

Evaluation: Enhancing S&T Capabilities in LDC's

John A. Daly

Introduction: The project titled "Enhancing S&T Capabilities in LDC's" was implemented through a contract with the National Research Council lasting from August 1977 through March 1981. The project funded three types of activities -- overseas workshops, information services for AID, and studies. These are described below.

The National Research Council (NRC) which is the operational arm of the National Academy of Sciences (NAS), the National Academy of Engineering (NAE), and the Institute of Medicine (IOM) plays a unique role in science and technology in the United States. The three membership organizations are composed of the most distinguished members of their respective professions. The NRC, drawing on its membership and the larger professional community, provides disinterested professional advice to the public through a network of advisory committees. This contract was implemented by the NRC Board on Science and Technology for International Development (BOSTID), and in part by the NRC Advisory Committee on Technological Innovation. In the following paragraphs the term NAS will generally be used to refer to the overall implementing agency.

The project was built on the unique capacity of the NAS. Overseas workshops, done by the NAS in cooperation with host country counterpart institutions, were primarily to provide fora for unbiased, informal discussion of S&T policy issues of major perceived importance to the host country. These also, however, were to strengthen host institutions and to encourage cooperation between U.S. and host country scientists. The information services for AID were designed to provide a mechanism to tap the U.S. and LDC professional communities quickly and easily to discuss scientific and technological issues of concern to AID. The studies were to produce monographs on technological issues of particular concern to AID and LDC's, particularly underexploited technologies of potential economic value to developing countries.

Methodology: A major evaluation was completed by a five person team on August 1, 1980. This evaluation was of particular importance due to the consideration at that time of a major new project to be implemented through NRC's BOSTID. Consequently more time and effort was spent on the evaluation than is customary, and the evaluation was very specific on revisions of processes and procedures for the NAS.

In light of the magnitude of this evaluation, completed seven months prior to the end of the contract, the current evaluation is primarily an update, done by the project manager. The Attachment is a report provided by the NAS, reviewing compliance with the recommendations of the last evaluation, and providing final data on project activities and costs.

Overall Project Accomplishments: The outputs of the program are shown in Table I. During the three and one-half years of the contract NAS carried out 12 overseas workshops (12 planned) and 10 discussion seminars (12 planned). Under the study program eight studies were undertaken under the project, one with cofinancing from another office (10-12 planned). Of these only two have been completed, and the remainder are in review. (As an administrative convenience, reprints

scheduled for printing under the new grant were printed under the project, and an equal amount under the new grant reserved for publication of the remaining studies as they appear.) There were two additional feasibility meetings that did not result in studies under the contract, and one previous study was translated into French (cost of \$46,000).

The project was completed within the original budget (\$3,375,000) with a six month, no cost extension mutually agreed upon. It is estimated that 320 persons have contributed 4296 person days of scientific and technical effort to the program without remuneration (valued at \$837,000 if paid at \$192 per person day). Counterpart organizations in overseas activities are estimated to have contributed at least 6368 person days of labor to the program.

Overseas Program: The direct costs associated with the twelve overseas workshops were \$307,947. However, allocating staff costs and indirect costs it is estimated that this portion of the program had a total cost of \$1,087,493. Individual workshops are estimated to have ranged from \$53,757 for the Caribbean workshop (organized in cooperation with the British Commonwealth S&T organization) to \$125,005. Average cost per workshop was estimated at \$90,624, and it is assumed that per workshop costs increased over the course of the contract due to inflation. It is noted, however, that some of the overhead involved in the overseas program involves development of S&T cooperation with LDC's, an objective of the project which is not reflected in the quantified evaluation indices of the logical framework.

The success of individual workshops varied according to the circumstances in the host countries. Overall the previous evaluation felt the quality of NAS effort in the first 10 workshops was high. The two workshops taking place after that evaluation were in Morocco and Nepal. Both were judged successful overall, although the NAS was somewhat criticized for failure in communications with the host organization in Morocco.

Discussion Seminars: Average cost for the ten discussion seminars was estimated to be \$31,137, with a range from \$28,500 to \$37,500. The one seminar completed after the last evaluation was at lower than average cost. Generally the previous evaluation found these seminars to be of high quality and well regarded in AID, and the final one appears to share these characteristics.

Studies: The failure of NAS to complete five of the seven studies initiated under this contract during the period of the contract is of major concern per se, and also complicates the evaluation of this program element. Costs per study can only be approximated and study quality can not be ascertained.

It is estimated that the total costs for the studies program over the life of the project are approximately \$1,400,000 (counting feasibility meetings and the co-financing for the Water Buffalo study). This cost includes not only the production of the seven new studies, but a major distribution program which responds to requests for 12 studies produced under previous projects, and considerable staff effort in technological diffusion. Reprint costs alone amounted to \$150,000.

Individual studies vary from quite small reports (Winged Bean and Aerial Seeding) to what will be major monographs (Water Buffalo and Productive Utilization of Wastes). Consequently per unit costs have little generalizability.

The two studies which have been completed under this contract both appeared since the last evaluation. The Aerial Seeding report appears to be a high quality effort of modest pretensions. The Supplement to Energy for Rural Development is a useful monograph that was widely distributed at the UN Conference on New and Renewable Sources of Energy (although it appears to be of rather variable internal quality).

Compliance With Recommendations of the Previous Evaluation: The attachment documents NAS efforts to comply with the major recommendations of the previous evaluation. The efforts have been significant and seriously undertaken. The impact of these efforts could not be adequately measured in the final seven months of the contract. They were largely oriented to preparation for efforts under the new project, funded in January 1981, and the impact of the reforms will be measured in the evaluation of that project.

Table I
Activities Completed

Workshops

1)	June 1978	Cameroon	Management of Agricultural Research
2)	September 1978	Philippines	Technology for Rural Development
3)	December 1978	Sudan	Aquatic Weed Management: Gezira Canals
4)	April 1979	Caribbean	Regional Meeting on Natural Products
5)	July 1979	Jordan	Science and Technology in Jordanian Development
6)	September 1979	Mauritania	Mauritanian Environmental Panel
7)	November 1979	Costa Rica	Energy Development
8)	December 1979	India	Postharvest Food Conservation
9)	February 1980	Sri Lanka	Postharvest Food Losses
10)	March 1980	Ghana	Research Management for Development Planning
11)	December 1980	Morocco	Science and Technology Policy
12)	February 1981	Nepal	Renewable Natural Resources

Discussion Seminars

1)	April 1978	Urban Problems in Developing Countries	
2)	October 1978	Regional Science and Technology Development in the Middle East	
3)	March 1979	New Mechanisms for Applying S&T to LDC Problems	
4)	June 1979	Techniques for Large Scale Revegetation	
5)	October 1979	Appropriate Technologies for Health Care Delivery	
6)	February 1980	Research Priorities Within the Foreign Assistance Program	
7)	March 1980	Review of Future Directions for AID's DS/ST	
8)	June 1980	Two-way Radio Communication for Rural Health Services	
9)	May 1980	Conventional Energy Training	
10)	January 1981	AID Strategy in Remote Sensing, Forestry, Environment and Natural Resources	

ACTI Studies

- 1) The Winged Bean (Revision) (not completed, and final printing transferred to the new grant)
- 2) The Productive Utilization of Wastes in Developing Countries (not completed, and final printing transferred to the new grant)
- 3) The Water Buffalo (cofinanced with DS/AGR) (not completed, final printing under DS/AGR financing)
- 4) The Potential for Alcohol Fuels in LDC's (not completed, and final printing transferred to the new grant)
- 5) Supplement to Energy for Rural Development
- 6) Land Imprinting (not completed, and final printing transferred to the new grant)
- 7) Aerial Seeding of Forests
- 8) Producer Gas for Motor Transport (not completed, and final printing transferred to the new grant)