra, Ghana

[http://www.nationalacademies.org/asadi/2009\\_Conference/ASADI5-GhanaReg.html](http://www.nationalacademies.org/asadi/2009_Conference/ASADI5-GhanaReg.html)

**Developing a Research Agenda for Transportation Infrastructure Preservation and Renewal Conference**, November 12-13, 2009, Washington, DC

<http://guest.cvent.com/EVENTS/Info/Summary.aspx?e=71a7d31d-5989-4cae-aa9a-3ee5e4a73b56>

**Developments in Climate Change**, November 19, 2009, Irvine, CA

[http://www.nasonline.org/site/PageServer?pagename=Beckman\\_DV\\_Fall2009](http://www.nasonline.org/site/PageServer?pagename=Beckman_DV_Fall2009)

## PROJECTS IN DEVELOPMENT

### A Sustainability Challenge: Food Security for All

The National Academies' Roundtable on Science and Technology for Sustainability will convene two public workshops in 2010 to help establish the dimensions of the sustainability challenge and explore the risks and opportunities that will be involved if the world is to achieve sustainable global food security by 2050. A 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. A second workshop, *Exploring the Environmental Risks and Opportunities for Sustainable Global Food Security*, will discuss the

conceptual and empirical interactions between food security and natural resource management/climate change and long-term perspectives (towards 2050) for sustainable food security. Funding is currently being sought for this project.

[http://sustainability.nationalacademies.org/proj\\_dev.shtml](http://sustainability.nationalacademies.org/proj_dev.shtml)

## **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 September 2009 Issue:**

**Between-country Collaboration and Consideration of Costs Increase Conservation Planning Efficiency in the Mediterranean Basin**

<http://www.pnas.org/content/106/38/16129.full>

**Forest Transition in Vietnam and Displacement of Deforestation Abroad**

<http://www.pnas.org/content/106/38/16139.full>

**Feeding Aquaculture in an Era of Finite Resources**

<http://www.pnas.org/content/106/36/15103.full>

**Setting Cumulative Emissions Targets to Reduce the Risk of Dangerous Climate Change**

<http://www.pnas.org/content/106/36/15368.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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