
ENGINEERS FORUM ON SUSTAINABILITY

Sustainable Education, Economics, and Megacities Highlighted

At the January 23, 2004 meeting of the Engineers Forum on Sustainability, participants heard and discussed developments in sustainable education and economics, and the sustainability challenges of megacities. These presentations are summarized in this issue of the Forum Newsletter.

This issue also introduces several modest changes in format, designed to facilitate access to articles of particular interest to the reader. Articles are now grouped in five categories: GOVERNMENT, ACADEMIA, INTERNATIONAL, PROFESSIONAL ORGANIZATIONS, and OTHER ORGANIZATIONS AND DEVELOPMENTS. Further, we are now including several full length articles, plus a number of short articles with electronic links to the full text material, to broaden the range of material presented and to reduce reading time, where desired. Finally, please note that the Index of Forum Newsletter Articles is organized under the same five categories as above, and can be found by visiting www.asce.org/instfound/techcomm_cs.cfm.

The next meeting of the Forum is scheduled for Friday, May 28, 2004, in the Lecture Room of the National Academy of Engineering in Washington, D.C. The Forum will meet from 9 am to noon, and the AAES International Activities Committee/Engineers International Roundtable will meet in the same room from 1 pm to 4 pm. Please mark your calendars for these two events. Detailed agendas will be e-mailed to you prior to the meetings. - Al Grant, Forum Chair

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GOVERNMENT

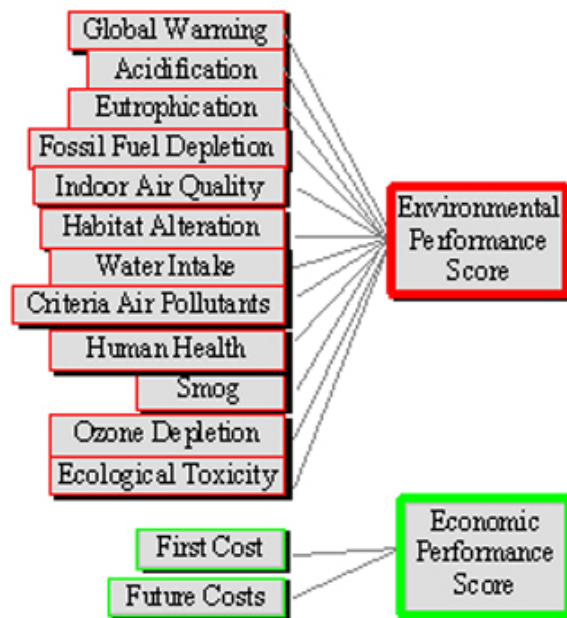
BEES 3.0 Tool Available

The 2002 Farm Bill mandated the creation of a program awarding Federal purchasing preference to biobased products. To address the questions of environmental and cost performance, candidate biobased products are being evaluated by the BEES (Building for Environmental and Economic Sustainability) tool, and performance results shared with Federal purchasers.

The National Institute of Standards and Technology (NIST), an agency of the U.S. Department of Commerce that works with U.S. industry to develop and apply technology, measurements, and standards, began developing the BEES decision-making tool in 1994. With over 9,000 users, BEES has become the most popular tool of its kind in the world. Its power lies in providing understandable, science-based information often lacking from “green”

marketing claims. BEES development has been supported by the U.S. Department of Agriculture, the U.S. Environmental Protection Agency (EPA) Environmentally Preferable Purchasing Program, and NIST.

BEES measures the environmental performance of products by using the internationally standardized and science-based life-cycle assessment approach specified in ISO 14000. All stages in the life of a product are analyzed: raw material acquisition, manufacture, transportation, installation, use, and recycling and waste management. Economic performance is measured using the ASTM standard life-cycle cost method, which covers the costs of initial investment, replacement, operation, maintenance and repair, and disposal. The impacts evaluated over time for each performance measure follows:



Download a free copy of BEES 3.0 at www.bfrl.nist.gov/oae/software/bees.html. If you prefer a free BEES 3.0 compact disc and printed manual, place your order through the EPA Pollution Prevention Information Clearinghouse by calling 202-566-0799 or e-mailing ppic@epamail.epa.gov.

EPA Seeks Reviewers for Student Design Competition

The Environmental Protection Agency (EPA) P3 Award Student Design Competition for Sustainability will provide grants to teams of college students to research, develop, and design solutions to sustainability challenges. P3 highlights the three pillars of sustainability—people, prosperity, and the planet—as the next step beyond P2 or pollution prevention. EPA and its affiliates offer the P3 Award competition to respond to the technical needs of the developed and developing world in moving toward the goal of sustainability.

EPA is looking for a mix of reviewers from government (non-EPA), academia, and industry, as well as local and regional. The peer review panels will be held for two days in Washington, D.C. in May or June. The review categories are:

agriculture, built environment, chemicals and materials, energy, ecosystems, delivery of resources, water, and general sustainability. The peer review division of EPA will contact individuals who wish to be considered as reviewers to obtain a copy of their resume or CV and discuss preliminary dates to determine availability. Individuals selected to serve as reviewers will receive a professional services fee and government per diem and reimbursement of travel expenses.

For further information about the competition, contact Julie Beth Zimmerman, Ph.D., U.S. EPA Office of Research and Development, Phone 202-564-1589, Fax 202-565-2447, or zimmerman.julie@epa.gov.

ACADEMIA

University of Florida Plans for Global Sustainability Leadership

An ambitious plan for the University of Florida (UF) to become a global sustainability leader was presented by Dave Newport, UF's Sustainability Director, at the January 23rd meeting of the Forum. The 45-point plan, designed by a high level task force at the university, calls for the University to determine a timeline by which it can attain so-called carbon-neutrality. The resulting no net emissions of carbon would be a first among universities worldwide.

In addition to its 45 recommendations, the task force found that “A comprehensive approach towards sustainability at the University of Florida is needed not only to remain a competitive research-intensive institution, but as an integral tool to achieving world-class prominence.”

The emergence of a sustainability agenda and mandate at UF grew from a fledgling student and faculty initiative in 1997. Then, in 2001, UF's President and the faculty senate jointly empowered a task force with the “global leadership” mission. Movement towards this mission was measured in a Sustainability Indicators Report released in 2001. The report

was the first from a university that was prepared in accordance with global business standards. An updated report is due later this year.

The 2001 report showed UF making good gains on various environmental and fiscal metrics, but still facing distinct challenges. Energy consumption and the concurrent emission of greenhouse gases (GHGs) showed a marked decline over the five year reporting period covered in the report. Similar reductions in water use and waste generation were also seen as a result of several progressive initiatives. However, research related to sustainability issues sagged through the period, and social indicators related to faculty and student diversity were cited as problematic.

Both the indicators report and the task force recommendations cited a need to better coordinate community-interface programs and opportunities. The “town-gown” gap present in many universities is also the norm at UF, and sustainability advocates insist that a strong commitment to sustainability would mitigate these challenges. The task force concluded that to usher in the wholesale institutionalization of sustainability at UF means a central coordinating

entity needs to be established that spans the academic and operational sides of the university. Further implementation of the plan currently awaits approval by the new President.

For further information, contact Dave Newport at dnewport@ufl.edu.

Georgia Tech Plans Sustainability Research Facility Expansion

The mission of the Georgia Tech Research Institute (GTRI), as chartered by the State of Georgia legislature, is to “plan and conduct programs of innovative research and development, education, and economic development that advance the global competitiveness and security of Georgia, the region and the nation.” The purpose of the Cobb County Research Facility (CCRF) Renovation and Expansion Project is to provide a sustainable retrofit of the existing CCRF buildings and construction of a new building dedicated to research and education related to energy, the environment, and sustainability. The project will serve as the impetus for the development of innovative technologies that dramatically improve energy efficiencies, the environment, and human health.

GTRI will construct one new sustainable building (30,000 s.f.), retrofit the five existing facilities as sustainable facilities, and then incorporate these facilities for expanded sustainability, energy, environmental research, training, and education. Critical elements of this

For more information, contact Kenneth E. Johnson, Division Chief & Associate Laboratory Director, at 404-894-2184 (ken.johnson@gtri.gatech.edu).

Leadership in Energy and Environmental Design (LEED) project include:

- State-of-the-art energy retrofit of five existing Cobb County Research Buildings. (This project will include LEED certification under the LEED criteria for existing buildings.)
- Construction of a green showcase building for research, training, conferences, and office space for research and technical support. (This project will seek a LEED Platinum certification.)
- Construction of numerous training zones for environmental health and safety training.
- Construction of a Plasma Arc Technology Research Facility for research related to the conversion of waste materials to an alternative energy resource.
- Wetland reclamation and establishment of a wastewater treatment system.
- Demonstration of a variety of photovoltaic installations.

Mascaro Sustainability Initiative Announced

The University of Pittsburgh School of Engineering has embarked on the new Mascaro Sustainability Initiative aimed at creating a nationally recognized center on sustainable engineering. It is the goal of this seed grant program to elicit proposed technical solutions to problems in the areas of green construction and the sustainable use of water. It is expected that research will describe next-generation solutions with a high level of innovation, and hence a high level of risk, mandating the need for seed grants for this initiative rather than a more conventional source.

The goals of the initiative will be achieved through interdisciplinary postdoctoral research, undergraduate and graduate summer research

projects, a bi-annual scientific conference, and educational programs and outreach. This year, the Mascaro Sustainability Initiative will fund and award five to ten summer research grants aimed at engaging undergraduate students in meaningful ways in on-going research projects in sustainability.

For further information, contact Gena M. Kovalcik, Co-Director, Administrative & External Relations, at 412-624-9698 (kovalcik@engr.pitt.edu) or Dr. Eric J. Beckman, Science & Technology, at 412-624-9631 (beckman@engr.pitt.edu).

INTERNATIONAL

The Challenges of Sustainable Megacities

(Ed. Note: The following is abstracted from the presentation of George Bugliarello, Foreign Secretary, National Academy of Engineering, and University Professor, Polytechnic University, at the January 23rd Forum meeting.)

Megacities are increasingly a developing world phenomenon that will affect the future prosperity and stability of the world. The percentage of world population in cities over 100,000 went from 5% in 1900 to 45% (2.5 billion) in 1995. By 2005, the United Nations estimates the percentage will increase to 61% (5.0 billion). The number of cities with over one million in population went from 49 in 1950 to 112 in 1995 in the developed world, and from 24 to 213 in the same period in the developing world. For “megacities” (cities with over 10 million in population), there were 2 in 1975 and an estimated 5 in 2005 in the developed world, and 3 in 1975 and an estimated 22 in 2015 in the developing world.

As a consequence of this population growth, developing world cities are experiencing rapid growth that overwhelms their resources. They need different technologies and fast action in planning, infrastructure, public health, and education. And developed world cities are not a model for the developing world.

There is a crying need for technology based in a new socio-technological context, with different

settings, needs, challenges, and opportunities than developed world megacities. This new technology must provide more choices, better tools to address challenges, and new markets.

Sample specifications for these new technologies include low cost, low maintenance, ease of repair, “good enough” (to meet pressing needs), high local content, different labor-machine equation, high export potential, and social and environmental acceptability.

Examples of needed technologies include simpler vehicles with high local content, cheap people-movers, simple sanitation systems, and local energy transformers. Also needed are flexible multi-modal systems in transportation, water supply, and waste removal; materials, supplies, and methods for self-help; and pay per use systems.

Smart megacity strategies include joint efforts with other megacities in R&D, developing a consolidated market, and creating a global market-oriented education program for software, devices, and services, for example tourism, health care, finance, and maintenance.

New WFEO Committee on Capacity Building Approved

With the United States rejoining the United Nations Educational, Scientific and Cultural Organization (UNESCO), U.S. engineering societies, through the American Association of Engineering Societies (AAES), developed a proposal entitled “Engineering for a Better World - Engineering and Technology for International Development.” Submitted to the Department of State for its input to the UNESCO governance, this proposal outlines a program to promote capacity building in engineering and technology for poverty eradication and for secure and sustainable social and economic development.

To support this effort and continue the strong support of AAES and its member societies in the World Federation of Engineering Organizations (WFEO), AAES presented the proposal to

WFEO at its annual meeting in Tunis, and obtained approval to form a new committee on capacity building within the WFEO structure. This committee would utilize the engineering talents from around the world to address engineering capacity building in developing countries.

Elements of the proposed activity would include:

- Providing pathways for the technical and professional societies of the developed world to make their expertise available to engineers in the developing world, including technical publications, conferences, codes of practice, and ethics.
- Utilizing state-of-the-art distance learning technology to deliver needed information and

interactions to engineers and engineering educators in developing countries.

- Strengthening engineering education, both initial and lifelong learning, in developing countries, including making available global best practices in curriculum reform and engineering work.
- Providing an information resource for teaching and learning materials, laboratory equipment, software, etc. for the engineering education needs of developing countries.
- Addressing pipeline and diversity issues in providing the needed quality and quantity of engineers for the world's needs.
- Promoting collaborative efforts between institutions in the developed and developing countries.
- Promulgating quality assurance standards and accreditation for engineering education

throughout the world, particularly in developing countries.

- Developing pathways for engineering volunteers in the developed world to spend time and effort working on capacity building in developing countries, including disaster relief needs.

Progress on these activities will be addressed at the next meeting of the AAES International Activities Committee and Engineers International Roundtable on May 28, 2004 at the National Academy of Engineering. For further information, contact Tom Price, AAES Executive Director, at tprice@aaes.org.

U.N. Decade of Education for Sustainable Development Addressed

The United Nations (U.N.) General Assembly has declared a “Decade of Education for Sustainable Development,” and the U.N. Educational, Scientific and Cultural Organization (UNESCO) is serving as the lead agency. Nations are being encouraged to establish their own Decade-oriented activities.

In November 2003, the newly-formed United States Coalition for the Decade of Education for Sustainable Development convened in Washington, D.C. A series of sessions were held and recommendations were developed. Under the heading of “What is Education for Sustainable Development?” subjects discussed were:

- Addressing Income Inequality
- Applying Natural Systems Principles in the Redesign of Educational Programs
- Climate Change and Sustainable Energy
- Core Requirements of Sustainability and Internationalizing the Curriculum
- Developing Institutional Structures to Meet Needs of Sustainable Development
- Educational Content: Concepts and Tools
- Low Impact Development
- Spiritual Foundation of Environmental Ethics
- Sustainability Across the Middle and High School Curriculum

- What Do Models of Sustainable Development Look Like Relative to the Uniqueness of Education?

Under the heading of “Outreach and Delivery Mechanisms,” subjects discussed were:

- Capturing Synergy Among Education for Sustainable Development (ESD) Efforts
- Developing Community Engagement for Sustainability
- Diversity and Inclusivity
- Engaging K-12 Networks
- Faith Communities and Education for Sustainable Development
- Goals for Behavioral Change
- Mechanisms to Sustain Today's Processes and Energy
- Reaching Every Student by 2014
- The Role of Zoos, Museums and Other Informal Education Centers
- A U.S. Role in Supporting ESD in Developing Countries
- Web and Online Resources for Community Building and Information Sharing.

Under the heading of “Measuring Progress,” Sustainable Indicators were discussed.

Summaries for each of these discussions can be found at www.ncseonline.org/EFS/page.cfm?FID=3138.

U.N.C.S.D. Sets Multi-Year Programme

At its most recent session, the United Nations, Commission on Sustainable Development (U.N.C.S.D.) decided that its multi-year programme of work would be organized on the basis of seven two-year cycles, with each cycle focusing on selected thematic cluster issues.

In each cycle, the thematic clusters of issues will be addressed in an integrated manner, taking into account economic and environmental dimensions of sustainable development. The Commission agreed that the implementation process would cover all these issues equally and noted that the selection of some issues for a given cycle did not diminish the importance of the commitments undertaken with respect to the issues to be considered in future cycles. The Commission further agreed that means of implementation should be addressed in every cycle and for every relevant action and commitment.

The cycles and thematic clusters follow:

- 2004/2005 - Water, Sanitation, Human Settlements
- 2006/2007 - Energy for Sustainable Development, Industrial Development, Air Pollution/Atmosphere
- 2008/2009 - Agriculture, Rural Development, Land, Drought, Desertification, Africa
- 2010/2111 - Transport, Chemicals, Waste Management, Mining, A Ten Year Framework of Programmes on Sustainable Consumption and Production Patterns
- 2012/2013 - Forests, Biodiversity, Biotechnology, Tourism, Mountains
- 2014/2015 - Oceans and Seas, Maritime Resources, Small Island Developing States, Disaster Management and Vulnerability
- 2016/2017 - Overall Appraisal of Implementation of Agenda 21, The Programme of Further Implementation of Agenda 21, and the Johannesburg Plan of Implementation

Cross-cutting issues to be addressed in every cycle include: Poverty eradication, Changing unsustainable patterns of consumption and production, Protecting and managing the natural resource base of economic and social development, Sustainable development in a globalizing world, Health and sustainable development, Sustainable development for Africa, Means of implementation, Institutional framework for sustainable development, Gender equality, and Education.

For more information, visit www.un.org/esa/sustdev/csd11/CSD_multiyear_prog_work.htm.

CAETS Celebrates 25th Anniversary

The International Council of Academies of Engineering and Technical Sciences, Inc. (CAETS) was founded in 1978. It has 26 member academies of engineering and technical sciences worldwide. The Secretary/Treasurer is William C. Salmon of the United States.

The objectives of CAETS include:

- Providing an independent nonpolitical and non-governmental organization of academies of engineering and technological sciences, prepared to advise governments and international organizations on technical and policy issues related to its areas of expertise;
- Contributing to the strengthening of engineering and technological activities in order to promote sustainable economic growth and social welfare throughout the world;
- Fostering a balanced understanding of the applications of engineering and technology by the public;
- Providing an international forum for discussion and communication of engineering and technological issues of common concern;
- Fostering cooperative international engineering and technological efforts through meaningful contacts for development of programs of bilateral and multilateral interest;
- Encouraging improvement of engineering education and practice internationally; and
- Fostering establishment of additional engineering academies in countries where none exist.

Proceedings of CAETS Convocations include World Forests and Technology (2001), Technology and Health (1999), Engineering

Innovation and Society (1997), Creating Wealth in Harmony With The Environment (1995), and Sustainable Development: The Challenge of Developing Transportation for Society (1993).

For more information on CAETS, visit www.caets.org.

U.N. Millennium Project Interim Report Available

The Interim Report of the Task Force on Science, Technology and Innovation of the United Nations Millennium Project, commissioned by the U.N. Secretary-General, is available. The report argues that most of the Millennium Development Goals cannot be implemented without continuous effort to generate and use new knowledge as a tool for economic transformation. The presentation focuses on improving the policy environment (especially enhancing science and technology advice), building human capabilities (mainly in scientific, technical, and engineering fields), and promoting business creation (emphasizing small and medium enterprise).

The report can be found at www.unmilleniumproject.org/html/tforce_10.shtml.

PROFESSIONAL ORGANIZATIONS

AAES Re-Activates International Activities Committee

The American Association of Engineering Societies (AAES) recently approved the re-establishment of the International Activities Committee. With AAES involvement in rebuilding engineering capacity in Iraq, with the establishment of a Committee on Capacity Building at the World Federation of Engineering Organizations (See article on New WFEO Committee), and with the support of the U.S. Department of State on the AAES proposal entitled "Engineers for a Better World" for the United Nations Educational, Scientific and Cultural Organization, the AAES Board recognized the need for bringing together the broad AAES membership as work develops in these three areas.

After nearly one year of engineering support to both the Department of State and the Army Corp of Engineers, AAES member societies have started to establish engineering society chapters in Iraq. Individuals from AAES member societies have been interacting with individual Iraqi engineers on a one-on-one basis. Society conference proceedings, standards, and training materials have begun to be exchanged. AAES members expect this effort will continue to grow over the coming years.

AIChE Update on Institute on Sustainability

AIChE will have six sessions in the Green Engineering Topical at the AIChE Spring Meeting in New Orleans, April 26 to 30, 2004. Sessions include: Meeting Business Goals with Green Chemistry - Success At Making It Greener, Applications of Green Chemistry and Engineering in Manufacturing and the Federal Government, From Bench Top to Commercialization: Incentives and Barriers, Critical Issues of Green Chemical Engineering, and Green Processing. A special multidisciplinary session, *University -Based Sustainability Centers*, is being organized by the Mascaro Sustainability Initiative at the University of Pittsburgh. To learn more visit the conference website at www.aiche.org/conferences.

The Bylaws of the Institute for Sustainability have been finalized. IfS will encourage three types of participation: individual, organizational and corporate. The purpose of the IfS shall be to serve the needs of and influence the professionals, academes, industries, and governmental bodies that contribute to the advancement of sustainability and sustainable development. IfS approaches sustainability from the perspectives of engineering and scientific disciplines with the objective of promoting the societal, economic, and environmental benefits of sustainable and green engineering. The IfS encourages cooperation and participation of engineers and scientists, plus their companies, in furthering the

development of decision tools and sharing of technical knowledge. To learn more about the Ifs, email darls@aiche.org.

ASCE Conducts Society-Wide Sustainability Survey

The American Society of Civil Engineers (ASCE) is pursuing various aspects of sustainability in its technical divisions and councils, institutes, and Civil Engineering Research Council. The purpose of the survey is to identify and document the Society-wide breadth and depth of its current and planned sustainability-related activities and programs, and to develop an integrated, cross-cutting sustainability agenda for the profession as a whole.

The survey results will be used as a framework for planning a Society-wide forum on sustainable development to be held in conjunction with the ASCE Annual Conference in Baltimore in October 2004. It is anticipated that the forum will lead to a national workshop to prepare a report on the state-of-the-art and needs for education and practice in sustainable development.

ASEE Engineering Deans Institute Addresses Sustainability

The 2004 Engineering Deans Institute of the American Society for Engineering Education (ASEE) will meet in New Orleans, LA, March 28-31 on the theme of "The Changing Dimensions of Engineering." Among the topics to be addressed by the Deans attending the Institute is "the ever increasing complexity associated with sustainability." This session will be chaired by O. Carroll Karkalits, Dean of the College of Engineering and Technology at McNeese University. Speaker Kennell J. Touryan, Manager of Former Soviet Union Country Programs and Chief Technology Analyst, National Renewable Energy Laboratory, will discuss "Renewable Energy: Rapidly Maturing Technology for the 21st Century"; Mark T. Holtzapple, Professor of Chemical Engineering at Texas A&M University, will talk about "Crops to Wheels"; and Terry Drabant, Corporate Vice President, Lockheed Martin Corporation, will review "Trends in Global Transportation Efficiency."

Participation in the Institute, which meets annually, is limited to full Deans of Engineering in the U.S. and Canada whose institutions have joined the ASEE Engineering Deans Council. Key findings from the Institute meeting will be reported in the next Forum newsletter.

ASME Update on Sustainability

The American Society of Mechanical Engineers (ASME) has initiated efforts to promote and seek collaboration on sustainable development through its various divisions and other engineering organizations. Among its current activities are the following:

- Sustainable Engineering online module for engineering students and early career engineers.
- Partnership with the U.S. Environmental Protection Agency and other organizations on the P3 National Student Design Competition for Sustainable Science and Engineering.
- Sustainable Engineering session at the International Mechanical Engineering Congress & Exposition 2004.
- Sustainable Engineering session at the NMW 2005.
- Creation of a Task Force which aims to facilitate the interaction and activities within the divisions on sustainable development issues.

For more information on ongoing and potential activities visit:

www.asme.org/divisions/ts/committees/progse.html, and
www.asme.org/gric/Policies&Issues/SustainableDevelopment.html.

OTHER ORGANIZATIONS AND DEVELOPMENTS

NAE Developing Grainger Challenge Prize

The National Academy of Engineering (NAE) has been given the opportunity to award an inducement prize of one million dollars for a novel high-impact technical solution to a specific, pressing sustainability challenge (e.g. clean water for developing countries). This prize, supported by the Grainger Foundation, will promote the concept of sustainability more widely, spur new research, stretch existing technologies, and encourage invention and innovation by the engineering community. The Academy is now in the process of designing the competition and is canvassing widely for candidate ideas. The final challenge problem and details will be selected by an NAE panel later this year.

The Grainger Challenge must address an important and commonly understood problem; ideally it will inspire technologists and lay people alike because of its importance. It must be amenable to a viable technical solution that is measurable and reachable in a short time frame (2-3 years). The short time frame probably implies building on existing technologies and/or bodies of research that just need a strong dose of

innovation to make them technically, socially, and commercially viable.

The NAE is currently soliciting ideas on what would make the best contest, and what are the pressing problems and the efforts of industry to address them. It seeks:

1. A definition of the problem and a sense of the impact of its solution;
2. What and how you would measure in competing solutions in order to pick a winner of the contest;
3. Identification of institutions/individuals working on interesting/unique approaches to a solution, and a description of those approaches as a way of indicating that a solution is possible in the time allotted; and
4. Any other relevant comments.

The Academy will be seeking responses over the coming months. Send your ideas to graingerchallenge@nae.edu (preferably), or to: Grainger Challenge, National Academy of Engineering, 2101 Constitution Avenue, NW, Washington, DC 20418.

RNRF Report on Critical Workforce Issues Available

A consortium of leading professional and scientific societies has released a report, "Federal Natural Resources Agencies Confront an Aging Workforce and Challenges to Their Future Roles." The report features findings and recommendations from more than 80 scientists, managers, and professionals, from 60 organizations, who attended the Renewable Natural Resources Foundation's (RNRF's) "Conference on Personnel Trends, Education Policy, and Evolving Roles of Federal and State Natural Resources Agencies." The conference was presented in association with the American Association for the Advancement of Science, in Washington, D.C. in late October 2003.

Government agencies charged with managing and protecting America's renewable natural resources are facing a crisis. Major changes in the federal workforce in the near-term will deprive agencies of significant numbers of senior scientists, engineers, and managers. These

demographic changes, shifting national priorities, and decades of underfunding are diminishing government's role in natural resources management and science.

Some changes in government's role are occurring by default and omission—without discussion and deliberation about agency missions and priorities. Other changes are deliberate and reflect the view that less government is good, even when it comes to managing and conserving the nation's natural resources and sustaining its environmental integrity. These challenges to government's role are occurring as the number of stakeholders is increasing, management is becoming more complex, resource use is rising, and science knowledge grows. An energetic and sustained outreach program to the public is desperately needed.

Copies of the report and conference powerpoint presentations are available at www.rnrf.org.

Religious Partnership for Anacostia River Formed

(Ed. Note: This article is included as an example of the potential of a religious coalition to address a regional environmental sustainability challenge.)

The Religious Partnership for the Anacostia River is a new project initiated by the Chesapeake Bay Foundation and the Earth Conservation Corps to involve Washington area religious organizations in working positively on behalf of the Anacostia River and the people living near it.

The Partnership has its origins in two fundamental religious tenets widely shared across faith traditions—the Creator charges humankind with the stewardship of Creation and with caring for those less fortunate than ourselves. The project builds on the successful Anacostia Pilgrimage organized by the Interfaith Conference of Metropolitan Washington in September 2003, as well as on the desire expressed by several congregations to get more involved with Anacostia issues.

As recently as 300 years ago, the Anacostia river valley was a wonderfully productive ecosystem, teeming with wild rice, fish, birds, mammals, and a few humans. The river ran with clean water, and the Anacostia valley surrounding the river was lush and green.

Today, the Anacostia is one of America's most badly polluted rivers, running with fecal bacteria,

For more information, contact Nora Cameron or Doug Siglin at 202-544-2232 or Anacostia@CBF.org.

NSB Report on Science and Engineering Workforce Available

The National Science Board (NSB) of the National Science Foundation has published a report entitled “The Science and Engineering Workforce: Realizing America's Potential.” The report addresses the challenge for U.S. science and engineering (S&E).

“Historically, the U.S. has benefited from both an abundant supply of indigenous talent and the contributions of a steady stream of scientists, engineers, and graduate students from other countries. This blend of domestic and foreign talent has helped advance the frontiers of knowledge and propel the U.S. to a position of global leadership in S&E.”

Analyses of current trends, however, indicate serious problems lie ahead that may threaten our long-term prosperity and national security. These include:

toxic chemicals, oxygen-depleting nutrients, trash, and other contaminants. Outdated sewers send untreated human waste to the river, light cannot penetrate through the murk, and more than half of the river's brown bullhead fish population has cancerous liver or mouth tumors. The destructive policies and practices of the past three centuries have done unconscionable damage to the ecosystem that had been clean, healthy, and balanced for millennia.

The Religious Partnership for the Anacostia River will bring together representatives from various religious traditions to contribute to the restoration of the Anacostia River and to tangibly assist the residents of the neighborhoods around the river. It is anticipated that the Partnership will develop along three tracks:

1. Learning more about the Anacostia and the people who live near it.
2. Acting to clean up the Anacostia and prevent new pollution from entering the river.
3. Supporting projects to help young people in the neighborhoods near the Anacostia.

- Flat or reduced domestic student interest in critical areas, such as engineering and the physical and mathematical sciences;
- Large increases in retirements from the S&E workforce projected over the next two decades;
- Projected rapid growth in S&E occupations over the next decade, at three times the rate of all occupations;
- Anticipated growth in the need for American citizens with S&E skills in jobs related to national security, following September 11, 2001; and
- Severe pressure on State and local budgets for education of the future S&E workforce.”

The report is electronically available at: www.nsf.gov/nsb/documents/2003/nsb0369/nsb0369.pdf. For paper copies, fill out a web-based order form: www.nsf.gov/pubs/.

Upcoming Sustainability Events

Green Engineering Topical. April 26-30, 2004. New Orleans. Visit: www.aiche.org/conferences.

8th Annual Green Chemistry and Engineering Conference: The Business Imperative for Sustainability. June 28-30, 2004. The National Academies, Washington, DC. Visit: <http://chemistry.org/meetings/greenchem2004.html>

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