Endnotes

[1] National Science Board, *Science and Engineering Indicators 2008*, (Arlington, VA: National Science Foundation (Volume 1, NSB-08-01; Volume 2, NSB-08-01A), 2008), pg. 2-19.

[2] For example, Europe leads the world in certain areas of physics while Japan leads the world in earthquake research, monitoring the global environment, and computational facilities.

[3] Through international S&E cooperation, the U.S. can provide leadership on many of these international challenges. For example, a high priority of the U.S. Government is the Global Earth Observation System of Systems (GEOSS), a global network that will enable coordinated observations, better data management, and increased data sharing. The success of GEOSS is highly dependent on meaningful and lasting international cooperation.

[4] In the past, research addressing these global challenges led to the use of oral rehydration therapy, which became a cornerstone in controlling diarrheal diseases. S&E research also found that two cents worth of vitamin A given to children every six months could reduce mortality in many countries by over one-third, and it established rice-wheat rotation techniques that have substantially improved agricultural productivity. For more information, see National Research Council, Committee on Science and Technology in Foreign Assistance, *The Fundamental Role of Science and Technology in International Development: An Imperative for the U.S. Agency for International Development*, (Washington, DC: The National Academies Press, 2006).

[5] For example, the National Institutes of Health permits funding of the best and brightest minds regardless of nationality to research and fight human diseases. For more information, see John E. Fogarty International Center for Advanced Study in the Health Sciences, U.S. National Institutes of Health, Global Research Initiative Program for New Foreign Investigators (GRIP). Available online at: *http://www.fic.nih.gov/programs/research_grants/grip/index.htm*.

[6] According to the Office of Management and Budget, the Program Assessment Rating Tool (PART) was developed "to assess and improve program performance so that the Federal government can achieve better results. A PART review helps identify a program's strengths and weaknesses to inform funding and management decisions aimed at making the program more effective. The PART therefore looks at all factors that affect and reflect program performance including program purpose and design; performance measurement, evaluations, and strategic planning; program management; and program results. Because the PART includes a consistent series of analytical questions, it allows programs to show improvements over time, and allows comparisons between similar programs." For more information, see *http://www.whitehouse.gov/omb/part/*.

[7] National Research Council, Committee on Science and Technology in Foreign Assistance, T*he Fundamental Role of Science and Technology in International Development: An Imperative for the U.S. Agency for International Development*, (Washington, DC: The National Academies Press, 2006).

[8] Closer coordination between policymakers and the users of these facilities will better ensure that U.S. funding policies do not present unintended hurdles to U.S. scientists' access to international research facilities.

[9] U.S. Federal disinvestment in national networking, the most fundamental infrastructure that underlies cyberinfrastructure, has resulted in the clear and substantial loss of U.S. leadership in a field that the U.S. invented and still led as recently as a decade ago. It also seems evident that the current lack of balanced investment in an integrated U.S. cyberinfrastructure strategy is likely to lead to deterioration of any leadership in cyberinfrastructure to which the U.S. may aspire.

[10] Bush, Vannevar, A Report to the President by Vannevar Bush, Director of the Office of Scientific Research and Development, *Science – The Endless Frontier*, (Washington, DC: United States Government Printing Office, July 1945).

[11] UNESCO, an intergovernmental organization with universal membership, recently celebrated its sixtieth anniversary with a publication, "Sixty Years of Science at UNESCO 1945-2005," which recounts its science efforts encouraging international cooperation in research, education and in science policy advice to governments. For more information about UNESCO, see *http://www.unesco.org*.

[12] For more information about the International Council for Science, see *http://www.icsu.org*.

[13] For more information about the World Federation of Engineering Organisations, see *http://www.wfeo.org*.

[14] For more information about the Academy of Sciences for the Developing World, see *http://www.twas.org*.

[15] National Science Board Interim Report, *Toward a More Effective NSF Role in International Science and Engineering* (NSB-00-217), (Arlington, VA: National Science Foundation, December 14, 2000).

[16] National Science Board, *Toward a More Effective Role for the U.S. Government in International Science and Engineering* (NSB-01-187), (Arlington, VA: National Science Foundation, November 15, 2001).

[17] National Science Foundation, *Investing in America's Future: Strategic Plan FY 2006-2011* (NSF-06-48), (Arlington, VA: National Science Foundation, September 2006).

[18] National Science Board, *National Science Board 2020 Vision for the National Science Foundation* (NSB-05-142), (Arlington, VA: National Science Foundation, December 2005). Available online at: *http://www.nsf.gov/pubs/2006/nsb05142/nsb05142.pdf*.

[19] National Science Board, Committee on Programs and Plans, Charge to the Task Force on International Science, September 29, 2005 (NSB-05-134). Available online at: *http://www.nsf.gov/nsb/committees/is_charge.jsp*.

[20] Secretary Condoleezza Rice, Transformational Diplomacy, Georgetown University, Washington DC, January 18, 2006. Available online at: *http://www.state.gov/secretary/rm/2006/59306.htm*.

[21] Nye, Jr., Joseph. *Bound to Lead: The Changing Nature of American Power*, (New York: Basic Books, 1990).

[22] Dr. Janez Potočnik, Commissioner for Science and Research for the European Commission, is actively seeking such partnering.

[23] It is important that partnerships with developing countries align with national and regional needs and priorities, as well as, catalyze positive future development.

[24] For more information, see *http://www.un.org/millenniumgoals/index.html*.

[25] For more information, see *http://www.usaid.gov/locations/sub-saharan_africa/initiatives/ieha.html*.

[26] The Millennium Ecosystem Assessment was, "called for by the United Nations Secretary-General Kofi Annan in 2000. Initiated in 2001, the objective of the MA was to assess the consequences of ecosystem change for human well-being and the scientific basis for action needed to enhance the conservation and sustainable use of those systems and their contribution to human well-being. The MA has involved the work of more than 1,360 experts worldwide. Their findings, contained in five technical volumes and six synthesis reports, provide a state-of-the-art scientific appraisal of the condition and trends in the world's ecosystems and the services they provide (such as clean water, food, forest products, flood control, and natural resources) and the options to restore, conserve or enhance the sustainable use of ecosystems." For more information, see *http://www.millenniumassessment.org/en/About.aspx#1*.

[27] The lead institutions involved in this assessment are the University of the West Indies, the Cropper Foundation, the Institute of Marine Affairs, the Island Resources Foundation, the University of Florida, the Association of Caribbean States Secretariat, the Caribbean Community Secretariat, the Economic Commission for Latin America and the Caribbean for the Caribbean Office, the Caribbean Conservation Association, the United Nations Environment Programme Regional Office for the Latin America and the Caribbean, and the Caribbean Agricultural Research and Development Institute.

[28] For example, the U.S.-Pakistan Science and Technology Program, led by a coordinating committee chaired by Dr. Arden Bement, NSF Director, and Dr. Atta-ur-Rahman, Pakistan Minister of Education and Science Advisor to the Prime Minister. USAID funds the U.S. contribution of the joint program and supports other programs in Pakistan involving NIH and other agencies. This U.S.-Pakistan S&T program supports a number of joint research projects peer reviewed by the National Academy of Sciences and approved by the joint S&T committee.

[29] The new Library at Alexandria is a magnificent complex that was established by Egypt in partnership with UNESCO, the EU, and a number of private sources near the site of the ancient Library. It includes a Planetarium, a Conference Center, and numerous research institutes and educational support facilities, in addition to, a modern library with extensive digital collections, databases, archives, and journals. The Library also provides extensive educational and research support services and stands as an important monument to the peoples of Egypt and other Arabic speaking nations.

[30] In the United Kingdom for example, coordination of international S&E partnerships between government departments is facilitated via the UK Global Science and Innovation Forum (GSIF). GSIF is chaired by the UK Government's Chief Scientific Advisor and brings together senior officials from the Department for Innovation, Universities and Skills, Foreign and Commonwealth Office, Department for International Development, Department for Health, and a number of other departments and bodies, including the UK Research Councils. GSIF provides useful information for greater sharing and coordination of activities on international S&E partnerships.

[31] However, many Federal agencies do engage in international S&E partnerships to fulfill their individual mission objectives. Due to the global nature of U.S. national interests and the rapidly growing international S&E enterprise, the Department of Defense, for example, has a presence around the world with offices in Tokyo, Singapore, Chile, Argentina, and Australia. The National Science Foundation's Office of International Science and Engineering has representatives in Beijing, Tokyo, and Paris to facilitate mutually advantageous research collaborations. The work of agencies such as the Department of Commerce's National Oceanic and Atmospheric Administration and the National Aeronautic and Space Administration is inherently trans-boundary in nature and global in scope.

[32] Although this annual conference would be primarily for U.S. Federal agencies to coordinate their international S&E partnerships, it would be beneficial to also include leadership from industry and academia.

[33] According to the Office of Management and Budget, the Program Assessment Rating Tool (PART) was developed "to assess and improve program performance so that the Federal government can achieve better results. A PART review helps identify a program's strengths and weaknesses to inform funding and management decisions aimed at making the program more effective. The PART therefore looks at all factors that affect and reflect program performance including program purpose and design; performance measurement, evaluations, and strategic planning; program management; and program results. Because the PART includes a consistent series of analytical questions, it allows programs to show improvements over time, and allows comparisons between similar programs." For more information, see *http://www.whitehouse.gov/omb/part/*.

[34] National Science Board, *Toward a More Effective Role for the U.S. Government in International Science and Engineering* (NSB-01-187), (Arlington, VA: National Science Foundation, November 15, 2001).

[35] The State Department does provide support to UNESCO, the Organization of American States, and OECD for capacity building in developing countries, and NSF provides direct leadership to these three international bodies.

[36] The Government Accountability Office has, "made several recommendations to strengthen the visa process in a way that reduces barriers for international students while balancing national security and recent changes have improved the process. Processing times for certain security reviews have declined, and recent data show more student visas issued in the last few years. The Department of State has also taken steps to ease the burden on students, including expediting interviews, and extending the length of time that some visa clearances are valid. The United States must maintain an appropriate balance between protecting national security interests and ensuring our long-term competitiveness. Monitoring current trends and federal policies is essential to ensuring that the United States continues to obtain talented international students in the face of greater global competition." See statement of George A. Scott, Director, Education, Workforce, and Income Security Issues, Testimony before the Subcommittee on International Organizations, Human Rights and Oversight, Committee on Foreign Affairs, House of Representatives, *Higher Education – Challenges in Attracting International Students to the United States and Implications for Global Competitiveness* (Washington, DC: U.S. Government Accountability Office, June 29, 2007).

[37] The Rockefeller and Gates Foundations, corporations such as Microsoft and Cisco and their foundations, the Abdus Salam International Centre for Theoretical Physics, and the U.S.–Israel Binational Science Foundation are excellent examples of non-governmental stakeholders that are able to successfully partner internationally in S&E.

[38] For example, USAID supported the first engineering design and construction phase of a Kabul to Kandahar highway, generating employment, engineering knowledge and improving access to markets, health care, schools, and jobs.

[39] National Research Council, Committee on Science and Technology in Foreign Assistance, *The Fundamental Role of Science and Technology in International Development: An Imperative for the U.S. Agency for International Development*, (Washington, DC: The National Academies Press, 2006).

[40] Ibid.

[41] Recently, Japan and Australia have emerged as premiere funding countries of international S&E partnerships with the developing countries of Asia. The European Union has also been very active in funding S&E partnerships in the developing countries of the former Soviet Union, the Middle East, South America, and Africa. In addition, South-South cooperation is promoting partnerships among developing countries with Brazil, China, and India.

[42] According to the 2005 Survey of Graduate Students and Postdoctorates in Science and Engineering, co-sponsored by the National Science Foundation and the National Institutes of Health, total U.S. enrollment of foreign graduate students in S&E fields continued to decline in 2005, but enrollment of first-time, full-time foreign S&E graduate students rose 4% over the 2004 level - the first increase since 2001. For more information, see *http://www.nsf.gov/statistics/infbrief/nsf07312/*.

[43] Closer coordination between policymakers and the users of these facilities will better ensure that U.S. funding policies do not present unintended hurdles to U.S. scientists' access to international research facilities.

[44] For more information, see *http://www.oecd.org/department/0,3355,en_2649_34319_1_1_1_1_1,00.html*.

Selected Acronyms

CRDF	Civilian Research and Development Foundation
GPRA	Government Performance and Results Act
ICSU	International Council for Science
ICTP	International Center for Theoretical Physics
IPY	International Polar Year
NSTC	National Science and Technology Council
OECD	Organisation for Economic Co-operation and Development
OMB	Office of Management and Budget
OSTP	Office of Science and Technology Policy
TWAS	The Academy of Sciences for the Developing World
USAID	U.S. Agency for International Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
WFEO	World Federation of Engineering Organisations