THE FUNDAMENTAL ROLE OF SCIENCE AND TECHNOLOGY IN INTERNATIONAL DEVELOPMENT (2006)

Science and technology (S&T) capabilities are fundamental for social and economic progress in developing countries. For example, in the health sector, scientific research led to the development and introduction of oral rehydration therapy which became the cornerstone of international efforts to control diarrheal diseases. Research also established that two cents worth of vitamin A given to children every six months could reduce child mortality in many countries by over one-third. In agriculture, rice-wheat rotation techniques have significantly enhanced food production in South Asia. In Central America, scientifically based natural resource management has been essential in developing the tourist industry, a major source of foreign currency.

In light of this potential, the U.S. Agency for International Development initiated a review by the National Research Council of selected aspects of U.S. foreign assistance—primarily the programs of USAID—that have benefited or could benefit from access to strong science, technology, and medical capabilities in the United States or elsewhere.

THE CHANGING FACE OF FOREIGN ASSISTANCE

International approaches to providing assistance to developing countries are changing. For example, global programs with important S&T dimensions that are targeted on health, food production, environmental, and other problems omnipresent in the developing countries are growing in number and size while bilateral assistance is also increasing. A particularly important challenge for USAID is to find its role amidst the expanding network of dozens of foreign assistance providers, and particularly those providers of S&T-related assistance that draws on the limited capabilities of recipient countries to manage technology-oriented programs.

Within the U. S. Government the responsibilities for programs in developing countries are rapidly diffusing, with USAID now financing only about 50 percent of the international development programs of the government. The independent Millennium Challenge Corporation (MCC) that was established by the U.S. Government in 2002 has a multi-billion dollar development program directed to 23 countries although it has been slow in launching its initial projects. The Department of State has relatively new responsibilities for programs directed to combating HIV/AIDS, also with an annual budget in the billions of dollars. Its HIV/AIDS program is moving forward very quickly while a number of other U.S. departments and agencies, international organizations, and private foundations finance directly related activities.

Within this myriad of expanding activities, USAID supports hundreds of foreign assistance projects. But its role in carrying out its program is increasingly determined by dozens of Congressional earmarks and White House initiatives, including many with S&T components. Some earmarks sustain important programs. But too often, earmarks do not have high development dividends when they focus on narrow special interests.

CHALLENGES FOR USAID

In recent years, the Agency has lost much of its direct-hire staff with technical expertise while other government departments and agencies with much stronger expertise in specific areas of interest to these organizations are expanding their activities in developing countries. This decline of technical expertise is the single most important reason why USAID has lost much of its S&T capability and reputation that are critical in providing leadership for applying S&T to overcome development problems. Strong USAID internal capabilities are essential to guide the effective use of S&T resources in Agency programs and to work collaboratively on problems of common interest with other organizations that have well-established technical capabilities.

Since S&T are integral components of many foreign assistance activities, consideration of USAID's efforts to draw on the nation's S&T capabilities must begin with consideration of USAID's broader role in foreign assistance. USAID will of course continue to follow the decisions of the Administration and the Congress to support program activities in many fields within USAID's established program framework of governance and humanitarian assistance, reconstruction in war-torn areas, global health, and broadly defined economic growth. However, the Agency should to the extent possible select a few areas of emphasis within this framework where it can concentrate resources and be an international leader in addition to its well established leadership role in promoting democratic governance. Criteria for selecting such areas should include (a) high levels of developing country interest, (b) opportunities to have significant impacts on development, (c) relevance of USAID's unique field experience, and (d) limited interest of other U.S. departments and agencies in providing substantial financial support for activities in the areas.

RECOMMENDATIONS

Against this background the following recommendations to strengthen S&T at USAID were developed:

Recommendation #1: *USAID should reverse the decline in its support for building S&T capacity in developing countries.* Clearly, development of human resources and building relevant institutions must be at the top of the priority list if nations are to have the ability to develop, adapt, and introduce technological innovations in sectors of importance to their governments, the private sector, and their populations. To this end, USAID should:

- Increase the number of USAID-sponsored participants in highly focused graduate-level training programs.

- Increase financial support for applied research and outreach, including extension, at local institutions that can support host country priority programs of interest to USAID.

- Provide increased financial support for development of local capacity to deliver public health services, including support for the establishment of strong schools of public health in developing countries.

- Assist important institutions in developing countries in using broad band Internet and other modern technologies to strengthen their information acquisition and processing capabilities in support of S&T specialists.

- Sponsor expert assessments of the S&T infrastructures in countries where USAID has major programs when there are interested customers for such assessments.

Recommendation #2: *USAID should strengthen the capabilities of its leadership and program managers in Washington and in the field to recognize and take advantage of opportunities for effectively integrating S&T considerations within USAID programs.* The following steps by USAID would help achieve this objective.

- Development of an S&T culture within USAID, with the Agency leadership continually articulating in policy papers, in internal discussions, and in interactions with host governments the importance of (a) strengthening local S&T capabilities, (b) integrating these capabilities within a broad range of development activities, and (c) incorporating S&T into USAID programs.

- Strengthening of USAID staff capabilities in S&T through (a) recruitment of senior officials with strong S&T credentials and good project management track records, (b) an increased number of entry-level positions devoted to young professionals with S&T expertise, and (c) **career incentives** for technically trained employees to remain at USAID, and particularly promotion opportunities based on an individual's success in applying technical skills to USAID programs.

- Appointment of a full-time S&T Adviser to the Administrator, with adequate staff, to alert the USAID leadership and program managers on a continuing basis of overlooked and of new opportunities for programs with significant S&T content.

- Establishment of an independent S&T advisory mechanism to address technical issues of interest to the USAID leadership and to **promote peer review** throughout the Agency.

- Establishment of a Nongovernmental Innovation Center to concentrate on application of innovative technologies to specific development problems identified by USAID Missions, by USAID/Washington, and by the Center's staff.

- Strengthening the economic analysis capability of USAID to help ensure that the many dimensions of technological change occurring in almost every developing country are adequately considered when designing and implementing Agency projects.

- Revitalizing the program evaluation capability of USAID based on rigorous methodologies to gauge program effectiveness.

Recommendation #3. *USAID should encourage other U.S. departments and agencies with S&T-related activities in developing countries to orient their programs to the extent possible to supporting the development priorities of the host countries, and USAID should provide leadership in improving inter-agency coordination of activities relevant to development.* USAID's long history of working in developing countries provides the Agency with unique field perspectives, but at the same time it is not as strong as other departments and agencies in many technological areas. Its capabilities should be effectively integrated with the well developed S&T capabilities of other U.S. government organizations. To that end, USAID should:

- Assume leadership, in cooperation with the Department of State and the Office of Science and Technology Policy, in the establishment in Washington of an effective interagency committee to coordinate the overlapping S&T interests of U.S. departments and agencies in developing countries.

- Emphasize within the joint State-USAID planning process and in the field the payoff from broad inter-agency coordination of S&T-related activities.

- Clarify the division of responsibilities for supporting research relevant to international development supported by USAID and by other U.S. government departments and agencies.

Now, the challenge is for the entire Agency to recognize more fully the opportunities to integrate one of America's strongest assets—S&T—into foreign assistance and to transform this recognition into action programs in the field. The entire foreign assistance establishment must be persuaded that S&T are crucial enablers of development and not simply endpoints. Just as governance has become a significant rationale for much of America's global presence, so S&T must be recognized as an essential platform for transforming aspirations for better lives into durable and practical reality. Only then will the sustainability of a strong S&T component within USAID be assured.

Committee on Science and Technology in Foreign Assistance

Thomas R. Pickering (C*o-chair*), Boeing Company
Kenneth Shine (IOM) *(Co-chair)*, University of Texas System
Barry Bloom (NAS/IOM), School of Public Health, Harvard University
Owen Cylke, World Wildlife Fund
Lee H. Hamilton, Woodrow Wilson International Center for Scholars
Susanna Hecht, Latin American Center, Department of Urban Planning, School of Public Policy and Social Research, University of California at Los Angeles
Susan Henry, College of Agriculture and Life Sciences, Cornell University
W. David Hopper, The World Bank Group (retired)
Allan Rosenfield (IOM), School of Public Health, Columbia University
Philip Smith, Science Policy and Management Consultant, Santa Fe, New Mexico
Barry Worthington, United States Energy Association
Michael Rock, Department of Economics, Bryn Mawr College