

Engineers Forum on Sustainability

An ASCE/ASEE Newsletter

August 2002 Issue

World Summit Tops Sustainability Agenda

Al Grant, Forum Chair

This issue of the Forum Newsletter reflects the growing interest in and attention to the World Summit for Sustainable Development scheduled for Johannesburg, South Africa, August 26 to September 4, 2002. Major articles include a U.S. Engineers Declaration for the Summit, a State Department briefing in preparation for the Summit, and a guest article by the Director-General of the World Health Organization. Related articles include the special edition of the State of the World 2002 which focuses on the Summit, and a compilation of websites on sustainable development case studies prepared by the Summit Secretariat. (See Resource Corner).

Other articles of interest include the work of AIChE's Center for Waste Reduction Technologies, the NCSE's Keys to Sustainable Living, Sustainability in Engineering Curricula, Energy Education, and the Congressional Energy Debate.

TABLE OF CONTENTS

World Summit Tops Sustainability Agenda	1
Health: A Pathway to Sustainable Development.....	1
U.S Engineers Prepare Declaration for WSSD	3
Dr. Neureiter Gives U.S. Briefing to NGOs	4
Center for Waste Reduction Technologies Reports Progress.....	5
NCSE Releases Report on Keys to Sustainable Living....	6
WFEO/ComTech Collecting Sustainable Technology Case Studies	7
Sustainability Being Addressed in Engineering Curricula	7
State of the World 2002 Focuses on Johannesburg	8
ASCE Conference to Feature Sustainability Track	9
NEED Project Promotes Energy Education.....	9
EESI Briefings Power Congressional Energy Debate....	10
RNRF Congress to Address Nonpoint Source Pollution	11

The Forum Newsletters and related sustainability information can be found on the ASCE Website (www.asce.org/professional/sustainability/) and on the ASEE Website (www.asee.org/neic/efs).

If further information is needed, please contact Harry Tollerton, ASEE, by e-mail at h.tollerton@asee.org.

The next meeting of the Engineers Forum on Sustainability will be held on Friday, September 13, 2002, from 9:00 a.m. to Noon at the National Academy of Engineering, 2101 Constitution Avenue N.W., Washington, D.C. High on the agenda will be presentations and discussion on the action and implications of the World Summit. The meeting agenda will be sent to Forum participants by e-mail. Information on the meeting of the Engineers International Roundtable (EIR), scheduled for the same day from 1 to 4 p.m. in the same room, will also be e-mailed.

Health: A Pathway to Sustainable Development

(Editor's Note: This article is the sixth in a series of guest articles to be featured in the Forum Newsletter. It was written by Gro Harlem Brundtland, MD, Director-General, World Health Organization, and published in the Journal of the American Medical Association, July 10, 2002)

At the end of August, world leaders will meet in Johannesburg to assess what has been achieved in the 10 years since the 1992 Earth Summit in Rio de Janeiro (also known as the UN Conference on Environment and Development) and to set out a plan for the future.

We have seen some significant progress on environmental issues, including new global conventions, reduced pollution in many countries, and greater awareness of the value and importance of sound environmental policies. A legal international framework for environmental protection is slowly but surely being built.

Still progress is too slow. Signs of environmental degradation and abject poverty constantly urge us to move faster. We are still far from the point at which human activity is adjusted to the limits of what our

global environment can support. We still cannot fulfill our needs in a world free from poverty without compromising future generations' ability to do the same.

My own message for Johannesburg is clear: health has to be a key element in work toward a common future. We cannot achieve the goals of sustainable development in the face of widespread ill health, particularly among poor people. Improving healthy life is not only a desirable outcome of sustainable development, it is also a powerful and undervalued means of achieving it. Poor people who are sick cannot earn and cannot learn.

Sustainable development is about the relationship between society and our planet. There are health conditions – of which HIV/AIDS is but the most prominent – and serious risks to health that threaten our very future.

Fortunately, health is no longer seen, as it was 10 years ago, just in terms of social services. It is an investment with a major economic return: scaling up spending on health by developing countries and donors toward \$66 billion a year could save around 8 million lives and generate a six-fold economic return.

Some of the greatest risks to health are in the physical environment. Diarrheal and respiratory diseases are intimately, but preventably, linked with poor living conditions, inadequate and contaminated water, dirty household fuels and unsafe food.

The environmental link does not stop there: as natural resources are depleted or degraded, livelihoods are affected. The vicious cycle is perpetuated. It must be broken.

UN Secretary-General Kofi Annan has identified water and sanitation, energy, health, agriculture, and biodiversity as five key areas for which the Summit can and must obtain concrete results.

The complex network of relationships and causation among these five areas should not keep us from action. There is much that health professionals can do:

- We can make the case for more resources for health in the context of sustainable development, because we know how to spend them well.
- We have clear and quantifiable goals on which donors and developing countries agree.
- We know what can be achieved through partnerships and alliances; for example, in

stimulating development of new drugs for malaria and tuberculosis and vaccines for HIV; in increasing coverage of vital immunizations through the Global Alliance for Vaccines and Immunizations; and for mobilizing new resources through the Global Fund to Fight AIDS, TB and Malaria.

- We know where new partnerships are needed: to mobilize a sustained, advocacy-led campaign that will ensure safer and healthier environments for children.

Children are key in this equation. Not only are they our future, but we know children suffer most from environmental degradation. They are more vulnerable to many waterborne infections. Their intake of toxins may be higher relative to their body weight than that of adults, and they are developing physically and mentally.

In its work toward sustainable development, WHO will focus on safeguarding the environment for children. By launching a "Safe Places for Children Initiative," we will, in partnership with UNICEF and others, work to drastically reduce death and morbidity for the world's children by building healthier and safer places to grow up in.

The risks to which children are likely to be exposed, and to which they are particularly vulnerable, are many: pathogens in water, difficulties with maintaining hygiene, lack of sanitation, insect vectors of disease, smoke in the home from burning solid fuels, passive tobacco smoking, unsafe and unhealthy food, solid waste, unintentional injuries, traffic injuries, and exposure to lead, pesticides, and other poisons.

These risks are relevant not only for the developing world. Their relative importance varies, and so does the scale of the risks involved. They increase in poorer households, and at times of crisis as a result of natural disaster, conflict, or breakdown in government services. But these risk factors should concern all of us who deal with children's health.

Resource Corner

In connection with the World Summit on Sustainable Development in Johannesburg, South Africa, the Summit Secretariat has compiled a directory of websites to assist those seeking examples of sustainable development initiatives by linking to documented case studies. The Directory is divided into six categories. Examples in each category are listed below. For the complete Directory, the website is

www.johannesburgsummit.org/html/sustainable_dev/case_studies.html

Intergovernmental Organizations

- UN/DESA – Energy and sustainable development
www.un.org/esa/sustdev/csd9/csd9_energy_bp4.pdf
- UNESCO – World Water Assessment Programme
www.unesco.org/water/wwap/case_studies/index.shtml

Governments

- Canada, International Development Research Centre
www.idrc.ca/reports
- USA-EPA Community Based Approaches
www.epa.gov/ecocommunity/case1/index.html

Business

- Business Action for Sustainable Development – partnership initiatives
www.basd-action.net/initiatives/
- WBCSD New Zealand – case studies
www.nzbcscd.org.nz/casestudies.org

Local Authorities

- Stockholm Partnerships for Sustainable Cities
www.partnerships.stockholm.se/projects_index.html

NGOs

- IUCN – Community-based management case studies
www.iuch.org/themes/pmns/community/lessons.html

Research Institutes and Educational Establishments

- WRI – Business and environment case studies
www.wri.org/meb/guide/gde.html

U.S Engineers Prepare Declaration for WSSD

On June 24, 2002, a “Dialogue on the Engineers Role in Sustainable Development – Johannesburg and Beyond” was convened at the National Academy of Engineering in Washington, DC. The Dialogue was organized by the National Academy of Engineering, the U.S. State Department, the American Association of Engineering Societies, and the American Institute of Chemical Engineers, in affiliation with the American Society of

Civil Engineers, the Engineers International Roundtable, and the WFEO Committee on Technology. As a result of the Dialogue, the following statement will be submitted to the World Summit:

“Our planet and we that inhabit it require the collaboration of all professions in both developed and developing countries to shape a world that can sustain future generations. The goal of improving the social and economic well-being of all peoples in the developed and lesser developed countries is a pre-requisite for creating a stable, sustainable world. Although achieving this goal will require a broad coalition of well-crafted policies, it will only be realized through the application of engineering principles and the commitment to partnerships involving the social and physical sciences, health and medical professionals. It will also require collaboration for development, acceptance and dissemination of innovative solutions and existing technologies.

Creating a sustainable world that provides a safe, secure, healthy, and sustainable life for all peoples is a priority for the US engineering community. It is evident that US engineering must increase its focus on sharing and disseminating sound information, knowledge and technology that provides access to energy, water, food, health and other basic human needs. Engineers must deliver solutions that are technically viable, commercially feasible and environmentally and socially sustainable.

Today’s world is complex. The technical challenges required for sustainability is enormous. The US engineering community must become engaged earlier in the decision-making process through its technical and professional societies. Engineers must be actively engaged in the full life cycle of decision-making process; not only in project execution. This includes the interdisciplinary process of building the evaluation/decision framework and the infrastructure to realize the required sustainable future.

We, the undersigned, commit to moving forward in support of the US engineering community successfully meeting societal needs through capacity building, improving education, training, information-dissemination, and engaging the engineering profession in all stages of the decision process.

Agreed, on the occasion of the Engineers Dialogue on Johannesburg and Beyond, June 24, 2002. The undersigned are participants in the Dialogue and do not

necessarily reflect the opinions of their stated associations.”

(Note: At the time frame of publication of this newsletter, the Declaration was being circulated for signature of the participants)

Dr. Neureiter Gives U.S. Briefing to NGOs

Dr. Norman Neureiter, Science and Technology Advisor to the Secretary of State, briefed the Non-Governmental Organizations (NGOs) at the PrepCom 11 meeting for the World Summit on Sustainable Development. The following remarks are abstracted from his presentation in New York City on February 5, 2002:

“A sufficient base for science and technology for sustainable development must be assembled from a variety of key activities. We believe that an overall strategy to this end entails 5 specific elements where science and technology are intimately involved. These are:

- Building Capacity for Sustainable Development
- Investing in Training the Next Generation
- Ensuring Access to Information
- Strengthening the Scientific Basis of Decision-Making
- Informing the Public

Let me elaborate briefly on each of these elements:

Building Capacity for Sustainable Development. This includes investment in the human and institutional resources to understand the challenges to sustainable development. National research capacity is needed to address national problems, to cooperate with the technical world outside their countries, and to participate confidently in international negotiations on global issues that impinge on development. Developing countries must also invest in science and technology capacity building in their own citizens, to increase their self-reliance in charting their own development path. The international community and donor countries also have a responsibility to invest in these efforts. Global benefits arise from investments in shared generation of knowledge and dissemination. The international community can identify ways to strengthen key global programs, facilitate regional cooperation, and foster public-private partnerships.

Investing in training the next generation. This is an imperative for all countries. Education in mathematics, science and technology is crucial for the long term economic development of a nation, and for the future of its scientific enterprise, encompassing sectors such as industry, health, agriculture, civil infrastructure, and the researchers and technical workforce of the next generation. The private sector has an interest in training workers for the skills needed in particular industries. Companies also see benefit in helping to raise the level of technical education in the communities in which they are located. They need a dependable pool of qualified candidates for their workforce.

Ensuring access to information. Information can be made more readily accessible and convenient to all users. The advent of global information networks linked electronically to supplement commercial, academic, governmental and personal networks enables the widest possible access to information. Further progress is needed on standardization and protocols for data collection and reporting, in order to foster data sharing and comparability across geographical and temporal borders. Scientific approaches to capture relevant indicators and criteria of sustainable development should be developed. Emphasis on creating and sustaining scientific databases, and creating appropriate arrangements for sharing such data, will be the hallmark of this effort. Just last week there was a meeting on the digital divide here in New York. We must bridge the digital divide!

Strengthening the scientific basis of decision-making. Many research themes related to sustainable development are the focus of ongoing international research programs, with mechanisms established to communicate findings to decision makers. Science needs to be integrated into policy-making through establishment of regular channels for soliciting and receiving scientific advice. We need better techniques for presenting findings: we need a shared vocabulary, and we need a dialogue between policymakers and researchers regarding research gaps. Science must not make decisions – but decisions that ignore the scientific facts will be very risky affairs.

Informing the public. One of the greatest challenges for sustainable development is the long time horizon of both the problems and the solutions. Governments and policymakers must support the communication of scientific findings to the public thereby enabling a dialogue. This is perhaps the essence of good governance. Investment in informal education of the public builds a populace that is scientifically more

literate and environmentally aware. This will help ensure political viability for sustainable development as a guiding principle for the extended period of time needed for enlightened policies to bear fruit.

The United States is committed to continue working with the international science community, governments, foundations, voluntary organizations, and private sector toward this end.

But it is also essential to remember that even with great education and advice, it is essential to have a secure flow of financial resources in order to advance solutions. There must be an appropriate flow of investment that leads full circle to the importance of governance. And the trend here is not good with FDI down sharply for emerging economies since 1997.”

Center for Waste Reduction Technologies Reports Progress

The Center for Waste Reduction Technologies (CWRT), an affiliate of the American Institute of Chemical Engineers (AIChE), recently published a Strategic Report, “Tools for Sustainable Development and Environmental Stewardship.” The Report states that “more and more, businesses have entered into a new phase in which sustainable business performance is regarded as: a global competitive advantage; a catalyst for innovation; and a way to capture new market and financing opportunities. New technologies are needed to allow us to maintain economic growth while decreasing material and energy intensities. Investing in sustainable technologies is expected to lessen the extent of future requirements for remediation, and monitoring and control. CWRT recognizes this leading-edge issue by developing technologies and management tools that can help in their drive towards sustainability.”

The Center has brought together key players from the chemical, pharmaceutical, petroleum, and downstream manufacturing industries, as well as their suppliers and technology contractors, to do collaborative work. Among the collaborative projects included in the Report are the following:

“Total Cost Assessment Methodology

The Total Cost Assessment (TCA) methodology provides a disciplined and standardized approach to identifying all life-cycle costs and benefits associated with decisions related to environmental health and safety

(EH&S) issues for industrial products and processes. Prior to the development of this tool, an industrially accepted approach to conducting a TCA was not publicly available.

The methodology, which has been beta-tested by CWRT sponsors, captures the costs associated with manufacturing operations for users and manufacturers of chemicals from raw material extraction to ultimate ecological fate (the entire life cycle of a process or product) and helps decision-makers to assess the total costs incurred, cost savings accrued, and the cost avoided for materials, products processes or services that explicitly include the costs of EH&S issues.

The methodology is not intended to replace a corporation’s existing financial accounting system. Instead, it is intended to be a decision support tool that aids the user in making informed decisions regarding EH&S opportunities and impacts.

Combining the Principles of Inherent Safety, Pollution Prevention, and Green Chemistry in the Design of Sustainable Products and Processes

Historically, safety and pollution prevention disciplines have been practiced independently, but there is now growing awareness that a methodology that could combine the two disciplines and include concepts from “green” chemistry would offer a powerful new paradigm for the design of new processes and products and the improvement of existing ones.

Many manufacturing processes (both new and retrofit) are often designed in a sequential “stagegate” manner with little integration between technical disciplines or EH&S, reviews in the developmental processes. This project is directed towards developing a validated methodology that can be overlaid on existing practices. The project methodology will help to create a more integrated, multi-disciplined, life-cycle approach to design, which is expected to result in significant design improvements throughout the development cycle and benefits in plant operation. Coupling the chemistry research phase to life-cycle, EH&S and ‘manufacturability’ issues early in the development phase is a key concept in this methodology.

Baseline Metrics for Sustainability

A study group of twelve major companies in the chemical, paper, pharmaceutical, and materials industries has been working since late 1999 to identify impact categories and associated metrics that would be

useful tools for industry. The group's objective is to develop, pilot, and benchmark metrics that complement the work of the World Business Council for Sustainable Development and others, with a focus on metrics useful to CWRT sponsor companies. Metrics have been developed covering material and energy intensity, pollutants (greenhouse gases, photochemical ozone creating gases, acidification, and eutrication), water, human health, and eco-toxicity. These metrics are all normalized against value added, net sales, and per unit of product. The study group is currently testing these metrics within their businesses, with the objective of refining the base metrics and identifying other complementary metrics which can help drive continual improvement in both business value and level of sustainability.

Sustainability Metrics for Industry

In late 1999 two projects were started to test and refine the energy and material metrics for small-and medium-sized enterprises that are manufacturers and suppliers of chemicals and their customers, and to test the metrics along key product supply chains (PVC products, ABS pipe, nylon rope, and carpet underlay). The data sources being mined in this work include the U.S. DOE's Industrial Assessment Center Database, Carnegie Mellon's Environmental Input/Output Lifecycle Assessment Database, and the European Plastics Industry Lifecycle Assessment Database. In addition, eco-efficiency metrics are being calculated for the 50 most important products in the US chemical industry while evaluating the feasibility of extracting complementary indicators using SRI's PEP (Process Economics Program) data. Selected results from this study will be tested against current industrial practice to validate this approach. "

Established in 1991, the mission of the CWRT is to "benefit industrial sponsors and society by leveraging the resources of industry, government, and others to identify, develop, and share technology and management tools that measurably enhance the economic value of industrial sponsor organizations while benefiting the environment or addressing issues of sustainability."

Contact: For more information, the CWRT website is: www.aiche.org/cwrt

NCSE Releases Report on Keys to Sustainable Living

The National Council for Science and the Environment (NCSE) recently released a report entitled **Recommendations for Achieving Sustainable Communities**. This document underscores new approaches for creating strong economies and healthy communities and provides constructive approaches to address complex issues such as economic development vs. ecosystem protection.

The report presents the "Top 10 Keys To Sustainable Communities." These "Keys" identify the crucial aspects of achieving sustainable communities at the local, regional and national levels. They are as follows:

1. New scientific information and technical tools are urgently needed to provide innovative approaches for sustainable communities.
2. Local communities must be involved from the inception to work hand-in-hand with scientists, engineers, planners and educators.
3. Scientists, engineers, planners and educators need to provide leadership to help define the vision, train future leaders and to link information, values and action.
4. Public resources are essential to provide access to information (free or at low cost), which should be understandable, user friendly and available to all.
5. "Community Learning Centers" are necessary to help citizens to learn about integrating environmental and social concerns into sustainable development.
6. Programs for achieving sustainable communities need to be undertaken on a cost-effective, timely and self-sustaining basis.
7. Planning for sustainability needs to be based on the social, economic and human health needs of the most vulnerable populations.
8. When economic development significantly conflicts with preservation of natural resources, decision-makers should give preference to ecosystem protection.
9. Communities need to develop sustainability goals and indicators to monitor progress.
10. Global partnerships involving public and private institutions are essential for achieving stability and security for all.

The NCSE will hold its 3rd National Conference on Science, Policy and the Environment, entitled

“Education for a Sustainable and Secure Future” on January 30-31, 2003 at the Ronald Reagan Building and International Trade Center in Washington, DC. The Conference will address how education can help to achieve a more sustainable relationship between people and the environment – recognizing the environmental dimensions to the security of human social systems, continued economic opportunity and quality of life.

The National Council for Science and the Environment (NCSE) has a mission to improve the scientific basis for environmental decision-making. NCSE is supported by nearly 500 organizations, including universities, scientific societies, government associations, businesses and chambers of commerce, and environmental and other civic organizations.

Contact: For more information on NCSE and to view the conference report online, visit www.NCSEonline.org

WFEO/ComTech Collecting Sustainable Technology Case Studies

The Committee on Technology (ComTech) of the World Federation of Engineering Organizations is facilitating an engineering dimension to the Sustainable Alternatives Network (www.sustainablealternatives.net). Its major activity in this regard is the assembly of replicable case studies using sustainable technologies. An award program is part of this activity. The winning submissions will be highlighted at the World Summit on Sustainable Development in Johannesburg, South Africa (August 24-September 2, 2002). Winning projects will showcase improvements to the environment, reduction in greenhouse gas emissions – GHG, persistent organic improvements – POPs, ozone-depleting substances – ODS, and lessened land, water, ecosystem degradation, biodiversity loss. Entries can be filed online at www.sustainablealternatives.net. Submissions must identify WFEO/ComTech as the nominating body. Other information required for consideration are: how the technology is applied, its economics, the global environmental benefits, background on the company or organization currently using the technology, and where it is available and a company/organization contact person.

ComTech is an NGO member of the U.N. Commission on Sustainable Development (UNCSD). It published the “Engineers Response to Sustainable Development” for Rio +5, and is producing a Rio+10 report/brochure with

CD as a follow-up document for the World Summit on Sustainable Development in Johannesburg.

ComTech has presented several engineering expert panels for the UNCSD, including: (1) Water Privatization Projects in the Developing World; (2) Engineered Energy Technologies; (3) Production Efficiencies; and (4) Sustainable Agricultural and Natural Resource Management Engineering Practices. The reports for these panels, along with other information about ComTech, can be accessed at www.wfeo-comtech.org.

Sustainability Being Addressed in Engineering Curricula

A recent survey of the Engineering Deans Council of the American Society for Engineering Education (ASEE) indicates that sustainability is being addressed in a variety of ways in many engineering schools.

The ASEE Statement on Sustainable Engineering Education says in part that “ASEE believes that engineering graduates must be prepared by their education to use sustainable engineering techniques in the practice of their profession and to take leadership roles in facilitating sustainable development in their communities.”

The survey asked “How has the subject of sustainability been introduced into your engineering curriculum?” A sampling of responses follows:

“Sustainability is introduced as a design objective in the required senior design project. Design constraints relating to sustainability concerns in the project life cycle are introduced during the problem definition phase of the systems engineering design phase.”

“We introduce the concepts of engineering sustainability in our environmental science and environmental engineering classes, and in our engineering project management class. The concepts of designing unit operation treatment processes for water and wastewater treatment are discussed in terms of their long-term integration into the natural environment.”

It is introduced in courses with: design content, energy, combustion and/or environmental content; and courses in which ethics has been specifically introduced.”

“Sustainability is introduced to undergraduate students in the civil engineering water resources and hydrology courses.”

“Sustainability is addressed through our Environmental Institute activities. It has an “Environment Across the Curriculum” mission that has motivated the engineering faculty to develop course content and modules on sustainability that can be incorporated into several classes.”

“We have a long standing program in the sustainability area. We have received several awards for developing a curriculum which has components integrated throughout the coursework taken by all engineering students.”

“The subject of sustainability is introduced in our curriculum in several ways: required engineering courses, elective engineering courses, and general education elective courses.”

The survey also asked respondents to “list current required and elective courses in your engineering programs that incorporate sustainability (i.e. life cycle analysis, ethics, industrial ecology, energy, design for the environment).” Among the courses listed were Environmental Engineering, Professional Issues in Engineering, Environmental Science, Solid and Hazardous Waste Management, Engineering Project Management, Design of Groundwater Systems, Hydraulic Engineering and Hydrology, Legal Issues and Environmental Technology, Engineering and Public Policy, Environmental Sustainability in Engineering, Civil Systems Infrastructure Planning and Pricing, Thermodynamics, Environmentally Responsible Design and Monitoring, Materials and Energy in Society, Recycling and Materials Engineering, and a variety of Senior Design Projects.

Finally, the survey asked about the utility of a primer that introduces the principles and applications of sustainable engineering practice. Most respondents felt that a primer would be useful, and most felt that it should be required reading as part of a freshman level introductory or enrichment course, and then referred to and built upon in subsequent level courses.

State of the World 2002 Focuses on Johannesburg

The Worldwatch Institute has released a special edition of *State of the World* which focuses on issues central to the United Nations Summit on Sustainable Development

in Johannesburg, South Africa in August/September, 2002. The Summit provides world leaders a historic chance to strike a new deal for an economically, socially, and environmentally sustainable world. In the book’s forward, the U.N. Secretary-General Kofi Annan notes that “all of us should understand not only that we face common threats, but also that there are common opportunities to be seized if we respond to this challenge as a single human community.”

The report highlights a number of social and environmental advances since Rio, including declining deaths from pneumonia, diarrhea, and tuberculosis and the phasing out of production of ozone-depleting chlorofluorocarbons (CFC)s in industrial countries.

But many other important trends continue to worsen. Deaths from AIDS increased more than six-fold over the 1990s; global emissions of the greenhouse gas carbon dioxide climbed more than nine percent; and twenty-seven percent of the world’s coral reefs are now severely damaged, up from 10 percent at the time of the Rio Earth Summit.

State of the World 2002 points to several significant impediments to have slowed progress towards building a sustainable world over the last decade:

- Environmental policies remain a low priority: The growing number of international environmental treaties and other initiatives suffer from weak commitments and inadequate funding. The U.N. Environment Programme has struggled to maintain its annual budget of roughly \$100 million. At the same time, military expenditures by the world’s governments are running at more than \$2 billion a day.
- Foreign aid is stagnating: Despite a more than 30 percent expansion in global economic output in the years since Rio, aid spending has declined substantially, falling from \$69 billion in 1992 to \$53 in 2000.
- Third world indebtedness is getting worse: Despite pledges at Rio to reduce indebtedness, the total debt burden in developing and transition countries has climbed 34 percent since the Earth Summit, reaching \$2.5 trillion in 2000.

Increased financial and political support for international social and environmental programs is a necessary but not sufficient condition for success in the transition to a sustainable world. The authors argue that the active involvement of other powerful international actors, such

a non-governmental organizations (NGOs) and the business community, will also be essential.

State of the World 2002 lays out the technical and political changes needed to forge a sustainable economy. "Getting the world onto a more environmentally and socially durable course is a daunting task," says Project Director Hilary French. "But history shows that cooperation can overcome even seemingly intractable obstacles. Johannesburg will help to determine whether the nations of the world can jointly address pressing problems, or whether we will remain on a destructive path that leads to poverty, environmental decline, terrorism, and war."

Contact: For more information contact Worldwatch Institute, 1776 Massachusetts Avenue, N.W., Suite 800, Washington, DC 20036. tel: 202-452-1999; fax: 202-296-7365; e-mail: worldwatch@worldwatch.org. Web site: www.worldwatch.org

ASCE Conference to Feature Sustainability Track

The American Society of Civil Engineers (ASCE) Conference and Exposition, "Building a Better World – History in the Making," will be held in at the Washington, D.C. Conference Center, November 3-7, 2002. This landmark event, which celebrates ASCE's 150th Anniversary, will include the 1st Annual Congress on Infrastructure Security and the Built Environment, and the Executive Program Series of the Civil Engineering Research Foundation (CERF).

As part of the Conference Technical Program, a five session sustainability track will be featured, including the following:

Current Policy and Practice in Implementing Sustainability for Federal Facilities – This session will describe how the Nation's largest owner/operator and contracting agencies are implementing sustainable planning, design, construction and operations in their work.

Sustainable Materials – This session will describe measures in the civil engineering and construction industry that contribute to overall sustainability by reducing the impact of materials extraction, transportation, conversion and utilization.

Sustainable Communities and Smart Growth – This session will highlight recent developments in sustainable transportation, smart growth and community planning, using case studies.

Sustainability Practices in Industry – Using case studies by industry leaders, this session will describe how owners value sustainability in their facilities and practices, and how suppliers, designers, and contractors can gain marketplace advantage through leadership in sustainable engineering practices.

Integration of Sustainability into Engineering Education – This session will describe what is happening in universities regarding the teaching of sustainability and sustainable development in civil engineering programs.

In addition to this five-session track, the CERF Executive Program Series includes sessions on "Sustainability: Changing the Way We Do Business Globally," and "Advanced Materials: Changing our Approach to Design and Construction."

Contact: For more details on the Conferences and on-line registration, visit: www.asce.org/conferences/annual02.

NEED Project Promotes Energy Education

The National Energy Education Development (NEED) Project is a 501(c) (3) nonprofit association dedicated to promoting a realistic understanding of the scientific, economic and environmental impacts of energy, so that students and teachers can make educated decisions.

The mission of the NEED Project is to promote an energy conscious and educated society by creating effective networks of students, educators, business, government and community leaders to design and deliver objective, multi-sided energy education programs.

The NEED program includes curriculum materials, professional development, evaluation tools, and recognition. NEED teaches the scientific concepts of energy and provides objective information about energy sources – their use and impact on the environment, the economy and society. The program also includes information to educate students about energy efficiency and conservation, and tools to help educators, energy managers and consumers use energy wisely.

NEED students learn by doing. NEED materials are hands-on and incorporate NEED's philosophy of Kids Teaching Kids About Energy. For many teachers, NEED is their first interaction with energy education. NEED makes teaching energy easy and fun.

NEED's materials are available for all grade levels from kindergarten through high school. Educators can design classroom programs that spark the interest of their students and meet course objectives. NEED's materials are designed to meet, and are correlated to, the National Science Education Content Standards, as well as to many state standards. Educators who use NEED materials report that their students score better on end-of-grade testing, are more actively engaged in their own education, and develop leadership skills for their futures as members of the community.

To ensure that teachers and students are working with accurate information, NEED materials are updated on a regular basis, using the latest figures from the U. S. Energy Information Administration, as well as from a wide range of energy industry partners. NEED works with educators and students to improve existing materials and develop new ones to meet national and state requirements.

NEED is a Strategic Partner of the United States Department of Energy's Rebuild American and Energy Smart Schools programs. As part of this network, NEED brings technical support and assistance to schools, introduces teachers and students to new technologies and energy efficiency opportunities, and helps school energy managers and facilities personnel work more closely with teachers and instructional personnel to reduce energy use in schools.

NEED encourages and rewards student leadership and innovation by sponsoring a Youth Awards Program for Energy Achievement. Many schools participating in NEED programs submit reports on their energy activities. Outstanding teachers and student leaders are recognized for their efforts and are invited to attend NEED's National Recognition Ceremonies held each June in Washington, D.C. Educators who make the commitment to become NEED Lead Teachers are recognized for their contributions to the program and for their involvement in expanding NEED programs in their regions. These dedicated educators conduct training programs for hundreds of teachers and thousands of students each year.

Teachers are the key to the success of the NEED program. NEED teachers in 39 states and two U.S.

territories reach more than 750,000 students each year in their local schools, and many more through outreach programs. Providing teachers with innovative training programs and opportunities to increase their own energy knowledge is a major objective of the NEED program. Training is offered at the local, state, regional and national levels. In the summer, NEED conducts National Energy Conferences for Educators. These national conferences give teachers the opportunity to meet other educators from across the country, design and develop NEED units for their classrooms, increase their energy knowledge and earn graduate credit. They participate in NEED activities and field trips to energy sites such as nuclear power plants, coal mines, offshore oil production facilities, solar energy facilities, and energy efficiency projects. Educators leave the conferences prepared to implement energy education programs in their classrooms and with the knowledge to teach energy effectively.

Contact: For more information, contact The NEED Project, 8408 Kao Circle, Manassas, Virginia 20110; phone: 703-257-1117; fax: 703-257-0037

EESI Briefings Power Congressional Energy Debate

The Environmental and Energy Study Institute has moved ahead with an active program to help frame the Congressional debate on energy policy. In June, the EESI briefings included "Building Corporate Markets for Green Power" (June 12) and "Reframing the Energy Debate: Lessons Learned from the National Energy Policy Initiative (June 26).

The June 12 briefing focused on building corporate markets for renewable energy sources, such as solar, wind, geothermal and biomass, and for other clean energy technologies, such as fuel cells. The briefing addressed the challenges that large commercial and industrial corporations face when trying to procure green power and discussed ways policymakers can help lower these barriers. The panel of participants included Jonathan Lash, President of The World Resources Institute, and senior staff of Alcoa, Inc., DePont, Cargill Dow LLC, and the National Renewable Energy Laboratory.

In 2000, the World Resources Institute (WRI) and Business for Social Responsibility convened the Green Power Market Development Group (the Group) as the first commercial and industrial partnership dedicated to building corporate markets for green power. Members

of the Group include Alcoa, Inc., Cargill Dow LLC, Delphi Corporation, DuPont, General Motors, IBM, Interface, Johnson & Johnson, Kinko's and Pitney Bowes. The Group is working to transform energy markets to enable corporate buyers to diversify their energy portfolios with green power and thereby help address climate change. Working together over the past two years, the WRI and these ten companies have:

- Conducted research on green power technologies, application and suppliers;
- Mapped renewable resource locations and corporate facility demand;
- Reviewed and facilitated green power project negotiations; and
- Developed innovative analytical tools to build the business case for green power.

To date, several policy options have been identified that could accelerate growth in corporate green power markets and renewable energy development:

- Streamlined interconnection procedures and non-discriminatory pricing;
- Efficient and transparent emissions markets;
- Emissions accounting and reporting standards; and
- Extension and expansion of green power tax incentives.

EESI's June 26 briefing discussed the "National Energy Policy Initiative (NEP)," an independent, nonpartisan effort to bring to bipartisan policymakers some of the nation's best thinking on creative and farsighted energy policies with a view to informing future sessions. The briefing panel included Amory Lovins, CEO (Research), Rocky Mountain Institute; Jack Riggs, Executive Director, Program on Energy, the Environment and the Economy, The Aspen Institute, and former Principal Deputy Assistant Secretary for Policy at the U.S. Energy Department; and Bruce Smart, Retired Chairman and CEO, Continental Group, and former Undersecretary of Commerce for International Trade.

The NEP initiative brought together a 22-member bipartisan Expert Group to discuss energy policy and to build a policy framework for four priorities: transportation and mobility, electricity services, energy security, and climate change. The NEP Initiative's vision is to create "an energy system that will not run out, cannot be cut off, supports a vibrant economy, and safeguards our health and environment."

Contact: For more information about the EESI briefings, contact Beth Bleil of EESI at 202-236-3368 or

bbleil@eesi.org. Further information about the Green Power Market Development Group and its members may be found at www.thegreenpowergroup.org. The full report of the National Energy Policy Initiative can be found at www.nepinitiative.org.

RNRF Congress to Address Nonpoint Source Pollution

The Renewable Natural Resources Foundation (RNRF) will conduct a Congress on Control of Nonpoint Source Water Pollution: Options and Opportunities. The Congress is sponsored by the National Oceanic and Atmospheric Administration, the U.S. Environmental Protection Agency, and the USDA Forest Service. It will be held in Baltimore, Maryland, September 18-21, 2002.

The Congress will feature a major case study presentation on the Chesapeake Bay, North America's largest estuary. The EPA currently lists the Chesapeake Bay among the Nation's "impaired waters" because of nutrient pollution problems that compromise the entire Bay ecosystem. It operates at barely more than one-fourth of its potential because water pollution (primarily excess nitrogen and phosphorous) inhibits overall improvements to the system. More than 15 million people live in the Bay watershed, and it is estimated that population may grow to 18 million by 2020. The Bay region is unique because it is impacted by every type of land use from urban to rural, crop farming to animal raising, and sprawl to runoff.

Other sessions will cover current Federal and State Approaches to NPS; Legislative, Regulatory and Non-Regulatory; and Specific State Approaches to Control.

Contact: For further information, contact RNRF (phone: 301-493-6148; fax: 301-493-6148; website: www.rnrf.org/2002).