Appendix A

Examples of International S&E Partnerships

The Task Force heard about the following examples of international S&E partnerships during its meetings and discussions. This list is not meant to be comprehensive or exhaustive but is instead a limited selection of S&E partnerships that emerged in conversations with various individuals.

The U.S. Civilian Research and Development Foundation (CRDF) is an example of a NGO dedicated to building international S&E partnerships. Congress created CRDF in the wake of the collapse of the Soviet Union to address problems that arose when thousands of scientists and engineers, many of them former weapons scientists, no longer had an outlet for their work. CRDF provided research grants, training, and exchange programs that enabled these scientists and engineers to continue making productive contributions in their fields and to participate in the rebuilding of their countries, while also building S&E partnerships with American counterparts. CRDF is now applying its programs and expertise in other regions of the world, including the Middle East and North Africa.

The U.S.-Israel Binational Science Foundation (BSF), the U.S.-Israel Binational Agricultural Research and Development Fund, and the Israel-U.S. Binational Industrial Research and Development Foundation (BIRD) were jointly endowed by the U.S. and Israel to organize, fund, and help achieve common goals for international partnerships in science, agriculture, and entrepreneurship. The U.S.-Israel BIRD Foundation, in particular, is an excellent example of a facilitator organization for partnerships in entrepreneurial business development. The truly exciting aspect of these venture partnerships is that once seeded, they have the potential to be economically self-sustaining and can generate additional funding for seeding similar future enterprises. Additionally, the BSF Board of Governors recently called for Palestinian involvement in workshops sponsored by BSF, which emphasizes the power of science diplomacy to bring together otherwise very antagonistic populations. With support from the U.S. Department of State, regional scientific workshops have proved to be a very cost effective way of bringing scientists together around common issues in the Middle East and in other regions of the world. These regional scientific workshops should continue to be a high priority, but subsequent funding for actual research collaborations are also needed.

The USAID-funded Red Sea Marine Peace Park Cooperative Research, Monitoring, and Management Program serves as a good example of a multilateral Israel-Jordan-U.S. science partnership with great benefits to science, to those nations, to the region, and to the pursuit of peace. Funding requirements for such partnerships are modest and pay substantial long-term dividends. Developing scientific institutions in developing countries can also facilitate cooperation, communication, and trust. An example of this is the Africa Science Academies Development Initiative at the National Academy of Sciences, which demonstrates the benefit of taking a regional, in addition to a country-by-country approach, to increase the capacity of scientists in bringing their knowledge to policy debates.

Egypt and the U.S. have also experienced great success in establishing collaborative partnerships under the aegis and support of the jointly funded Egypt-U.S. Joint Science and Technology Fund. Like the U.S.-Israel partnerships mentioned before, this fund represents an excellent example of science diplomacy that could well serve as a model for other bilateral and multilateral diplomatic relationships in the Middle East and elsewhere. Very recently, the U.S. established the Community College Initiative with Egypt under the aegis of the Fulbright Commission. This innovative program will sponsor up to 200 Egyptians to study for up to 2 years at community colleges in the U.S.

The U.S. and Jordan have recently signed an Agreement on Science and Technology Cooperation. However, unlike the agreements with Israel and Egypt, this agreement is not yet funded. In fact, only 2 out of the 42 S&T partnerships that the U.S. established with other nations are funded. S&T agreements with no funding may well engender more frustration than good will. Some argue, however, that by developing relationships between scientists through the S&T working groups of the U.S. and partner countries, the best projects will rise to the surface and attract funding from a pool that already exists.

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 Arab speaking nations. Another great resource is the Iraqi Virtual Science Library, developed by the U.S. Departments of State and Defense, which provides Iraqi researchers with the same access to scientific journals and research as one would expect on any university campus in the U.S.

There are also examples where NSF and USAID partner in supporting international S&T programs to facilitate capacity building. 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. Over the past year, the Committee has also established sixteen S&T working groups that involve interagency participation in Pakistan and in the U.S. to carry out joint research projects of mutual interest (with direct benefit to Pakistan). Through this collaboration, NSF just completed a network connection of *Internet 2* with Pakistan to facilitate research and education collaborations and data exchanges under the program.

The USAID Initiative to End Hunger in Africa uses science and technology to innovate ways to increase agricultural productivity while reducing vulnerabilities from the environment. This initiative encourages partnerships among U.S. universities, international researchers, and African researchers that invest in agricultural research, institutions, networking, and training in order to accelerate the development of science-based solutions for the problems of African farmers. There needs to be a long-term commitment of funding for this type of S&E initiative in Africa in order for capacity building to be effective.

The Caribbean Sea of the Millennium Ecosystem Assessment brings together participants to undertake integrated ecosystem analyses. The assessment aims to determine the policies and governance structures that will protect the ecosystem of the Caribbean Sea to sustain and supply services that support human well-being in all countries of the region. Partnership among the involved nations helps to provide uniquely interdisciplinary scientific and analytical information to protect the Caribbean Sea ecosystem.

International centers serve as another means to build international S&E partnerships. Examples of these centers include the Abdus Salam International Center for Theoretical Physics (ICTP) in Trieste, Italy; the International Centre for Pure and Applied Mathematics; the Trace Elements Institute of UNESCO; and the International Centre for Chemical Studies. ICTP is supported by Italy, UNESCO, the Synchrotron-light for Experimental Science and Applications in the Middle East project, and the International Atomic Energy Agency to provide education and to stimulate research in a wide variety of scientific fields for scientists in developing countries. With modest additional funding from other developed countries, this center could serve as an important broker to establish productive international collaborations between scientists and engineers in developed and developing countries. In the Southern African Millennium Ecosystem Assessment, the International Centre for Researching Agroforestry works together with national research systems and NGOs to take a soil nutrient replenishment approach in rebuilding soil fertility.

In 1999, UNESCO, together with the International Council for Science, convened a World Conference on Science. The final documents of this conference offer a contract for international cooperation among the scientific community and governments, to serve the needs of humanity for peace and sustainable development. In response to this conference, UNESCO adopted a more integrated approach to problem-solving and the promotion of research and science education through multilateral cooperation.