

# THE NATIONAL ACADEMIES

*Advisers to the Nation on Science, Engineering, and Medicine*

**“Science and Engineering: Strategies for Capacity Building in Africa,  
and Their Long-Term Impact on the U.S.”**

**Government University Industry Research Roundtable Meeting**

**June 7, 2005**

**Room 100 Keck Building**

**The National Academies**

**500 Fifth St., NW, Washington, D.C. 20001**

7:30 – 8:00 Continental Breakfast Available

8:00 – 8:10 Co-Chairs’ Welcome and Introductory Remarks

- Bill Joyce, CEO, Nalco and
- Marye Anne Fox, Chancellor, University of California, San Diego

## ***CURRENT AND PROPOSED GUIRR ACTIVITIES***

8:10 – 8:30 **GUIRR “Coalition of the Concerned” Activities on Deemed Exports** (*current activity*)  
*GUIRR volunteers:* Sam Armstrong, Artie Bienenstock, Jim Bloedel, Claude Canizares, Ed Furtek, John Hunt, Wayne Johnson, Eva Pell, Frank Pita, Kelly Sullivan  
*Collaborators:* Todd Willis (Commerce), Greg Doerrler and Jim Short (DOD), Stephanie Tennyson (DHS), Deborah Wilson (NIH), Antoinette Betschart (USDA), Pete Cseke (AFOSR)

- Gen. Sam Armstrong, retired, NASA  
*Report of the working group’s activities since the last GUIRR meeting.*

8:30 – 9:00 **GUIRR-IRI-NCURA “University-Industry Partnership” IP Project** (*current activity*)  
*GUIRR volunteers:* Larry Rhoades, Wayne Johnson, Roberto Peccei  
*Collaborators:* Bob Killoren (NCURA); Susan Butts (IRI).

- Larry Rhoades, President, Extrude One Corp  
*This project has released its first product, a draft “Guiding Principles for University-Industry Endeavors,” intended to be the focus of an institutional sign-on effort. GUIRR members are being asked two questions regarding this document: a) would you be able to sign this document, in its current form, on behalf of your institution? and b) if not, why not? The responses and discussion will help the project volunteers craft a revised document. Industry and*

*university members should be prepared to answer on behalf of their home institutions.*

**9:00 – 9:15 Federal Demonstration Partnership (FDP) (current activity)**

- Nancy Wray, Senior Associate Director, Office of Grants and Contracts, Dartmouth College

*Nancy Wray is the new chair of the Federal Demonstration Partnership, a working collaboration between research administrators in universities and their counterparts in federal agencies. GUIRR launched the FDP in 1986, and the FDP has thrived as a semi-autonomous organization ever since. Ms. Wray will give an update on the FDP's current activities.*

**9:15 – 9:35 Proposed New Project: Data Sharing (proposed activity)**

- Melvin Bernstein, Director, Office of University Programs, Department of Homeland Security

*Mel Bernstein will give an overview of the issues involved in sharing large datasets between universities, industry and government. The intersection of differing state and federal FOIA regulations with each other, combined with Shelby Amendment and Data Quality Act provisions, severely complicate the transfer of privately-owned data. One component of the problem is that many regulations, as written, assume print documents rather than electronic datasets. This topic is on the table as a DHS-sponsored workshop that GUIRR would hold in 2005. A potential partner for the project would be the Science, Technology, and Law unit of the National Academies, which has substantial expertise in the legal aspects of data transfer.*

***SCIENCE AND ENGINEERING: STRATEGIES FOR CAPACITY BUILDING IN AFRICA, AND THEIR LONG-TERM IMPACT ON THE U.S***

**9:35 – 10:00 Overview: The African Capacity for Capacity-Building**

- Princeton Lyman, Ralph Bunche Senior Fellow in Africa Policy Studies, Council on Foreign Relations

*A former ambassador to Nigeria and South Africa, Dr. Lyman served for over three decades in the U.S. Department of State and the U.S. Agency for International Development. Dr. Lyman will discuss the different "Africas" within "Africa," and why some countries are more ripe for science and engineering-related interventions than others. Recently, Dr. Lyman participated in a National Academies assessment of African nations' readiness to accept science-based advice, in conjunction with a Gates Foundation*

*initiative to strengthen African Academies of science and the communities they serve.*

10:00 – 10:25 BREAK

10:25 – 10:50 **International S&T Initiatives for African Development**

- Russ Jones, consultant

*Formerly President of the University of Delaware, President of ABET (the Accreditation Board for Engineering and Technology), the Executive Director of the National Society of Professional Engineers, the winner of the Collingwood Prize, and recipient of the International Medal for Distinguished Contributions to Engineering Education, Dr. Jones is currently a private consultant assisting the new U.S. Ambassador to UNESCO on capacity building issues, while simultaneously chairing the World Federation of Engineering Organizations' (WFEO) Committee on Capacity Building. Dr. Jones will discuss the potential of the U.S. to develop a cross-sectoral capacity building effort within UNESCO, now that it has newly rejoined as a member. He will also describe the WFEO's major effort to upgrade engineering education in Latin America and sub-Saharan Africa.*

10:50 – 11:40 **Physical Sciences and Engineering Initiatives**

- Wole Soboyejo, Professor of Mechanical and Aerospace Engineering, Princeton University

*In addition to his research in microelectromechanical systems, Prof. Soboyejo serves as Director of the U.S./Africa Materials Institute and recently established an African Materials Research Society. He will share his view of the challenges and opportunities facing efforts to expand the infrastructural, professional and human resources available for the conduct of physical sciences and engineering research in Africa.*

- James Mihelcic, Professor of Civil & Environmental Engineering, Michigan Technological University

*Prof. Mihelcic and his colleague Prof. Tom Van Dam, have formulated a unique master's program in collaboration with the Peace Corps to allow engineering students to receive academic credit for conduct engineering projects in developing countries. Prof. Mihelcic will discuss the impact this program has had on students, faculty, the administration, and the African regions where it has been implemented.*

11:40 – 1:10 **Lunch**

- John F. Turner, Assistant Secretary of State for Oceans and International Environmental and Scientific Affairs (OES)

*The Bureau of Oceans and International Environmental and Scientific Affairs coordinates an extensive portfolio of issues related to science, the environment, and the world's oceans. It is widely recognized as the most science-intensive of all the State Department's Bureaus, with offices specializing in oceans and fisheries, global change, space and advanced technology, science and technology cooperation, and sustainable development. As the current Assistant Secretary in charge of the OES, John Turner has an unparalleled opportunity to influence the pace of regional development through the international application of science, engineering, and technology. Mr. Turner will speak on "current U.S. policy towards African development, roles that science and engineering ought to play in the effort and what the success could mean for the U.S. "*

1:10 – 2:00 **Medicine and Health Initiatives**

- Sharon Hrynkow, Acting Director, Fogarty International Center, National Institutes of Health

*The Fogarty International Center is the international component of the NIH and as such, is involved in multiple global health issues. Through international partnerships and research programs, the Fogarty Center tackles infectious disease threats, including HIV/AIDS, malaria, schistosomiasis, and leishmaniasis; adverse health impacts of environmental pollution; maternal and child health concerns, and the growing burden of brain disorders and mental illness. Recently, Dr. Hrynkow has also positioned the Fogarty center to target the issue of trauma and injury in developing countries. Trauma and injury, including challenges related to interpersonal violence, road traffic injuries, and civil/societal disturbances, kill more people than HIV/AIDS and malaria combined. Dr. Hrynkow will give an overview of the Fogarty Center's current activities, their impact on Africa, and potential implications for U.S. health and security.*

- Andrew Spielman, Professor of Tropical Public Health, Harvard University

*An expert on insect-borne diseases, Prof. Spielman has successfully synthesized genetic, physiological, microbiological, ecological and immunological information to arrive at a multifaceted understanding of the transmission of such diseases as yellow fever, malaria, dengue fever, the West Nile virus, and Lyme disease. He also works directly with international collaborators to reduce indigenous risk factors. For the GUIRR membership, Prof. Spielman will be presenting his work on the socio-economic benefits of malaria control in*

*Africa, including the positive economic benefit to corporations investing in Africa.*

2:00 – 3:15 **Food, Agriculture, and Climate Initiatives**

- Stephen Zebiak, Director-General, International Research Institute for Climate Prediction (IRI), Columbia University

*Under Dr. Zebiak’s direction, the IRI is orchestrating climate prediction and assessment activities to provide developing nations with the capacity to better respond to weather phenomena that influence the socioeconomic well being of their citizens. In the case of subsistence farmers, for example, climate knowledge can be critical in deciding what to plant, when to plant, or whether to plant at all. Prof. Zebiak will discuss climate variability as a component of national economic well-being, using examples from current and proposed IRI projects.*

- Robert Herdt, Adjunct International Professor of Applied Economics and Management, Cornell University.

*Dr. Herdt served for 17 years as the Director of the Rockefeller Foundation’s Agricultural programs, prior to his current position at Cornell. He will present his perspective on food and agriculture-related interventions that have worked, those that haven’t, and provide lessons learned that can guide future activities.*

- Per Pinstrup-Andersen, H.E. Babcock Professor of Food, Nutrition, and Public Policy, Cornell University

*In 2001 Dr. Pinstrup-Andersen was awarded the Food Prize for his contribution to the improvement of agricultural research, food policy, and lives of the poor. He led the Food Policy Research Institute for more than a decade, and consequently has delved deeply into issues of food and agricultural policy in developing countries. Dr. Pinstrup-Andersen will speak today on the relationship of science and technology to food production and rural development in Africa.*

3:15 – 3:40 BREAK

3:40 – 4:30 **National Defense Implications of Capacity-Building**

- Lisa Albuquerque, Research Analyst, Center for Emerging Threats and Opportunities (CETO), Potomac Institute

*Ms. Albuquerque will brief GUIRR on the outcomes of the “Flashpoints for Future Conflict” project recently released by CETO, the Marine Corps’ think tank located at Quantico, Virginia. The analysis examines 150 countries with respect to five critical destabilizing factors: water, energy, poor governance, ,*

*demographics, and religion. Eleven African countries were in the top most 20 likely to experience instability based on these factors. The implication is that the development of marginal nations may not only be a humanitarian goal, but a U.S. national security imperative.*

- Stewart Patrick, Research Fellow, Center for Global Development (CGD)

*Dr. Stewart Patrick joined the CGD this year as director of the project on Weak States and U.S. National Security. Previously, he was with the Secretary of State's Policy Planning Staff, where he helped formulate U.S. policy on Afghanistan, as well as a range of global and transnational challenges, including weak and failing states, humanitarian crises, post-conflict reconstruction, organized crime, global health and sustainable development. His presentation will focus on the risks to U.S. security provided by weak states.*

4:30– 5:00     **Proposed New Project: Data Overload** (*proposed joint activity between GUIRR and the Board on Mathematical Sciences and their Applications*)

*Two GUIRR member viewpoints on the problem of Data Overload will be presented, with an ensuing discussion with the membership on whether and how GUIRR/BMSTA should frame an activity in this area.*

- Robert Morris, Vice President, Assets Innovation, IBM Global Services
- Rick Rosen, Assistant Administrator for Oceanic and Atmospheric Research at NOAA and Thomas Karl, Director, NOAA National Climate Data Center

5:00– 6:00     Cocktails, Hors D'Oeuvres and continued discussions  
(Pre-function area, just outside Rm.100 Keck)