

PD-ABF-576

BN 81515

**SCIENCE AND TECHNOLOGY FOR  
DEVELOPMENT PROJECT  
(263-0140)**

**MID-TERM EVALUATION**

**Contract No. OTR-0000-I-11-0035-00**

Submitted to:

**USAID/Egypt**

106 Kasr El Aini Street  
Cairo, Egypt

Submitted by:

**Development Associates, Inc.**

1730 North Lynn Street  
Arlington, Virginia 22209  
(703) 276-0677

Prepared by:

**Donald E. Dembowski, Team Leader  
Jon Gliven**

March 1992

## TABLE OF CONTENTS

	<b>Page</b>
<b>PREFACE</b>	
<b>LIST OF ACRONYMS</b>	
<b>EXECUTIVE SUMMARY</b> .....	i
<b>EVALUATION REPORT</b> .....	1
I. <b>INTRODUCTION</b> .....	1
II. <b>BACKGROUND AND DESCRIPTION OF THE PROJECT</b> .....	2
III. <b>THE EVALUATION METHODOLOGY</b> .....	11
IV. <b>FINDINGS REGARDING THE PROGRESS           OF PROJECT IMPLEMENTATION</b> .....	12
V. <b>STRATEGIC CONSIDERATIONS:           FINDINGS REGARDING THE PROJECT'S           GOALS AND OBJECTIVES</b> .....	18
VI. <b>CONCLUSIONS AND RECOMMENDATIONS</b> .....	23
 <b>ANNEXES</b>	
A. <b>Scope of Work</b>	
B. <b>Bibliography</b>	
C. <b>List of Persons Interviewed</b>	

## **PREFACE**

The attached evaluation report, concerning the Science and Technology for Development (STD) Project being funded by USAID/Cairo, was prepared by Development Associates Inc., in conjunction with its mid-term evaluation of USAID/Cairo's \$136.75 million Science and Technology for Development (STD) program. It is one in a series of five individual evaluation reports prepared concurrently by Development Associates for the five component projects of the STD program, which include the following:

<b>Project Number</b>	<b>Project Name</b>	<b>LOP Amount (\$ mill.)</b>
263-140	S&T for Development Includes Phase I - Start Up Component	136.75 3.00
263-140.1	S&T Cooperation	36.00
263-140.2	Schistosomiasis Research	39.65
263-140.3	Energy Conservation and Efficiency	49.50
263-140.4	Energy Manpower Development	8.60

Participants in the evaluation exercise included expatriate as well as Egyptian S&T specialists, as indicated on the cover sheets of the individual reports. Specialists in the design and implementation of U.S. AID projects and programs were also involved. The Chief of Party for the overall evaluation effort was Mr, Donald Dembowski.

## LIST OF ACRONYMS

<b>AID</b>	Agency for International Development
<b>ASRT</b>	Academy of Scientific Research and Technology
<b>CDSS</b>	Country Development Strategy Statement
<b>DRTPC</b>	Development Research and Technological Planning Center
<b>ECEP</b>	Energy Conservation and Efficiency Project
<b>EMD</b>	Energy Manpower Development Project
<b>ENSTINET</b>	Egyptian National S&T Information Network
<b>FEI</b>	Federation of Egyptian Industries
<b>FY</b>	Fiscal Year
<b>GOE</b>	Government of the Arab Republic of Egypt
<b>IHRDC</b>	International Human Resources Development Corporation
<b>IQC</b>	Indefinite Quantity Contract
<b>LOP</b>	Life of Project
<b>MIC</b>	Ministry of International Cooperation
<b>MSCI</b>	Medical Services Corporation International
<b>M/TA</b>	Managerial/Technical Assistance
<b>OBI</b>	Overseas Bechtel Incorporated
<b>PACD</b>	Project Activity Completion Date
<b>PI</b>	Principal Investigator
<b>PIO/T</b>	Project Implementation Order/Technical Assistance
<b>PP</b>	Project Paper
<b>Pro Ag</b>	Project Agreement
<b>RD&amp;E</b>	Research, Development and Engineering
<b>RFP</b>	Request for Proposal
<b>S&amp;T</b>	Science and Technology
<b>SRP</b>	Schistosomiasis Research Project
<b>STC</b>	Science and Technology Cooperation Project
<b>STD</b>	Science and Technology for Development Project
<b>TIMS</b>	Tabbin Institute for Metallurgical Studies

# **SCIENCE AND TECHNOLOGY FOR DEVELOPMENT PROJECT (Proj. No. 263-0140)**

## **MID-TERM EVALUATION**

### **EXECUTIVE SUMMARY**

The purposes of this evaluation, which covered USAID/Cairo's umbrella Science and Technology for Development (STD) Project, were basically three-fold. The Team was asked to assess (1) the use of STD Project funds to finance the design and start-up of four component projects; (2) the progress of Project implementation and prospects for achieving the Project's principal goals and objectives; and (3) the relevance of the S&T activities financed under the Project to current Mission and Agency strategic objectives.

While the USAID Mission had indicated that it was too early in most cases to determine the success and impact of Project-funded activities, the Scope of Work called for the Evaluation Team to make recommendations for adjusting or redirecting project activities so that they would contribute more effectively toward the achievement of Project goals and objectives.

During the course of the evaluation, the Team was informed that the USAID had decided to abolish the Office of Science and Technology, which had been managing the STD Project, and was planning to transfer management of three of the four component projects, i.e. the Science and Technology Cooperation (STC) Project, the Energy Cooperation and Efficiency Project (ECEP), and the Energy Manpower Development (EMD) Project, to a new Environmental Affairs Office, which is to be located in the Mission's Program Directorate. Management of the Schistosomiasis Research Project (SRP) is to be transferred to the Mission's Health Office. The tentative effects of these administrative changes were taken into account in assessing the progress of Project-funded activities.

The Team's key findings, conclusions and recommendations as they relate to both the STD Project itself, and the four component projects, are summarized below.

#### **A. The Science and Technology for Development (STD) Project**

**The STD Project was designed in a way that gave individual GOE ministries independent control over the four STD component projects. The Team found that this contributed to poor coordination of effort among the many agencies and institutions involved in Egyptian S&T activities.**

The Team recommends that this approach be re-considered as the Mission moves towards integrating S&T activities into its evolving privatization and environmental protection programs. A high degree of interministerial coordination is needed to ensure the successful implementation of complex "cross-sectoral" programs, such as privatization and environmental protection.

**The need to strengthen the "macro-economic" rationale for promoting S&T transfers.**

USAID S&T assistance to Egypt in recent years has been focused on problem solving in a limited number of sectors and on technology transfers to meet specific user-defined needs. This "micro-economic" approach, though beneficial, is not resulting in production increases or energy savings of sufficient scale to trigger broad-based user interest and replication.

The Egyptian economy is in a precarious economic position at present. The Evaluation Team believes that this warrants the USAID Mission putting greater emphasis on large-scale S&T applications which can lead to "macro-level" economic benefits, such as: (a) increased exports, and higher value exports; (b) improved capacity utilization and productivity; and (c) higher-skill jobs.

**The need for a "rolling" redesign of the USAID S&T strategy and related refocusing of the STD Project and its components.**

The USAID assistance strategy appears at present to be evolving toward one of program assistance and less management-intensive projects, i.e. capital assistance as contrasted with technical assistance, and toward environmental issues rather than science and technology research in general. Adjustments are needed to bring a new cohesiveness and efficiency to Mission management of the various components of the STD Project.

The Team believes that this can best be accomplished through a "rolling" redesign of the USAID S&T strategy and by refocusing ongoing STD-funded activities so that they converge at some point in the future (o/a the PACD), and are realigned and redirected toward the Mission's economic growth, privatization and environmental protection goals and objectives. Current activities should be continued as this realignment is taking place to preserve project momentum.

**The issue of continuing S&T capacity building vs. promoting "off-the-shelf" technology transfers.**

The Mission's S&T strategy calls for emphasis to be given to the transfer of proven "off-the-shelf" technologies in the modern sector, e.g., energy-efficient equipment

and processes and modern management systems, in order to increase productivity through reduced energy consumption. .

Except for the ECEP, emphasis under STD-funded projects has instead continued to be placed primarily on "capacity building "activities.

### **Improving the coordination of S&T-related activities within the USAID.**

The STD Project Paper noted that the USAID S&T Office would play a catalytic and facilitative role to support other USAID divisions by responding to requests for assistance or information in the design, review, monitoring and possible implementation of projects involving S&T activities or components. The Office was also designated to serve a coordinating function to tie together S&T themes common across USAID sectoral boundaries.

Evaluation Team discussions with Sector office staff indicate at present only a very limited degree of Mission coordination of S&T activities.

### **B. The Science and Technology Cooperation (STC) Project**

**The diversity of sub-project activities currently being implemented under the STC Project is preempting development of the catalytic groups of experts in critically important technical areas espoused in the Mission's 1985 S&T strategy paper.**

A primary focus of the STC project was to have been directed toward resolving a limited number of development problems. This approach was aimed at allowing the assembly of a large enough group of expert and technical personnel to effectively address development problems.

This does not appear to have occurred to the degree envisioned.

**The implementation design of the STC Project appears to be impeding U.S. contractor involvement in S&T activities in Egypt.**

The Evaluation Team was told that STC Project developers consciously tried to avoid creating joint working groups to preclude sharp increases in the number of Americans associated with a project.

In view of their potential contribution to the success of the government's prospective privatization and environmental protection programs, and its ongoing energy conservation program, the Team recommends that the extent of U.S. contractor involvement in STC Project activities in Egypt be reconsidered.

**The need to modify implementation of the STC Project in order to effectively capitalize on the needs and demands of end users.**

A key objective of the STC Project is to focus the Egyptian S&T community on major Egyptian social and economic problems, as identified by Project end-users.

The Team found reason to question the extent to which the STC sub-project selection and implementation processes have been driven by the needs of end-users.

**C. The Schistosomiasis Research Project (SRP)**

The Schistosomiasis Research Project, while related in several ways to S&T and environmental issues, is essentially a health activity.

The Team recommends that it be moved to the Mission's Health Office as a free-standing project. Mission staff have indicated that such a move is being considered.

**D. The Energy Cooperation and Efficiency Project (ECEP)**

**The Government's long-standing reluctance to raise energy prices to border price levels has tended to undercut the effectiveness and impact of the ECEP Project.**

Energy prices have been highly subsidized for at least the last 10-12 years. Prices were raised appreciably during the 1980s; however, they averaged only about 30 percent of world prices by 1988. Further increases in May 1991 brought the average to 50 percent.

The subsidized prices have been costly to the economy, and have been a major disincentive to the adoption of energy-efficient technologies in Egypt, especially among public sector firms. The Team endorses the USAID's support for current IBRD and IMF efforts to induce the GOE to remove the subsidies by 1995.

**The proposed establishment of an Energy Conservation and Environmental Protection Fund.**

Mission documentation indicates that the USAID is pursuing a number of approaches to help surmount the problem of environmental deterioration in Egypt. The problem is a complex one, and will require a variety of approaches.

Establishing an Energy Conservation and Environmental Protection Fund would put the Mission's energy conservation and environmental protection efforts on a

business footing. The new activity could readily be merged with the existing Energy Conservation and Efficiency Project.

Setting up a **Clearinghouse** operation -- to identify, track and match U.S. sources of procurement, Egyptian end-users, and S&T applications opportunities -- would greatly facilitate Fund operations.

**E. The Energy Manpower Development (EMD) Project**

**Energy manpower development vs. skills training in the context of the proposed privatization of the Egyptian economy.**

Evaluation of the Energy Manpower Development component of the STD Project indicates a need to focus future activities more directly on technical and managerial skills training and on upgrading training facilities. Conversely, the considerable attention that has been given under the project to strengthening manpower development systems for Egypt's petroleum and electricity sectors should be seriously downgraded.

Privatization is widely viewed in Egypt as necessary to restore Egyptian productive enterprise to a competitive position in world markets. The Team believes that improving the efficiency of Egyptian workers through technical and managerial skills training programs is critical to the success of the privatization strategy.

# **SCIENCE AND TECHNOLOGY FOR DEVELOPMENT PROJECT (Proj. No. 263-0140)**

## **MID-TERM EVALUATION**

### **EVALUATION REPORT**

#### **I. INTRODUCTION**

This evaluation was undertaken by a two-person team from Development Associates, Inc., of Arlington, Virginia. It covered the USAID/Cairo's umbrella Science and Technology for Development (STD) Project. Similar teams from Development Associates undertook simultaneous evaluations of each of the Project's four currently active component projects.

The purpose of the evaluation, as set forth in the Scope of Work, was to assess: (1) the overall design of the STD Project; (2) the efficacy of the pre-implementation design process used under Phase I of the Project; (3) the relevance of S&T activities financed under the Project to current Agency and Mission strategic objectives; (4) the progress of Project implementation; and (5) the current prospects for achieving the Project's overall goals and objectives.

It became clear during the course of the evaluation that there had been significant changes in the USAID Mission's objectives and strategy for assisting Egypt in recent years, and in the country's orientation towards development and the development assistance process. These changes were taken into account in conducting the evaluation and were themselves assessed in the context of recent changes in AID's overall assistance strategy and objectives.

The Scope of Work called for the Evaluation Team to make recommendations for improving project implementation and for adjusting or redirecting project activities so that they would contribute more effectively toward the achievement of project goals and objectives. While the Mission indicated that it was too early in most cases to determine the success and impact of project-funded activities, the Evaluation Team was asked to assess the potential future impact of sub-project activities on project goals and objectives.

Evaluation issues and questions developed by USAID for each of the five evaluation reports were included in the Scope of Work.

## **II. BACKGROUND AND DESCRIPTION OF THE PROJECT**

### **A. The Country's Current Economic Situation**

Since the early 1950s, Egypt's economy has been controlled by the public sector and dominated by inefficient state-run, parastatal industries. This has led to costly subsidies and the persistent misallocation of productive resources in a number of sectors. In spite of increasing private sector activity, over one-half of Gross Domestic Product and about 75 percent of Egypt's industrial establishment is operated by public sector agencies, through parastatal organizations.

The Government has been working with the World Bank and the IMF since the late 1980s to evolve a strategy that would transform the country's centrally-planned economy into one that is market-based and decentralized.

The proposed strategy would put private companies on the same footing as public enterprises, thereby increasing competition and correcting extreme distortions in the price structure. It would establish the private sector as the country's engine of development and main source of economic growth.

The Government's strategy is ambitious and its implementation will require concerted efforts by Egypt's major donors. Substantial and sustained assistance will need to be focused on projects which: (a) improve capacity utilization; (b) increase productivity; (c) assure better management of Egypt's scarce land and water resources; and (d) protect its environmental resource base. In a country that relies as heavily as Egypt does on limited water and arable land resources, as well as on tourism, environmental issues are of critical importance.

Scientific research and the development of efficient technology are essential ingredients for sustaining broadly-based development. Egypt's S&T community has the potential to help provide new and adaptive technologies capable of raising productivity and incomes, reducing mortality and illness, and coping with economic and environmental constraints. Whether this potential is realized will depend heavily on whether the S&T community can find ways to bring the results of successfully applied research activities to bear on the country's economic growth process.

### **B. The Current USAID Assistance Strategy**

The current USAID strategy for assisting Egypt is focused on removing policy, infrastructural, and resource constraints to economic growth and development. Privatization and private sector development constitute a second major theme. To achieve these objectives, USAID is supporting a number of GOE projects aimed at increasing agricultural and industrial productivity, while encouraging the

Government to privatize state-run enterprises and to remove restrictions on the operation of market forces. The current strategy places increased emphasis on the implementation of environmental protection activities, while diminishing somewhat the historical role that S&T research and development activities have played in the achievement of the Mission's overall goals and objectives.

A key USAID assumption is that the GOE will implement significant policy reforms affecting subsidies and prices in the near future. This was attempted in 1987, but widespread public resistance forced the Government to back down. The country's budgetary and debt service problems have worsened in recent years, and the Government now appears determined to undertake the reforms needed to restore balance to the economy. An improved policy environment would greatly facilitate donor efforts to assist Egypt's economic growth.

### **C. The USAID Strategy for S&T Development**

Egypt has been a center of education and technology development in the Middle East for many years. For almost twenty years, from the mid-1950s until the mid-1970s, Egypt was essentially cut off from Western sources of technology. Starting in 1975, the USAID made large investments in rebuilding the country's S&T institutions. This included establishing Egyptian linkages with U.S. institutions through projects focused on participant training, and applied research.

#### **1. USAID efforts to upgrade S&T**

USAID support for development of the S&T community in Egypt began in 1961 with the use of PL-480 funds. For the most part, these early efforts were focused on institution building and staff training.

Later efforts continued institution building activities, but began focusing on solving productivity problems in key sectoral areas, including agriculture, health, energy and industry.

When U.S. assistance to Egypt resumed in 1975, after a prolonged hiatus, Mission priority was given to projects directed towards dealing with the country's deteriorated physical infrastructure and stalled economy. S&T efforts were focused on re-establishing technical and scientific ties with the West.

A second generation of S&T activities funded by USAID during the early 1980s continued to promote ties with the West through technology transfers and training, while focusing on the need for Egypt's S&T community to get directly involved in solving problems of increasing productivity, and energy and natural resource conservation.

**2. The status of S&T research and development at the outset of the STD Project.**

Despite the USAID's considerable assistance, Egyptian S&T research and development capabilities in the mid-1980s remained limited. R&D units comprising the S&T community varied widely in their capacity and capabilities. Most public sector industries had established research and development units; however, private sector companies generally did not support such activities because of their small size and limited resources.

While various attempts were made to stimulate close cooperation, the country's established S&T research and development institutions to a large extent operated independently. The large number of S&T research institutions attached to government ministries were organized around specific assignments such as the Building Research and Tropical Medicine Research Institutes. S&T research activities within the universities continued to be directed toward "academic" research with the main objective being journal publication.

The Academy of Scientific Research and Technology (ASRT) was the country's main coordinating body for S&T efforts; however, it was not able to achieve the level of cooperation needed to engender a strong impact on Egypt's socio-economic problems.

**3. The USAID's current S&T strategy**

Under the USAID's current strategy for S&T assistance, which evolved during the 1980s, emphasis has shifted from broad-based capacity building to a primary focus on problem solving in selected development sectors, and on technology transfers to meet important end-user needs.

The principal elements of the current strategy include building on capabilities already developed by previous S&T projects, and channeling USAID support to areas where successful applications could have industry-wide impact. The strategy tries to avoid creating joint working groups that might unduly increase the number of Americans involved in S&T projects. It also aims at supporting activities which will create local capacities for scientific research and technology transfer that are sustainable and replicable.

The fact that the Mission's current overall assistance strategy cuts across the country's key productive sectors has had important implications for Mission S&T support programs, as indicated below.

## **Agriculture**

USAID's overall goal for agriculture is to achieve increases in agricultural production primarily through improvements in productivity (processing in particular) so as to optimize the use of arable land. This requires the application of a broad range of appropriate technologies. It is estimated that production in crops for which Egypt has a comparative export advantage could increase from 25 to 75 percent with the use of modern technologies, and the right economic incentives.

## **Health**

In the health sector, USAID is currently supporting research to develop preventative or curative interventions against the country's more prominent debilitating diseases. Focusing on improved maternal and child health as a main goal, the USAID program concentrates on cost recovery as a means to improve and sustain health care coverage, and on basic and applied research for the discovery and development of agents for the treatment of illnesses such as Schistosomiasis, diarrhea, and acute respiratory infections. Program objectives are: (1) improved case management of acute respiratory infections, (2) increased immunization coverage, and (3) improved access to perinatal care to enhance pregnancy outcomes.

USAID is planning to complete its ongoing activities in child survival and health research over the next several years, and will shift its focus during the second half of the 1990s to concentrate on "emerging" health issues related to modern life styles and degenerating environmental conditions.

## **Energy**

Lack of attention to operations and maintenance and cost recovery has led to poor efficiencies in power generation and transmission in Egypt. Low prices have led to wastefulness in energy use. Subsidies to energy represent the largest portion of the Government's total subsidy bill. Proper pricing is a cornerstone of the USAID strategy to raise industrial productivity. USAID is also supporting the World Bank in its dialogue with the GOE to increase energy prices.

USAID S&T activities in the energy sector address the problem of inefficient energy generation, use and transmission. Much of the equipment and processes currently in place in Egypt's productive industries were installed during an era of energy abundance, and little thought was given to efficiency. The sector costs the national economy several billion dollars

annually through energy waste, reduced productivity, and lost revenues from potential petroleum exports.

In technology transfer, emphasis is given to the transfer of proven energy efficient technologies in the modern sector -- specifically the adoption of energy efficient equipment, processes and improved management systems -- in order to increase productivity through reduced energy consumption.

### **Water/Wastewater**

Further expansion of water and wastewater facilities is considered essential to improving the quality of life in Egypt and to protecting the environment. The USAID strategy for this sector assumes that price reform will occur and that tariffs sufficient to cover operating and maintenance costs will result.

### **Environment**

Egypt is in the midst of a serious environmental crisis affecting its air, water, and coastal land resources. This situation is exacerbated by the country's continuing high rate of population growth. Many of the Mission's current assistance activities have environmental implications.

The USAID is presently developing a comprehensive strategy to promote environmental protection which will be focused in part on improving environmental conditions through the application of modern technologies.

## **D. The S&T Development (STD) Project**

The STD Project is an umbrella project consisting of a start-up activity and four component projects that are being implemented by separate ministries. Originally, there were to have been five component projects, but one involving land use planning was eliminated. Each STD component project is comparable to an individual USAID project.

The STD Project is based on the S&T strategy evolved in March 1985, following a major Egyptian-U.S. assessment of Egyptian S&T requirements in the early 1980s.

The general requirements of the Project include: (a) building on capacities installed under previous S&T projects, both bilateral and multilateral; (b) establishing R&D management systems and processes which are to remain after project completion; and (c) developing methods of planning and more selectively implementing transfers of appropriate technology.

## **1. Project goals and objectives**

The overall goal of the Project is to improve the welfare and productivity of the Egyptian people. The Project seeks to:

- Maximize the contribution of science and technology to Egyptian socio-economic development;
- Generate and extend inter-disciplinary and inter-institutional cooperation;
- Develop, introduce, and transfer technologies to meet important and well-defined end-user needs.

The purpose of the Project is to enable the Egyptian S&T community to solve complex, national development problems and constraints through applied research and technology in energy, health and industrial productivity. The Project is designed to provide models for the coordination of S&T research and development activities which have been lacking in previous efforts.

## **2. The Project design process**

USAID approved the STD Project Paper in July 1985. In March 1986, USAID and the GOE signed a Project Agreement (ProAg) authorizing \$3.0 million for the design of the five proposed component projects and to finance the Phase I start-up of project implementation activities.

Project Agreements for the S&T Cooperation (STC), Schistosomiasis Research (SRP), Energy Conservation and Efficiency (ECEP), and Energy Manpower Development (EMD) Projects were signed in 1987-1988. The proposed land use planning project was not approved. Phase II, the post-design implementation phase of the Project, got underway in 1989-1990.

## **3. The four STD component projects.**

### **The S&T Cooperation (STC) Project**

The purpose of the STC Project is to strengthen Egyptian S&T research capabilities in pre-defined, high-priority problem areas having the greatest impact on end-users.

The Project funds research grants in fields such as construction materials, industrial minerals and chemicals, soil improvements, water/wastewater,

lake ecosystems, small-scale industry, crops for semi-arid areas, and computer-based technology.

The Project is being implemented by a Secretariat housed in the Egyptian Academy of Scientific Research and Technology (ASRT). Policy guidance is provided by a Steering Committee composed of senior representatives from the Egyptian S&T and end-user communities.

Egyptian universities, research centers, and private and public sector firms are eligible to compete for STC contracts in response to advertised "Requests For Proposals" (RFPs). The proposals are developed in close collaboration with end-users, including individual companies and groups of producers.

### **The Schistosomiasis Research Project (SRP)**

The SRP underwrites a comprehensive U.S.-Egyptian research and development effort to control Schistosomiasis by developing tools (vaccines), methods and information through directed research. A secondary purpose is to improve the biomedical research capabilities of research institutions to conduct control-oriented Schistosomiasis research.

The Project makes grants to Egyptian universities, research centers, and U.S. private and public sector groups for research in high-priority areas. Egyptian and U.S. investigators collaborate actively on joint projects. Young Scientist (YS) grants are used to involve a younger generation of Egyptian scientists in research activities.

The SRP is the largest ongoing Schistosomiasis research project in the world.

### **The Energy Conservation and Efficiency Project (ECEP)**

The Energy Conservation and Efficiency Project has two purposes: (1) to promote and accelerate the adoption of energy-efficient technologies, processes, and practices among the country's energy producers and users; and (2) to improve Egyptian institutional capabilities, particularly in the private sector, to promote and implement energy-saving and energy-related productivity enhancing investments.

The initial ECEP design called for technical assistance and funds (loans and grants) to be provided on roughly a fifty-fifty basis to private and public sector companies for the implementation of up to 60 applications (sub--

projects) of energy-efficient technologies. A proposed loan component, which was to operate through the banking sector, was dropped.

The Tabbin Institute for Metallurgical Studies (TIMS) of the Ministry of Industry is implementing public sector applications, while the Cairo University, Development Research and Technological Planning Center (DRTPC), is handling the private sector. The Federation of Egyptian Industries (FEI) is responsible for promoting ECEP among Egyptian business enterprises.

The public sector in Egypt is by far the largest energy user and offers the best opportunities for energy conservation. Public sector companies in the metal, chemical and cement industries were selected for initial ECEP participation. Food and textile companies were added later.

### **The Energy Manpower Development (EMD) Project**

The primary objectives of the EMD Project are to provide training related to the adoption of energy efficient technologies by energy producers and users, and to further develop the capabilities of indigenous technical and management staff on the application and use of advanced energy technologies.

The EMD Project has two interrelated components. The first addresses capacity building requirements and the immediate need to improve technical and managerial skills in Egypt's petroleum and electricity industries. The second involves introducing manpower planning and development systems on a pilot-testing basis in three GOE agencies: the Egyptian General Petroleum Corporation (EGPC), the Egyptian Electricity Authority (EEA), and the Electricity Distribution Authority (EDA).

## **E. Project Implementation**

The STD project, as well the four component projects, are being managed by the USAID S&T Office. In order to coordinate project implementation, each component features a joint Egyptian-U.S. management structure which includes a policy steering committee to ensure that component activities support component goals, and a technical secretariat which assists in planning, implementing and monitoring sub-project activities.

### **1. S&T Office support services**

The STD Project Paper envisioned the S&T Office playing a catalytic and facilitative role within the USAID regarding STD Project implementation by responding to requests for assistance from other USAID divisions and by

providing them information on project design, review, monitoring and possible implementation.

Examples of the kinds of S&T activities in which cross-sectoral and inter-office involvement and collaboration were seen to be needed included joint U.S.-Egyptian efforts to improve productivity in private/public industrial enterprise projects, applying S&T community resources to the GOE's national commodity program and other aspects of modernizing agricultural productivity, and helping to mobilize research for water/wastewater projects.

S&T priority setting within the USAID Mission was to be effected through a committee made up of the Deputy Director, the Associate Directors, and the S&T Office Director, with the S&T Joint Coordination Committee serving as a consultative group and coordinator.

In practice, neither of these proposed support activities has been effectively implemented.

## **2. Project Implementation**

By design, the STD umbrella project was not given implementation responsibilities for the implementation phase of the STD Project itself or for the four component projects, other than providing initial funding for the design and start-up of the component projects and assuring project implementation follow-up by the Ministry of International Cooperation (MIC).

### **III. THE EVALUATION METHODOLOGY**

The Evaluation Team for the STD Project was comprised of two consultants: an Economist, who also served as Chief of Party for the five separate evaluation efforts, and a Financial Specialist. As the starting point in the evaluation, the Team reviewed background documents pertinent to the STD Project and the four component projects. The documents reviewed included:

Project Papers, Project Agreements, contracts, subcontracts, sub-grant agreements, RFPs and other procurement documents, Project Implementation Letters, Project manuals, Project status reports and reviews, newsletters and promotional materials, feasibility studies, consultant reports, trip reports, and selected correspondence.

The Team then conducted interviews with key individuals involved in the design, start-up, implementation, and monitoring of the STD umbrella project and its four components including:

- Senior and operational counterparts in GOE implementing agencies and Secretariats;
- Key individuals in USAID/Cairo;
- Project participants; and
- Contractor consultants from:
  - RCG/Hagler Bailly (HB)
  - International Development & Energy Associates (IDEA)
  - Overseas Bechtel Inc. (OBI)
  - International Human Resources Development Corporation (IHRDC)
  - Naval Medical Research Unit Three (NAMRU-3)

Using the USAID Mission's evaluation issues and questions as a guide, the Team compiled and analyzed information pertinent to the design and implementation of the STD Project.

## **IV. FINDINGS REGARDING THE PROGRESS OF PROJECT IMPLEMENTATION**

### **A. Project Design and Start-Up**

The Team found that the approach taken by the USAID of using funds from an umbrella project to start up component projects, while unconventional, does not violate AID regulations or policy. It is used to expedite start-up and to permit a degree of flexibility of shifting resources among the components that a single project structure would not provide. The main disadvantage of this approach is that it places an extra burden on the project design team to "get things right" right from the start, because the design process is not subject to normal outside scrutiny.

For the STD Project, design and start-up activities funded under the project included buy-ins to AID/W contracts, consultant services to assist the USAID and GOE with component project design, and managerial and technical assistance (M/TA) to initiate project implementation activities pending the award of competitive contracts for longer-term M/TA.

The Team does not consider the use of funds provided under the STD umbrella Project to finance the start-up and early implementation of the individual component projects to have been a totally beneficial undertaking. It did help expedite project implementation, but it precluded the USAID from carefully assessing the quality and adaptability of consultant services that were obtained through quick buy-ins to ongoing centrally-funded projects. It also consolidated the development of a framework for project implementation whereby each component project was to be managed independently by a different ministry assisted by different contractors.

This segregated ministerial approach to project management effectively foreclosed the option of shifting resources from one component to another during project implementation, whether to facilitate interaction and dialogue among participants in the component projects or to accommodate changes in the country's S&T development situation.

## B. Implementation Progress to Date

Current financial information for the STD umbrella project and the four component projects is summarized in the table below.

<u>Project Name</u>	<u>LOP Fund- ing</u>	<u>Oblig. Thru 2/91</u>	<u>Spent By 2/92</u>	<u>Proj. Comp. Date</u>
STD Start-Up	3.00	3.00	2.40	7/93
S&T Cooperation	36.00	9.44	3.30	9/95
Schistosomiasis	39.65	16.00	9.20	9/97
Energy Conservation	49.50	21.00	6.50	9/96
Energy Manpower	<u>8.60</u>	<u>8.60</u>	<u>2.60</u>	9/94
	136.75	55.04	24.00	

### **Science and Technology Cooperation Project**

Relatively limited implementation progress was made during the year following the signing in July 1987 of the Project Agreement for the STC Project. After contracting delays, USAID awarded a two-year M/TA contract to International Development and Energy Associates (IDEA) to assist the STC Secretariat in establishing operating procedures and a management information system (MIS), and to provide consultants for basic research in selected problem areas.

Operating procedures were in place by August 1989, but by then efforts were underway to remove the IDEA resident project manager for lack of performance. He left in November 1989. A new project manager arrived in early 1990 to serve the remainder of the contract, which ended in June 1991.

The STC Secretariat manages the day to day operations of the project. Secretariat staff are paid with USAID-allocated funds. Generally, staff are not current GOE employees; however, they may be GOE employees in leave without pay status.

The Secretariat hires Egyptian and American experts to conduct background studies on each research topic. Working in close collaboration with end-users, the Secretariat develops a draft RFP which is reviewed by technical experts and the end-user. After the end-user approves the final RFP, the Secretariat advertises the RFP and distributes it to interested parties.

The Secretariat awarded the first eight research contracts under the project in January-February 1990, for a total of about \$1.6 million. The grants cover staff

salaries, research equipment and supply procurement, and international consultancy services.

In support of Project objectives and to promote the STC research program, the Secretariat also conducts a variety of workshops and seminars as well as publishing and distributing newsletters and other documents.

The Project prepared 48 feasibility studies for labor intensive, small-scale agricultural/industrial sub-projects and distributed these to about 2,000 young entrepreneurs. The STC is demonstrating three of these sub-projects in the 6th of October City.

The project also supports the Egyptian National Scientific and Technical Information Network (ENSTINET) and its extension to regional universities. ENSTINET was formally established in 1983 and received early financial support under USAID's Applied S&T Project and from the STD Project.

As of March 1992, STC had initiated eight research contract competition cycles, of which five were completed, and had awarded 33 research contracts.

#### Summary of the STC Evaluation Team's Findings

The STC Evaluation Team found the STC Secretariat, which is the GOE agency set up to carry out the STC Project, to be a "lean" operation with well-qualified staff and high staff morale. Project procedures are considered to be well thought out and appear to be working well. The Project seems well-launched towards the accomplishment its major objective, which is "selling" the R&D approach to Egypt's industrial and local government sectors, and is thus helping to reinforce and forge links between the R&D community and these two sectors.

The Team has suggested that consideration be given by Project management to adopting a policy of requiring end-users to make progressively greater contributions to the local cost portions of R&D costs. Also, that the STC Secretariat consider setting itself up to provide short-term consultancy services to industry on a profit-making basis in areas such as modernization, technology upgrading and industrial restructuring.

#### **Schistosomiasis Research Project**

STD start-up funds were used to buy into AID/W's Vector Biology Control (VBC) contract with the Medical Service Corporation International (MSCI) to provide consultant services to the Ministry of Health (MOH) and USAID for design of the SRP. USAID also used STD funds for a second buy-in to enable MSCI to provide interim assistance to the MOH in organizing the SRP Secretariat and to help

develop the technical, financial and administrative procedures needed to implement the SRP grant program.

In April 1989, USAID signed a two-year Participating Agency Services Agreement (PASA) with the U.S. Naval Medical Research Unit Three (NAMRU-3) in Cairo to help develop research proposals for SRP funding. NAMRU-3 also agreed to provide training in scientific techniques and procurement to selected SRP participants.

In August 1989, USAID awarded a competitive contract to MSCI for long-term M/TA for the SRP. Under this longer-term contract, MSCI is responsible for providing technical and managerial assistance to the SRP, for procuring SRP commodities (mostly research equipment for grantees), for training and training consultants, and for administering grants to collaborating U.S. research institutions.

STD also funded a two-year contract with the University of Lowell to establish a facility at the GOE Theodore Bilharz Research Institute (TBRI) to produce biological materials (Schistosomes) needed for Schistosomiasis research, and to provide early support for the Egyptian National Scientific and Technical Information Network (ENSTINET).

In January 1991, MSCI hired two consultants to conduct an assessment of SRP. This internal evaluation documented SRP's early successes and made a number of recommendations for improving the project. By September 1991, the SRP had awarded 46 research grants, including 29 full grants for about \$9.0 million and 17 Young Scientist grants for about \$340,000.

#### Summary of SRP Evaluation Team Findings

The SRP Evaluation Team found the SRP in the fifth year of its implementation to be a healthy, promising project that is for the most part on schedule and in line with the goals and purposes detailed in the Project Paper.

USAID assistance to the SRP will run out in 1998. A final external evaluation is scheduled for 1997, but before that date the SRP Team has recommended that an assessment be made of the status of Project efforts to develop a Schistosomiasis vaccine. Even if no suitable candidate vaccine is available at that time, it should be at least possible to predict a future date for its availability. If this cannot be done, the Team suggests that USAID support for the development of a vaccine be terminated.

## **Energy Conservation and Efficiency Project**

USAID signed the initial Project Agreement for the ECEP with the GOE in September 1988. In February 1989, the ECEP funded a one-year buy-in to an AID/W contract with RCG/Hagler-Bailly (HB) to assist with the establishment of the three ECEP secretariats to be staffed by DRTPC, TIMS and FEI) and the completion of feasibility studies for the first set of technology applications.

USAID signed a two-year M/TA contract with Overseas Bechtel Inc. (OBI) in 1989, which included a sub-contract with RCG-Hagler-Bailly (HB). ECEP Project implementation started with the screening of technology application needs among private and public sector industrial plants. Of 135 plants screened, DRTPC and TIMS identified and completed feasibility studies for 36 technology applications. By February 1992, sixteen companies had signed contracts to implement sub-projects.

Under these contracts, the companies pay for the procurement of locally available equipment, the installation of all energy conservation equipment, and monitoring of energy savings (roughly one-third of total sub-project cost). ECEP pays for feasibility studies, detailed engineering work, and the procurement and delivery of energy conservation equipment imported from the U.S. (roughly two-thirds of total sub-project cost).

Of the first sixteen sub-projects, nine are in the private sector and seven are in the public sector. Energy savings from these first sixteen sub-projects are expected to be about \$3.4 million per year. By September 1991, installation of the first three sub-projects had been completed and a fourth was nearing completion.

By September 1991, 784 plant and other personnel had been trained in Egypt on modern energy conservation. An additional 14 had received training in the U.S.

### **Summary of ECEP Evaluation Team Findings**

The ECEP Evaluation Team believes that the ECEP is being effectively implemented and is progressing well toward achieving its objectives. However, the Team has recommended that the Steering Committee for the Project meet more frequently and become more active in carrying out its Project management responsibilities.

The Team has also recommended that, for the remainder of the Project, beneficiary industries be asked to do cost-sharing for the technical services, training and commodities they receive under the Project. This will help in preparing them to bear the total cost of such support activities when the ECEP is terminated in 1996.

## **Energy Manpower Development Project**

In May 1989, USAID awarded an interim buy-in contract to the International Institute for Education (IIE) to prepare manpower development master plans and to present training courses in Egypt for the EGPC, EEA and EDA. In June 1990, USAID negotiated and signed a two-year \$4.1 million contract with International Human Resources Development Corporation (IHRDC) to manage the Project. Stone and Webster was a sub-contractor.

In February 1991, USAID and the Ministry of Electricity and Energy (MOEE) agreed to use EMD project funds for a new MOEE Executive Management Training Program. In July, IHRDC consultants starting working with the newly established MOEE steering committee and MOEE senior management to develop an Action Plan for the Executive Management Training Program.

During 1991, EMD was presenting courses every month, except for the summer and the Gulf War period.

### **Summary of EMD Evaluation Team Findings**

The EMD Evaluation Team found the Project to be meeting a serious need in the development of manpower in Egypt's petroleum and electricity sectors. Their evaluation indicated that only one of the four components of the Project, the component focused on technical and management training, could be considered successful at this time. The other three components were started late and are experiencing implementation difficulties.

The EMD Evaluation Team also recommended that the Project be re-focused to strengthen the emphasis being given to management and technical training, and to expand the capacities of Project-related training facilities. This task assumes even more importance in view of the Mission's current emphasis on environmental issues and privatization.

The Team also suggested that training under the EMD Project be made available to top management officials of the EGPC and the EEA, including the appropriate support Ministries, in order to promote their advocacy for the basic training concepts and goals of the EMD Project.

## V. STRATEGIC CONSIDERATIONS

### A. The Strategic Relevance of STD-Funded Activities

STD-funded activities are making a substantial contribution to the further development of the Egyptian economy. They represent high-impact, on-site applications of the AID Administrator's "business and development" and "environmental impact" initiatives. The Schistosomiasis Research Project can readily be linked to the Administrator's initiative to improve family welfare in developing countries.

### B. An Assessment of the Extent to Which the STD Project and Its Component Projects Have Effectively Addressed the Assistance Needs of Egypt's S&T Community.

The S&T assessments sponsored by USAID in the early 1980s provided a sound basis for deciding which types of S&T activities to pursue. The assessment indicated that the time was opportune in Egypt to shift emphasis from broad-based capacity building to a primary focus on problem solving in selected sectors, and on technology transfers to meet important end-user needs. The STD Project's designers clearly attempted to accommodate this need for a shift in strategy based upon the state of the S&T development situation at that time.

The designers did not, however, adequately address the need for flexibility in allocating funds that should have been incorporated in the Project's problem-solving, end-user-driven approach to allocating funds, given the Project's lengthy implementation period.

Vesting decision-making authority in Secretariats dominated by university professors and public sector officials attuned to managing a centrally-controlled economy, created rigidities in the fund allocation process that preempted the Project from effectively addressing the changing assistance needs of the country's S&T community.

#### **The STC Project**

While each of the 33 component activities being financed under the STC Project may prove useful, they are too diverse to permit measurement of the overall impact of the project.

Secondly, even if an applied research activity is found to be technologically and commercially successful in one location, there is no plan in place or investment package available to exploit or replicate the successful application. Some form of investment funding should have been included as part of the STC Project design.

Among the 33 research activities being financed under the Project, several relate directly to environmental issues affecting both the quality of air and water. The STD Evaluation Team recommends that the STC portfolio of sub-projects gradually be purged of activities that do not contribute directly to environmental protection, and that the projects that do contribute be reconstituted as part of the Mission's enhanced environmental strategy.

### **The Schistosomiasis Research Project**

Schistosomiasis is a parasitic disease that can lead to debilitation and death. The disease constitutes an extremely serious problem in Egypt because it is widespread in the country's rural areas. Since the beginning of this century, Egyptian and international scientists have conducted research on the disease and on its control. This research has continued to the present.

The SRP Project's strategy, which is to produce a society free of the morbidity of Schistosomiasis, is betting heavily on the development of a vaccine. Scientists working on Schistosomiasis appear almost unanimous in the view that, while not impossible, a vaccine is at best unlikely and would be more of a stroke of luck than an attainable goal achievable through systematic research. Moreover, the Project's objectives can be achieved through other approaches, e.g., improved diagnostic techniques and chemotherapy.

This brings up a key issue. If the primary objective remains to create an Egypt free of the morbidity of Schistosomiasis, there is a question as to what would be the most effective and efficient way to proceed, i.e., whether to continue to emphasize research for a vaccine or to put more emphasis on chemotherapy and improved diagnostics.

While the SRP has environmental impact implications, the Project is essentially a health activity that shares little or nothing in common with the other STD projects. The Evaluation Team believes that USAID should take the SRP out from under the STD umbrella and make it a free-standing project. We recommend further that it be moved to the Mission's health portfolio and that its objectives and methodology be modified as necessary to facilitate achievement of the Project's goals and objectives on a cost-effective basis.

### **The Energy Conservation and Efficiency Project**

This Project was designed to introduce energy efficient technology and practices into Egyptian industry to achieve energy conservation, because energy losses are costing the economy heavily. This condition exists because subsidized energy prices promote inefficiency.

Energy consumption in general is presently high in Egypt and significant future increases are likely unless the subsidies are removed. Moreover, enormous expenditures to build additional generation capacity will need to be made, if the subsidies are not removed.

Some of the equipment brought in for the ECEP is also applicable to reducing the emission of environmental pollutants. Portable gas analyzers, for example, have the capability not only to identify the energy wasted in an industrial process, they can also identify the type and amount of pollutants being released into the atmosphere. The Evaluation Team believes that the ECEP should become a cornerstone project for the USAID's proposed environmental initiative. Virtually everything done under this project has a beneficial effect on the environment.

USAID should give consideration to modifying the financial structure of the activity to provide for cost sharing with end-users. This would assist the GOE in its efforts to shift to a market-driven mode of operation. Egyptian engineering firms, service personnel and local suppliers should be brought into the process of energy audits and equipment specification, design and maintenance so that project activities can be sustained once USAID funding ends.

### **The Energy Manpower Development Project**

The EMD Project was justified on the basis of the importance of the energy sector to the Egyptian economy, energy being one of the most important revenue-producing sectors in the economy. The Project Paper stated that technical staff in this sector are inadequately trained in state-of-the-art technologies and methods. Training is neither emphasized in most energy-sector companies nor is it a basis for career development and promotion.

This is a curious set of circumstances that indicate that there are no market forces at work and no incentives for an employee or a company to improve performance. The ECEP Project Paper notes that Egypt's oil refineries use 50 percent more energy than comparable refineries elsewhere. A 0.5 percent efficiency improvement in the refining industry, given their current capacity of 375,000 barrels per day, would result in a savings of \$12.0 million per year, if refinery personnel were to receive and use adequate training in energy conservation technologies.

Compounding the problem is the fact that for energy infrastructure projects financed by USAID, training is furnished as part of the package. The ECEP Project, likewise, has its own training component.

**C. The Proposed "Rolling" Redesign of the USAID S&T Strategy and Related Refocusing of the STD Project and Its Components.**

As the USAID assistance strategy now appears to be evolving toward environmental issues rather than science and technology research in general, adjustments are in order to bring a new cohesiveness and efficiency to Mission management of the various components of the STD Project.

This can best be accomplished by refocusing ongoing STD-funded activities so that they converge at some point in the future (o/a the PACD) on achieving the overall purposes of the Project and contribute in a measurable way toward accomplishing the Project's socio-economic development goal. Current activities would continue as the redesign is taking place. This would preserve project momentum.

**The specific changes needed to bring about a refocusing of STD-funded activities are identified below.**

1. The Schistosomiasis Research Project should be moved to the USAID Health Office and managed as a free standing project. While there are environmental issues related to Schistosomiasis transmission, it is primarily a health matter.
2. The ECEP Project should be realigned to permit the development of a plan for investing in, replicating, or otherwise exploiting the results of each applied research activity undertaken successfully. Consideration should be given to establishing an Investment Fund to serve this function.
3. For the ECEP, refocusing should also include redefining the work of the three secretariats involved in the project. The secretariats should become more involved in policy matters and less involved in energy audits and specification writing. The latter tasks should be relegated to private sector engineering firms. This would create a structure that would endure after the Project ends.
4. If the STC Project is to be kept as a separate project, the activities funded under it should be focused solely on energy conservation and environmental protection objectives. Other unrelated ongoing activities should be redirected to the University Linkages II Project. Consideration should then be given to folding the STC Project into the ECEP.
5. Since all of the money authorized for the EMD Project has already been obligated, the Project should be allowed to run its course, but probably not

be renewed. Instead, an appropriately-focused training component should be added to the expanded ECEP.

6. Greater attention should be given under the Mission's revised S&T strategy to support GOE privatization and private sector development efforts. This should include building stronger linkages between U.S. and Egyptian companies.
7. Enhanced involvement in private sector development should include establishing a "clearinghouse" for providing information on the full range of energy-saving and anti-pollution technologies available in the U.S.
8. As the GOE raises energy prices and begins privatizing the economy, industries which were formerly GOE enterprises should become energy conservation targets. It is unlikely that the GOE will willingly engage in enforcement activities against its own GOE-run industries, which are among the country's biggest polluters.
9. Mission adjustments to its ongoing energy conservation and evolving environmental strategies should be attuned to the rate at which the GOE carries out its commitments to privatize the economy and to price energy at economic rates. This will help assure the sustainability of S&T activities funded by USAID.

## VI. CONCLUSIONS AND RECOMMENDATIONS

The Team's conclusions and recommendations as they relate to both the STD Project itself and the four component projects are summarized below.

### A. The Science and Technology for Development (STD) Project

**The STD Project was designed in a way that gave individual GOE ministries independent control over the four STD component projects. The Team found that this contributed to poor coordination of effort among the many agencies and institutions involved in Egyptian S&T activities.**

By design, the principal function of the STD Project was to provide initial funding for the design and start-up of the four component projects. A secondary purpose was to assure Project implementation monitoring and follow-up by the Ministry of International Cooperation (MIC). However, the Ministry was not given responsibility for overseeing the implementation phase of the STD Project itself, nor oversight authority over any of the four component projects.

These arrangements, while they helped expedite Project start-up, led to the establishment of a framework for Project implementation, whereby each component Project is being managed independently by a different ministry assisted by different contractors. A large number of research institutions and agencies from the implementing ministries are also involved in Project activities, and each institution functions essentially autonomously. There is, in effect, virtually no inter-agency or inter-ministerial coordination.

**Recommendation:** The Team recommends that this approach be re-considered as the Mission moves towards integrating S&T activities into its evolving privatization and environmental protection programs. A high degree of interministerial coordination is needed to ensure the successful implementation of complex "cross-sectoral" programs, such as privatization and environmental protection.

**The need to strengthen the "macro-economic" rationale for promoting S&T transfers.**

USAID S&T assistance to Egypt in recent years has been focused on problem solving in a limited number of sectors and on technology transfers to meet specific user-defined needs. This "micro-economic" approach though beneficial is not resulting in production increases or energy savings of sufficient scale to trigger broad-based user interest and replication.

Egypt's S&T community has the potential to help provide new and adaptive technologies capable of raising productivity and incomes, and coping with economic constraints. Whether this potential is realized will depend heavily on whether the S&T community can find ways to bring the results of successfully applied research activities to bear on the country's economic growth process.

**Recommendation:** The Egyptian economy is in a precarious economic position at present. The Evaluation Team believes that this warrants the USAID Mission putting greater emphasis on large-scale S&T applications which can lead to "macro-level" economic benefits, such as: (a) increased exports, and higher value exports; (b) improved capacity utilization and productivity; and (c) higher-skill jobs.

**The need for a "rolling" redesign of the USAID S&T strategy and related refocusing of the STD Project and its components.**

The USAID assistance strategy appears at present to be evolving toward one of program assistance and less management-intensive projects, i.e., capital assistance as contrasted with technical assistance, and toward environmental issues rather than science and technology research in general. Adjustments are needed to bring a new cohesiveness and efficiency to Mission management of the various components of the STD Project.

**Recommendation:** The Team believes that the needed adjustments can best be accomplished by refocusing ongoing STD-funded activities so that they converge at some point in the future (o/a the PACD), and are realigned to focus on the Mission's economic growth, privatization and environmental protection goals and objectives. Current activities should be continued as this realignment is taking place to preserve project momentum.

**The Mission's need to adhere to Congressionally-mandated assistance levels appears to have undercut normal program discipline in the design of the STD Project.**

With Congressionally-mandated assistance levels, USAID has had limited leverage to press for reforming an inefficient and flawed S&T program development process which appears to have been deeply rooted in past generations of S&T projects. This has led to duplication of effort, for example, between the Science and Technology (STC) Project and the University Linkages II Project.

**The issue of continuing S&T capacity building vs. promoting "off-the-shelf" technology transfers.**

The Mission's S&T strategy calls for emphasis to be given to the transfer of proven "off-the-shelf" technologies in the modern sector, e.g. energy efficient equipment

and processes and modern management systems, in order to increase productivity through reduced energy consumption. .

Under the STD Project, emphasis has instead continued to be placed on "capacity building "activities.

### **Improving the coordination of S&T-related activities within the USAID.**

The STD Project Paper noted that the USAID S&T Office would play a catalytic and facilitative role to support other USAID divisions by responding to requests for assistance or information in the design, review, monitoring and possible implementation of projects involving S&T activities or components. The Office was also designated to serve a coordinating function to tie together S&T themes common across USAID sectoral boundaries. Within the USAID Mission, the S&T priority setting process was to be done by a committee made up of the ADs, the Deputy Director, the S&T Office Director and the S&T JCC serving as consultant and coordinator.

Evaluation Team discussions with Sector office staff indicate at present only a very limited degree of Mission coordination of S&T activities.

### **B. The Science and Technology Cooperation (STC) Project**

**The diversity of sub-project activities currently being implemented under the STC Project is preempting development of the catalytic groups of experts in critically important technical areas espoused in the Mission's 1985 S&T strategy paper.**

A primary focus of the STC project was to have been directed toward resolving a limited number of development problems and toward creating a sustainable residual improvement in Egyptian capacity for research, training and technology transfer.

Delimiting the number of problem-solving components was aimed at allowing the assembly of a large enough group of expert and technical personnel to effectively address development problems.

This does not appear to have occurred to the degree envisioned.

**The implementation design of the STC Project appears to be impeding U.S. contractor involvement in S&T activities in Egypt.**

The Evaluation Team was told that STC Project developers consciously tried to avoid creating joint working groups to preclude sharp increases in the number of

Americans associated with a project. In view of their potential contribution to the success of the government's prospective privatization and environmental protection programs, and its ongoing energy conservation program, the extent of U.S contractor involvement in STC Project activities in Egypt should be reconsidered.

Efforts in these areas should involve cooperating with other donors and international networks to use the cumulative body of knowledge developed by others as a point of departure.

**The need to modify Implementation of the STC Project in order to effectively capitalize on the needs and demands of end users.**

A key objective of the STC Project is to focus the Egyptian S&T community on major Egyptian social and economic problems. The research topics to be addressed and the sub-projects to be funded are to be focused on the needs and demands of end-users of a technology.

In practice, there is reason to question the extent to which the STC sub-project selection and implementation processes have been driven by the needs of end-users.

**C. The Schistosomiasis Research Project (SRP)**

The Schistosomiasis Research Project, while related in several ways to S&T and environmental issues, is essentially a health activity.

**Recommendation:** The Team recommends that it be moved to the Mission's Health Office as a free-standing project. Mission staff have indicated that such a move is being considered.

**D. The Energy Cooperation and Efficiency Project (ECEP)**

**The Government's long-standing reluctance to raise energy prices to border price levels has tended to undercut the effectiveness and impact of the ECEP Project.**

Energy prices have been highly subsidized for at least the last 10-12 years. Prices were raised appreciably during the 1980s; however, they averaged only about 30 percent of world prices by 1988. Further increases in May 1991 brought the average to 50 percent.

The subsidized prices have been costly to the economy, and have been a major disincentive to the adoption of energy-efficient technologies in Egypt, especially among public sector firms.

**Recommendation:** The Team endorses the USAID's support for current IBRD and IMF efforts to induce the GOE to remove the subsidies by 1995.

**Putting the installation of high-value energy saving equipment and processes on a loan/re-lending basis.**

The Government's preference for donor grant financing of technical and technological assistance is inconsistent with its plans to privatize. Adding a re-lending feature to the Project would expand its outreach potential and could multiply potential benefits enormously.

**The proposed establishment of an Energy Conservation and Environmental Protection Fund.**

Mission documentation indicates that the USAID is pursuing a number of approaches to help surmount the problem of environmental deterioration in Egypt. The problem is a complex one, and will require a variety of approaches.

The inefficient production of energy and power is having considerable environmental impact. Ongoing USAID projects include reducing pollution through improvements in energy efficiency.

**Recommendation:** Establishing an Energy Conservation and Environmental Protection Fund would put the Mission's energy conservation and environmental protection efforts on a business footing. The new activity could readily be merged with the existing Energy Conservation and Efficiency Project. A USAID policy, conditions and procedures coordination committee would be needed. Environmental protection activities could be promoted as "debt for nature" swaps.

Setting up a **Clearinghouse** operation -- to identify, track and match U.S. sources of procurement, Egyptian end-users, and S&T applications opportunities -- would greatly facilitate Fund operations.

**E. The Energy Manpower Development (EMD) Project**

**Energy manpower development vs. skills training in the context of the proposed privatization of the Egyptian economy.**

Evaluation of the Energy Manpower Development component of the STD Project indicates a need to focus future activities more directly on technical and management skills training and on upgrading training facilities. The considerable attention that has been given under the Project to strengthening manpower development systems for Egypt's petroleum and electricity sectors should be seriously downgraded.

**Economic reform and privatization are widely viewed in Egypt as necessary to restore Egyptian productive enterprise to a competitive position in world markets. Improving the efficiency of Egyptian workers through technical and managerial skills training programs is critical to the success of the government's economic reform and privatization strategies.**

STDFINAL.RP5

## **ANNEXES**

- ANNEX A:**            Scope of Work
- ANNEX B:**            Bibliography
- ANNEX C:**            List of Persons Interviewed

**ANNEX A**

PIO/T 263-0140-  
Page 4 of 41 pages

SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (263-0140)

MASTER EVALUATION SCOPE OF WORK  
FOR ALL COMPONENTS

CONTENTS

- I Introduction
  - \* Brief Overview of the Project
  - \* Overview of the Evaluation Effort
- II Phase I - Science & Technology for Development Project
  - \* Description
  - \* Evaluation Questions and Issues
- III Science & Technology Cooperation Project
  - \* Description
  - \* Evaluation Questions and Issues
- IV Schistosomiasis Research Project
  - \* Description
  - \* Evaluation Questions and Issues
- V Energy Conservation & Efficiency Project
  - \* Description
  - \* Evaluation Questions and Issues
- VI Energy Manpower Development Project
  - \* Description
  - \* Evaluation Questions and Issues
- VII EVALUATION REQUIREMENTS
  - \* Methodology
  - \* Reporting
  - \* Contract Duration & Scheduling
  - \* Overall Team Composition
  - \* Budgeting Information

30

## I. INTRODUCTION

### A. BRIEF OVERVIEW OF THE PROJECT

According to the 1985 Project Paper, the overall goal of the Science and Technology for Development (STD) Project is to improve the welfare and productivity of the Egyptian people. The project purpose is to enable the Egyptian S&T community to solve national development problems and constraints through applied research and technology in the fields of health, productivity, and science and technology. The STD Project seeks to:

- Maximize the contribution of science and technology to Egyptian socioeconomic development;
- Generate and extend interdisciplinary and inter-institutional cooperation;
- Develop, introduce, and transfer technologies to meet important and well-defined end-user needs.

The project calls for the integration of Egyptian and AID resources to solve higher level and more complex problems in health, land-use, energy and industrial productivity. The project's primary focus is on development problem solving and technology transfer to meet end-user needs.

The STD Project is an umbrella activity consisting of separate components described in separate Project Papers, funded by separate Project Agreements and implemented by separate ministries. Each component is comparable to an individual AID project.

### B. OVERVIEW OF THE EVALUATION EFFORT

This scope of work covers the first evaluation for the umbrella Science and Technology for Development (STD) Project and each of its four currently active components. The overall purpose of the evaluation is to assess the original project designs and their relevance to current Agency and Mission strategic objectives as well as to evaluate progress toward achievement of project purposes. The evaluation will make recommendations for adjusting

or redirecting project activities so they contribute more toward achievement of strategic objectives as well as recommendations for improving the project implementation. While it is too early to determine the impact of project funded activities, the evaluation will assess the potential future impact of project activities on project goals and strategic objectives.

Since each of the four components is being implemented independently by different ministries assisted by different contractors, a separate evaluation report will be produced for each component. In addition to evaluation reports for each component, a fifth evaluation report will be produced covering the potential contribution of the S&T activities on strategic objectives as well as the components which produced the design and pre-implementation process used in Phase I of the STD Project.

The separate evaluation issues and questions for each of the five evaluation reports are presented in Sections II through VI of this Master Scope of Work. To reduce USAID's staff intensity and achieve economies of scale, one contractor will be hired to produce the five evaluation reports during the second quarter of FY 1992. The contractor shall identify one individual as the overall Contract Chief-of-Party and specify individual Team Leaders for each of the five evaluation reports. It is expected that some members of the contractor's overall team will have input into more than one of the evaluation reports. Section VII discusses evaluation requirements including methodology, reporting, scheduling, team composition, and budget.

## II. PHASE I OF SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (STD) PROJECT 263-0140

### A. DESCRIPTION

The STD Project rests squarely on the March 1985 USAID/Cairo S&T Strategy which followed a major Egyptian-U.S. assessment of S&T in 1983-84. USAID's first generation S&T activities focused on building S&T infrastructure. The second generation sought to involve the Egyptian S&T community in a wide range of relatively general development problems. The 1985 Strategy advocated a third generation of activities tightly focused on a limited number of

well-defined, end-user identified needs. The Strategy identified three basic areas: Critical Childhood Diseases; S&T Cooperation and Productivity, which had two foci - land use (planning) and energy (management and training).

In July 1985, USAID/Cairo approved the Project Paper for Phase I.

USAID and the GOE signed the Phase I Project Agreement (ProAg) in March 1986 obligating \$3M for the design of the individual project components as well as financing pre-project start-up of implementation activities. Phase II is the implementation of each of the components.

Analyses and consultant services funded under Phase I, were used to prepare separate Project Papers for five components. In FY 1987, USAID approved the first component Project Paper for the S&T Cooperation (STC) Project (263-0140.1); USAID and the GOE signed the STC ProAg in August 1987. With assistance from the STD consultants and the GOE, USAID completed Project Papers in FY88 for four other components, three of which were approved by the USAID Director (Schistosomiasis Research Project - SRP, Energy Conservation and Efficiency Project - ECEP, and Energy Manpower Development Project - EMDP). The USAID Director did not approve the Project Paper for the Land Use Planning Project. In late FY 1988, USAID and the GOE signed separate Project Sub-grant Agreements for SRP, ECEP, and EMDP. During FY89 and FY90, Phase II started in earnest as all four approved components moved into active implementation.

Current financial information for the STD umbrella project and the four component projects' summarized below:

Project Number	Project Name	ProAg Signing Date	LOP funding \$ mill.	Oblig. thru FY90	Spent by 9/91
263-140	Phase I S&T for Devel.	3/31/86	3.00	3.00	2.67
263-140.1	S&T Cooperation	7/30/87	36.00	9.44	3.68
263-140.2	Schistosomiasis Research	9/27/88	39.65	18.00	8.21
263-140.3	Energy Conservation and Efficiency	9/27/88	49.50	21.00	5.30
263-140.4	Energy Manpower	9/27/88	8.60	8.60	2.31
	TOTAL		136.75	55.04	22.17

37

An overview of component design and start-up implementation activities is described below.

S&T Cooperation:

- STD funded consultant services to assist USAID with project design.
- STD funded early support for the Egyptian National Scientific and Technical Information Network (ENSTINET).
- Contract to provide Management and Technical Assistance (M/TA) for establishing grants management program and management information system.

Schistosomiasis Research:

- STD funded buy-in to AID/W contract with Medical Service Corporation International (MSCI) to: assist USAID and GOE with project design and to provide interim M/TA for initiating project implementation activities for a period of about one year from just prior to final signing of SRP ProAg until after the award and mobilization of a competitive contract for a long-term M/TA.
- STD funded a two year contract with the University of Lowell to establish a facility at the GOE Theodore Bilharz Research Institute (TBRI) to produce the biological materials (schistosomes) needed for schistosomiasis research.

Energy Conservation and Efficiency:

- STD funded a buy-in to AID/W's contract with RCG/Hagler Bailly to assist USAID and GOE with project design and to provide interim M/TA for initiating project implementation activities for a period of about one year prior to award and mobilization of a competitive contract for a long-term M/TA.

Energy Manpower Development:

- STD funded a buy-in to AID/W's contract with the Institute for International Education (IIE) to assist USAID and GOE with project design and to initiate project implementation

activities for a period of about one year prior to award and mobilization of a competitive contract for a long-term M/TA.

Land Use Planning:

- STD funded a buy-in to AID/W contract with Dames and Moore to assist USAID and GOE with project design.

B. EVALUATION QUESTIONS AND ISSUES

1. Strategic Relevance of STD Activities

- The AID Administrator has identified four initiatives; the family, partnership for (private sector) business and development, democratization, and the environment. USAID/Cairo has set strategic objectives (to be explicitly specified by start of the evaluation). What STD sub-activities are making the strongest/weakest contribution to these initiatives and objectives? What types of S&T activities would make a stronger contribution? How can the contribution be enhanced?
- In what ways do the STD activities contribute to the goals and objectives of the GOE? What types of S&T activities would make a stronger contribution? What STD sub-activities are making the strongest/weakest contribution? How can the contribution be enhanced?
- How well do the designs and implementation of the four STD component projects contribute to Egyptian development and to the overall goal and purpose stated in the STD Project Paper? What STD sub-components of each activity are making the strongest/weakest contribution? How can the contribution be enhanced?
- Based on the above, what changes should be made? What sub-components should be enlarged or reduced or even eliminated?

## 2. Design of Umbrella Project and Component Activities

- The approved 1985 STD Project Paper, Authorization, and 1986 ProAg implied a commitment of AID to provide \$131.6M for a long-term (at least eight year) S&T Program. The GOE agreed in the ProAg to provide LE\$54.7M to the S&T program. By signing the initial umbrella STD documents, did AID and the GOE tend to "lock" themselves into a set of S&T activities and, thus, unnecessarily limit their flexibility to shift resources to other S&T topics or out of S&T altogether? Did AID and the GOE have sufficient background information from the various S&T assessments conducted in the early 1980's to make sound long range decisions on what types of S&T activities to pursue? Is limiting flexibility a serious weakness of umbrella projects?
- The STD umbrella project funded consultant design teams for the five component projects. What are the advantages and disadvantages of using this approach as compared to using funds from Project Development & Support (PDS) or USAID/Cairo's Technical Services and Feasibility Studies Project (263-0102)? Is this approach inconsistent with any AID policies or regulations?
- What lessons were learned from the STD umbrella project experience that will benefit future development projects?

## 3. Start-Up Implementation Activities

- The STD umbrella approach resulted in USAID and its consultants simultaneously designing SRP, ECEP, EMDP, and Land Use projects in 1987/88 and then starting implementation of SRP, ECEP, and EMDP in early FY89. What are the advantages and disadvantages of designing and starting implementation of three or four projects at the same time? How can the advantages be enhanced and the disadvantages minimized?
- The start-up implementation activities of the four components were funded from the umbrella STD project using the AID/W contract buy-in mechanism. Thus, implementation could start before component funds became available with

the satisfaction of the Conditions Precedent to Initial Disbursement and before mobilization of competitively selected long-term M/TA contractors. In fact, implementation of the SRP component started even before the SRP ProAg was signed. What are the advantages and disadvantages of using umbrella project funds for initial start-up implementation of component projects? How can the advantages be enhanced and the disadvantages minimized? Is this approach inconsistent with only AID policies or regulations?

### III. SCIENCE AND TECHNOLOGY COOPERATION (STC) PROJECT (263-0140.1)

#### A. DESCRIPTION

##### 1. Overview

The S&T Cooperation Project (263-0140.1) is designed to redirect Egyptian S&T programs to solving priority development problems having the greatest effect on end-users, and to building S&T capacities in selected technologies. The Project funds research contracts in pre-defined, high priority problem categories. Egyptian universities, research centers, and private and public sector firms are eligible to compete for research contracts in response to advertised "Requests For Proposals" (RFPs) which are developed in close collaboration with end-users. End-users include individual companies or groups of producers.

The Project is divided into three major components. The National Research Program (NRP) focuses on solving limited, but well-defined national development problems. The Local Research Program (LRP) addresses local/rural development problems identified by, and associated with, specific governorates or regions. The Advanced Technology Program (ATP) builds on advanced applications in biotechnology and computer-based technology.

The Project is implemented by a semi-autonomous STC Secretariat which is housed in the Egyptian Academy of Scientific Research and Technology (ASRT). Policy guidance is provided by the STC Steering Committee composed of senior representatives from the Egyptian S&T and End-User communities.

## 2. Implementation Start-up

Relatively limited implementation progress was made during the first year after the signing of the ProAg in August 1987 which obligated \$8.04 million. At its first meeting in July 1988, the Steering Committee agreed to advertise for the STC Executive Director position and selected problem areas in each of the three STC components: NRP - Industrial Minerals and Chemicals and Construction Materials; LRP - Water/Wastewater and Small Scale Industry; ATP - Micro-electronics and Biotechnology. While no funds had been expended by October 1988, an Executive Director had been hired, Secretariat staff were being recruited, and efforts were underway to obtain contract Management/Technical Assistance (M/TA) from an 8(a) firm.

By January 1989, the Steering Committee had met four times, 18 research proposals had been received, several Secretariat staff had been hired, but still no AID funds had been expended. After contracting delays, AID awarded a two year, \$968,000 M/TA contract to IDEA in February 1989. IDEA was responsible for assisting the Secretariat with the establishment of operating procedures and a management information system (MIS) as well as providing consultants to undertake background research in the selected problem areas. The IDEA resident project manager (RPM) arrived in April and shortly thereafter a number of short-term consultants starting arriving.

By August 1989, operating procedures had been established meeting an AID Condition Precedent to disbursement of funds for research contracts. However, by then efforts were underway to remove the IDEA resident project manager (whose CV had been approved by the Secretariat and AID) for lack of performance. The RPM resisted these efforts, but was finally removed in November 1989. The new IDEA RPM arrived in early 1990 and served the project effectively through the remainder of the contract, which ended in June 1991.

In June 1990, The Secretariat awarded an incrementally-funded (\$1.7M for the first two years) host country Procurement Service Agent (PSA) contract to American Manufacturers Export Group (AMEG, 8a). Under the contract, AMEG will procure up to \$5 million in scientific equipment required for implementation of the research contracts.

The Secretariat's Executive Director and his 20 person staff manage the day to day operations of the Project. The Secretariat staff, which are paid with USAID allocated funds, are not current GOE employees (they may be GOE employees who are currently on leave without pay status). The STC Secretariat includes a Technical Liaison Office (TLO), with a branch TLO in the Tenth of Ramadan City, which is responsible for identifying End-Users and appropriate S&T development problems for research as well as to marketing research results. For each problem area, the Project works with End-Users and identifies specific research topics. The Secretariat hires Egyptian and American experts to conduct background studies on each research topic. Working from the background studies and in close collaboration with End-Users, the Secretariat develops a draft RFP which is reviewed by technical experts and the End-User. After the End-User approves the final RFP, the Secretariat advertises the RFP and distributes it to interested parties.

Upon receipt of proposals, the Secretariat convenes Review Panels of technical experts, chaired by the End-User. In response to comments from the Review Panels, the selected Principle Investigators (PIs) submit "Best and Final Offers" which are the basis for negotiation and ultimate award of the research contracts.

The Secretariat awarded the first eight research contracts in Jan./Feb. 1990 for a total of about \$1.6M. The grants cover the salaries, imported and local research equipment and supplies, as well as collaboration with international consultants.

In support of Project objectives and to promote the STC research program, the Secretariat also conducts a variety of workshops and seminars as well as publishing and distributing newsletters and other documents.

The project prepared 48 feasibility studies for labor intensive small scale agricultural/industrial sub-projects and distributed these to about 2000 young entrepreneurs. The STC is demonstrating three of these sub-projects in the 6th of October City.

The project also supports the Egyptian National Scientific and Technical Information Network (ENSTINET) and its extension to regional universities. ENSTINET was formally established in 1983

and received early financial support under the USAID Applied S&T Project (263-0016) and from the S&T for Development Project (263-0140).

### 3. Current Status

As of September 1991, STC had completed four research contract competition cycles and awarded 30 research contracts representing commitments of AID funds totalling \$2.9M plus LE 7.2M. In addition, research contractors had already contributed LE 1.3M (in kind) to STC research efforts. Furthermore, end-user companies had contributed LE 1.0M (including LE 0.2M in cash). AMEG had delivered almost \$1.0M worth of research commodities to the principal investigators and had ordered an additional \$500,000.

The topical breakdown of the first 30 contracts is as follows:

- 2 Biotechnology
- 5 Computer Technology
- 1 Construction Materials
- 12 Industrial Chemicals and Minerals
- 4 Small Scale Industries
- 4 Water and Wastewater Treatment

In September 1991, the STC Secretariat was involved in various stages of two more contract competition cycles and, by January 1992 is expected to award 10 additional contracts.

## B. EVALUATION QUESTIONS AND ISSUES

### 1. The STC Secretariat

- Are administrative structures and procedures effective and efficient? Do they meet all AID and GOE requirements?
- Is the Secretariat appropriately housed, equipped, staffed and budgeted?
- Are administrative, financial, and commodity control systems adequate to meet GOE and USAID monitoring requirements?

- Is the contract award process (from Background Studies through Request for Proposals (RFPs), Peer Review Panels, and Best and Final Offers, to Contract Award) working effectively and efficiently? Productive sector end-users with real technology problems need rapid solutions; what can be done to accelerate the process?
- Has the Secretariat developed effective linkages with end user communities and with research organizations? Is the STC promoted effectively?
- How has the IDEA contract contributed to the Secretariat? Is additional technical assistance required?
- To what extent is the achievement of STC's project objectives being facilitated by the existing project organizational and administrative procedures, including participation of other organizations?
- What steps should be taken to improve the overall functioning of the Secretariat?
- Are the 48 feasibility studies for labor intensive small scale enterprises contributing to project objectives?
- What should be done to ensure continued strengthening of linkages between industry and scientists after AID funding for the Secretariat ends in 1996?

## 2. Research Contracts Program

- Are the accounting, reporting, and the Research Contract requirements clearly understood by the Principal Investigators?
- Are Principal Investigators receiving required (US and Egyptian) commodities and other inputs in a timely fashion? What can be done to improve the procurement process?
- What are the strengths and weaknesses of the STC as viewed by private sector companies? public sector companies?

local governmental units? and potential principle investigators?

- Are research contracts sufficiently focused on real development problems? Should steps be taken to better focus the research contracts?
- What is the likelihood that the research contracts will solve the end user's specific development problem? What can be done to increase the likelihood?
- Are research contracts building sustainable linkages between scientists and end users? What can be done to strengthen the linkages? What can be done to generate greater interest of scientists in STC?

### 3. The Effectiveness and Sustainability of ENSTINET

- Are ENSTINET's organizational and administrative procedures effective and efficient?
- Does ENSTINET have appropriate staff, budget, and equipment? Are revenues and expenditures balanced? Is the staff suitably qualified? Are the hardware and software systems appropriate?
- Will ENSTINET become a sustainable agency when USAID's assistance phases out after FY93? What steps should be taken now to improve its sustainability?
- Are administrative and financial control systems adequate to meet GOE and USAID monitoring requirements?
- To what degree is ENSTINET meeting the technical and scientific information needs of Egypt?
- What steps should be taken to improve the long term functioning of ENSTINET?

### 4. USAID

- Is USAID effectively fulfilling its STC monitoring and accountability responsibilities? Has USAID effectively

communicated its requirements to the Secretariat? Does HRDC/S&T have sufficient staff levels and skills to fulfill its project monitoring responsibilities?

- What changes should USAID make to better insure achievement of STC's purposes and goals or to improve implementation of STC?
- When and by what amount should the obligation level of \$9.44M be increased? If additional funds are not forthcoming, what will happen to the STC project?

5. Overall

- Is the project on a track leading to achievement of its goal and purpose? What changes are needed?
- How will the positive aspects of the project be sustained when AID's assistance ends in 1996? What changes are needed now to enhance sustainability?
- How is the project contributing to the Administrator's initiatives, USAID's strategic objectives and GOE S&T priorities? What can be done to enhance the contribution?
- What policy or program changes could the GOE or AID make to facilitate accomplishment of project goal and purpose?

IV. SCHISTOSOMIASIS RESEARCH PROJECT (SRP) 263-0140.2

A. PROJECT DESCRIPTION

1. Overview

The primary purpose of SRP is to control schistosomiasis by developing tools, methods and information through directed research. The secondary purpose is to improve the biomedical research capability of existing medical research institutions to conduct practical, control oriented research.

The ten year, \$36M SRP makes grants for pre-defined high priority research to Egyptian universities, research centers, and U.S. private and public sector groups. Research grants focus on six interrelated research areas: vaccine development; improved diagnostic methods; better chemo-therapeutic regimens; epidemiology of schistosomiasis; socio-economic factors that affect the disease; and, operations research to develop systems for delivering appropriate interventions. Egyptian and U.S. investigators collaborate actively in joint research projects. Young Scientist (YS) grants are developing a new generation of Egyptian schistosomiasis research scientists.

## 2. Project Implementation Start-up

STD Project funded a buy-in to the AID/W's Vector Biology Control (VBC) contract with Medical Service Corporation International (MSCI) to provide consultant services to assist the Ministry of Health (MOH) and AID with the design of SRP. In June 1988, USAID's Director approved the SRP Project Paper, with AID Life-of-Project funding of \$36M. In mid 1988, USAID used STD funds for a new buy-in with MSCI to provide interim assistance to MOH with the task of organizing the SRP Secretariat and developing the technical, financial and administrative procedures needed to implement the SRP grants program.

USAID signed the initial SRP Subgrant Agreement (ProAg) with the GOE in September 1988 obligating \$10M. The ProAg was amended in June 1989, increasing the obligated amount to \$18M. SRP is the largest schistosomiasis research activity worldwide.

Since project implementation actually started before the signing of the initial ProAg, the project got off to a rapid start. In December 1988, USAID used STD funds to award a \$830,000 sole source contract to the University of Lowell to assist the GOE Theodore Bilharz Research Institute (TBRI) in establishing a biological materials facility. Within a year the facility was providing researchers schistosome worms and cercariae. In April 1991, USAID used SRP funds to amend the Lowell contract extending it to five years and increasing the funding level \$1.5M.

In April 1989, USAID signed a two year, \$2M Participating Agency Services Agreement (PASA) with the U.S. Naval Medical Research Unit Three (NAMRU-3) in Cairo. NAMRU-3 immediately started

helping Egyptian scientists develop collaborative research proposals for SRP funding. NAMRU-3 also is providing training on scientific techniques and procuring research supplies. In 1991, the PASA agreement was augmented by \$1.4M and extended for two more years.

After successful completion of procedures, grants manual, and financial plan, AID provided funds to the SRP Secretariat in April 1989. In August 1989, USAID awarded a competitive contract to MSCI for long term management/technical assistance (M/TA) for the SRP. Since MSCI had assisted with the SRP design and implementation start-up, project continuity was maintained. As part of its contract, MSCI is responsible for providing technical and management assistance to the SRP; for procuring SRP commodities (mostly research equipment for grantees), training, and consultants; and for administering grants to collaborating U.S. research institutions.

Egyptian scientists (with assistance from NAMRU-3 collaborators), developed the first cycle of research proposals and submitted them to the SRP Secretariat in July 1989. The proposals were reviewed by joint Egyptian-American Technical Review Panels and revised accordingly. After budget negotiations, the first cycle research grants were formally awarded in November 1989. The first cycle included eight full grants (for a total of about \$2M) and three Young Scientist grants (for \$60,000).

### 3. Current Status

The SRP research grants program has continued making rapid progress. By September 1991, the MOH SRP has awarded 46 research grants; 29 full grants (for about \$9M) and 17 Young scientist grants (for about \$340,000). In support of these grants, MSCI had placed \$3.3M in orders for equipment; over \$1.6M in equipment was delivered to SRP by September 1991.

The SRP has held two highly successful Technical Symposia. The first Symposium in October 1990, which focused on vaccine development and improved diagnostics, attracted over 259 Egyptian and international scientists. The scientists voiced confidence that vaccine agents for schistosomiasis would be developed by the project completion date. It became clear at the second Symposium

in May 1991, that the SRP annual symposia had become a major event among international schistosomiasis scientists.

In January 1991, MSCI hired two independent consultants, Paul Basch and Gary Roderick, to conduct an assessment of SRP. This internal assessment documented SRP's early successes and made a number of recommendations for improving the project. The SRP Secretariat and USAID carefully reviewed all the recommendations and implemented those that would clearly improve the project.

## B. EVALUATION QUESTIONS AND ISSUES

### 1. The SRP Secretariat

- Is the Secretariat appropriately housed, staffed, equipped, and budgeted?
- Are administrative structures and procedures effective and efficient? Is the grants award and management process working effectively and efficiently? Are there adequate mechanisms for curtailing grants that are not progressing satisfactorily? Do the structures and procedures meet all AID and GOE requirements?
- Are administrative, financial, and commodity control systems adequate to meet all GOE and USAID monitoring requirements?
- To what extent is the achievement of SRP project objectives being facilitated by the existing project organizational and administrative procedures, including participation of other organizations?
- Is the balance of resources among the six SRP research areas appropriate? How should the balance be shifted in the later stages of SRP to optimize achievement of overall goals.
- Is the grants program adequately advertised? Is the project publicized effectively?

## 2. Research Grants Program

- Are Principle Investigators receiving required (US and Egyptian) commodities and other inputs in a timely fashion? What can be done to improve the procurement process?
- What are the strengths and weaknesses of SRP as viewed by the Principle Investigators? Are the accounting, reporting, and administrative requirements of Research Grants clearly understood by Principal Investigators?
- Is the research grants program leading to optimum collaboration between Egyptian scientists and their American "collaborators"? What can be done to improve collaboration?
- Is the SRP improving coordination and collaboration among the various Egyptian scientists participating in the project? What can be done to improve coordination and collaboration?
- What are the major advantages and disadvantages of the Young Scientists program? Should the program be increased or curtailed? What can be done to improve the program?
- Do grants include sufficient training funds to enable grantees to learn new scientific techniques? How can the balance between U.S. and Egyptian training be improved?
- Are research grants sufficiently focused on truly promising avenues of research? Should steps be taken to better focus the research grants?
- What evidence is there that research grants will indeed lead to improved tools for schistosomiasis control? What can be done to increase the likelihood of positive results?
- Are research grants building sustainable linkages between Egyptian and American scientists? What can be done to strengthen the linkages?

3. Contractors (MSCI and Lowell)

- What are the strong points and weak points of MSCI and Lowell's performance under their contract? What can be done to enhance the strong points and improve the weak points?
- Is MSCI effectively and efficiently procuring SRP commodities, training, and collaboration with U.S. scientists? What can be done to improve procurement?
- Are the MSCI and Lowell contracts adequately focused on SRP objectives and goals? What can be done to improve the contracts?
- Are the relationships and communications between MSCI/Cairo and the MSCI Home Office appropriate? Is the balance of responsibilities and resources between the two MSCI offices appropriate?
- Are the relationships and communications between Lowell and Cairo (Secretariat, TBRI, USAID, MSCI) effective?
- Are MSCI and Lowell providing effective assistance to SRP? What overall improvements should be made?

4. NAMRU-3

- What are the strong points and weak points of NAMRU-3's SRP performance under their PASA? What can be done to enhance the strong points and improve the weak points?
- Is NAMRU-3 providing effective scientific collaboration and technical assistance to SRP? What improvements should be made?
- Is NAMRU-3 effectively and efficiently procuring, storing, and providing access to commodities funded under the PASA?
- Is NAMRU-3 effectively and efficiently providing training to the SRP grantees? What improvements should be made?

5. USAID

- Is USAID effectively fulfilling its SRP monitoring and accountability responsibilities? Has USAID effectively communicated its requirements to the Secretariat, MSC1, NAMRU-3, and Lowell University? Does HRDC/S&T have sufficient staff levels and skills to fulfill its project monitoring responsibilities? What improvements should be made?
- What changes can USAID make to improve implementation of SRP?
- Should the AID obligated amount of \$18M be increased? If so, when and by what amount? If additional funds are not forthcoming, what will happen to SRP?

6. Overall

- Is the project on a track leading to achievement of its goal and purpose? What changes are needed?
- How will the positive aspects of the project be sustained when AID's assistance ends in 1996? What changes are needed now to enhance sustainability?
- How is the project contributing to the Administrator's initiatives, USAID's strategic objectives and GOE S&T priorities? What can be done to enhance the contribution?
- What policy or program changes could the GOE or AID make to facilitate accomplishment of project goal and purpose?

V. ENERGY CONSERVATION AND EFFICIENCY PROJECT (ECEP) 263-0140.3

A. PROJECT DESCRIPTION

1. Project Overview

The ECEP Project's two purposes are: 1) to promote and accelerate the adoption of improved commercial technologies, processes, and practices in order to save energy and increase energy efficiency;

and 2) to improve Egyptian institutional capabilities, particularly in the private sector, for promoting and implementing energy-saving and productivity-enhancing investments.

The initial project design provides private and public sector companies with technical assistance and funds (loans and grants) for the implementation of up to 60 applications (sub-projects) of energy-efficient technologies. The loan aspect, which was to operate through the banking sector, was later dropped. Project grants for energy-efficient technologies are split about 50-50 between the private and public sectors. While AID's policy strongly favors encouragement of the private sector, the public sector in Egypt is clearly the largest energy user and offers by far the best opportunities for energy conservation. Public sector companies in the metals, chemicals and cement industries were selected for initial ECEP participation, later, food and textile companies were added. All private sector industrial and commercial companies in Egypt are eligible for participation.

The Tabbin Institute for Metallurgical Studies (TIMS) of the Ministry of Industry is implementing the public sector applications, while the Cairo University, Development Research and Technological Planning Center (DRTPC) is handling the private sector. The Federation of Egyptian Industries (FEI) is responsible for promoting ECEP among Egyptian business enterprises.

By implementing the project, TIMS, DRTPC, and FEI will improve their ability to promote, identify, engineer, install, operate and maintain energy-efficient technologies. ECEP will enhance the energy conservation capabilities of Egyptian companies through training in Egypt and the U.S. as well as through implementation of technology applications.

## 2. Project Implementation Start-up

USAID signed the initial Subgrant Agreement (ProAg) with the GOE in September 1988, obligating \$15M for the eight-year project. The ProAg was amended in June 1989, increasing the obligated amount to \$21M.

In February 1989, ECEP funded a one-year, \$891,000 buy-in to an AID/W contract with RCG/Hagler-Bailly (HB) to assist DRTPC, TIMS, and FEI with: the organization of their ECEP Secretariats,

the establishment of project procedures, and the completion of feasibility studies for the first set of technology applications.

In April 1989, AID provided funds to DRTPC, TIMS, and FEI Secretariats after they successfully established procedures and met AID's other requirements. Shortly thereafter, the three Secretariats hired staff and started implementing the project. Initial activities included preparation of informational materials, presentation of the project to various industrial groups, and screening of companies interested in participating in ECEP.

During 1989, AID competitively procured a long-term management/technical assistance (M/TA) contractor. After proposal review (by DRTPC, TIMS and AID), AID negotiated and signed a two-year (extendable to the PACD) \$10.1M M/TA contract with Overseas Bechtel Inc. (OBI). The OBI contract includes a sub-contract with RCG/Hagler-Bailly (HB) which enhances continuity from project design through implementation.

### 3. Current Status

From a screening of 135 private and public industrial plants, DRTPC and TIMS have identified and completed feasibility studies for 36 technology applications. By September 1991, thirteen companies had signed contracts to implement sub-projects. Under these contracts, the companies pay for detailed engineering work, procurement of locally available equipment, installation of all energy conservation equipment, and monitoring of energy savings (roughly one third of the total sub-project cost). ECEP pays for feasibility studies and the procurement and delivery of the energy conservation equipment imported from the U.S. (roughly two-thirds of the total sub-project cost).

Of the first 13 sub-projects: six are in the private sector (power factor improvement in Seven-up Beverage Co., Giza Cables, and Arab Contractors Medical Center; energy management systems at the Ramsis Hilton and Egyptian International Pharmaceuticals; and cogeneration at ALUMISR) and seven are in the public sector (combustion efficiency in Egyptian Copper Works and Delta Steel; cogeneration at Abu Zaabal Fertilizer; and power factor improvement at National Metals, Shorbagy Textile, and Transport and Engineering Tire Company; and water treatment at SEMADCO

Fertilizer). Energy savings from the first thirteen sub-projects are expected to be about \$800,000/year. By September 1991, installation of the first three sub-projects was complete and a fourth was nearing completion ( Ramsis Hilton, Seven-Up, Giza cables, and Arab Contractors Medical Center).

By September 1991, 784 plant and other personnel had already been trained in Egypt on modern energy conservation. An additional 14 have received training in the U.S..

USAID is currently reviewing a request from the GOE to use ECEP funds to implement a large \$10-\$12M cogeneration project.

## B. EVALUATION QUESTIONS AND ISSUES

### 1. ECEP Sub-project Process

- What can be done to improve or accelerate the sub-project process (screening, letter of intent, feasibility study, development of specifications for equipment, implementation contract, Request for Quotations (RFPs), shipping, detailed engineering, installation, monitoring)? Why has it taken so long to launch the first set of sub-projects?
- What are the options for undertaking the detailed engineering required for each sub-project? What is the best option? Who should do the detailed engineering work? Who should pay for the detailed engineering work?
- Do participating companies clearly understand their sub-project responsibilities (engineering, local procurement, installation, monitoring, and maintenance)? Are the companies qualified to fulfill these responsibilities? Do implementation contracts have sufficient detail?
- What can be done to improve or accelerate the procurement process?
- Is there an appropriate mix of technologies in the first 13 sub-projects? Which technologies have the greatest potential for widespread replication?

- How can the project better encourage companies to implement low-cost, no-cost energy conservation opportunities?
- How can ECEP have a stronger impact on GOE energy policy?
- Is the existing organizational structure the most appropriate to meet the overall objectives of ECEP?
- Given that 135 factories have been screened and only 13 have signed implementation contracts, are sub-project selection criteria appropriate? Should ECEP seek larger sub-projects in the \$5-\$15M?
- What are the major problems of sub-project process as viewed by TIMS? DRTPC? FEI? client companies? Bechtel? USAID? energy conservation equipment vendors?

## 2. USAID

- Is USAID effectively fulfilling its ECEP monitoring and accountability responsibilities? Has USAID effectively communicated its requirements to the TIMS, DRTPC and FEI Secretariats and OBI? Does HRDC/S&T have sufficient staff levels and skills to fulfill their project monitoring requirement? What improvements should be made?
- What changes can USAID make to improve implementation of ECEP?
- Given project progress to date and USAID/Cairo's overall priorities, should the authorized level of \$36M be adjusted? Should the AID obligated amount of \$21M be increa

commodity, and financial control systems adequate to meet GOE and USAID monitoring requirements?

- Are the Secretariats effectively and efficiently implementing the sub-project process (screening, pre-feasibility study, etc.)? Is coordination among DRTPC, TIMS and FEI effective and efficient?
  - Are the Secretariats sufficiently housed, equipped, funded, and staffed to achieve their objectives? Are they allocating staff to the highest priority ECEP activities?
  - Have effective linkages been developed with public and private companies, with Egyptian suppliers, with Egyptian consulting engineers, with other related development projects? Are these linkages a distraction or a direct contribution to achievement of ECEP objectives?
  - Is the Steering Committee providing effective guidance and leadership to TIMS? Have the RCG/Hagler Bailly and OBI contracts contributed effective technical assistance?
  - To what extent is the achievement of ECEP project objectives being facilitated by the existing project organizational and administrative procedures?
  - What steps should be taken to improve the overall functioning of the Secretariats?
4. Overseas Bechtel Inc. (OBI)
- What are the strong points and weak points of OBI's performance under the contract?
  - Is OBI effectively and efficiently procuring ECEP's commodities and training?
  - Is the OBI contract adequately focused on ECEP's objectives and goals? What can be done to improve the contract?
  - Are the responsibilities, relationships and communications among OBI's project staff in Cairo, OBI in San Francisco,

and Hagler-Bailly in Washington appropriate? What can be done to improve the situation?

- Is the role of OBI (technical assistance & procurement) clearly understood by USAID and the secretariats?
- Is OBI providing effective technical assistance to ECEP agencies (TIMS, DRTPC and FEI)? What overall improvements should be made?

#### 5. Overall

- Is the project on a track leading to achievement of its goal and purpose? What changes are needed?
- How will the positive aspects of the project be sustained when AID's assistance ends in 1996? What changes are needed now to enhance sustainability?
- How is the project contributing to the Administrator's initiatives, USAID's strategic objectives and GOE S&T priorities? What can be done to enhance the contribution?
- What policy or program changes could the GOE or AID make to facilitate accomplishment of project goal and purpose?
- Should ECEP undertake a large \$10-12M cogeneration project?
- What is the current and potential future impact of ECEP on Egyptian natural resources and the environment? What changes are needed to enhance this impact?

## VI. ENERGY MANPOWER DEVELOPMENT (EMD) PROJECT 263-0140.4

### A. PROJECT DESCRIPTION

#### 1. Project Overview

The purpose of the EMD Project is to improve the technical and managerial capabilities of the petroleum and electricity sectors.

The Project consists of systematic manpower planning, defining the most effective training programs available, training, building institutional capacity, and demonstrating the effectiveness of manpower planning and development systems in pilot companies.

The Project's two interrelated components operate in parallel. The first component; capacity building, addresses an immediate need to improve technical and management skills in the petroleum and electricity industries based on manpower development plans. The output will be better trained professionals who will improve job performance and increase production. The component consists of three elements: 1) focused management and technical training programs; 2) training of trainers; and 3) improving training facilities.

The second component will introduce manpower planning and development systems at the three GOE implementing agencies; the Egyptian General Petroleum Corporation (EGPC), the Egyptian Electricity Authority (EEA), and the Electricity Distribution Authority (EDA). The component will adapt, design, and use human resource and career development systems for manpower planning. Services will include assistance in: preparing methods for and conducting annual training needs assessments; refining and updating training plans; designing and installing a manpower development and training database. Manpower development systems will be applied and tested, on a pilot basis, in three companies: the General Petroleum Company, the Cairo Petroleum Refinery, and the Alexandria Zone of EEA.

## 2. Project Implementation Start-up

USAID signed the initial EMD Project Agreement (ProAg) with the GOE in September 1988 obligating \$5M for the six-year project. The ProAg was amended in July 1990, increasing the obligated amount to \$8.6M, the total authorized AID level of funding.

In May 1989, AID awarded a \$960,000 interim buy-in contract to the International Institute for Education (IIE) to assist EGPC, EEA and EDA by preparing manpower development master plans and by presenting training courses in Egypt. IIE arranged U.S. training for thirteen participants, trained an additional thirteen Egyptian trainers, and conducted five training courses in Cairo.

During early 1990, AID competitively procured a long-term Management/Technical Assistance (M/TA) contractor. In June 1990, AID negotiated and signed a two-year (extendable to the PACD) \$4.12M contract with International Human Resources Development Corp. (IHRDC), with Stone and Webster as a sub-contractor.

### 3. Current Status

During FY91, EMD was presenting courses every month, except during summer and the Gulf war period. The three GOE implementing agencies approved plans for U.S. training which included: study tours, training of trainers, industrial training, and industrial internships. U.S. training under the IHRDC contract is scheduled to start in October 1991. USAID agreed to a request from the GOE implementing agencies to eliminate U.S. academic training and reprogram the funds for additional industrial training and industrial internships.

Limited progress has been made on the establishment of manpower development systems at the three pilot companies. IHRDC has been preoccupied with selling EMD its proprietary manpower planning software and started installing it in the three companies. Much of FY91 was spent discussing software issues. When the software finally arrived, on a trial basis, in August 1991, it was full of bugs.

In February 1991, AID and the Ministry of Electricity and Energy (MOEE) agreed to use EMD project funds for a new MOEE Executive Management Training Program. In July, IHRDC consultants started working with the newly established MOEE steering committee and MOEE senior management to develop an Action Plan for the Executive Management Training Program.

By August 1991, the EMD project had trained 320 people in sixteen training courses in Egypt:

#### Petroleum Sector

- "International Petroleum Pricing and Agreements"
- "Petroleum Accounting, Finance and Economics"
- "Project Management, Appraisal and Evaluation"
- "Petroleum Economics"
- "Management I"

- "Learning Systems Design"
- "Reservoir Engineering"
- "Spare Parts"
- "Management II"

Electricity Sector

- "Utility Management"
- "Power Plant Operations, Maintenance & Utility Management"
- "Personal Skills for Managing People"
- "Performance Evaluation"
- "Engineering Economics"
- "Standard Specifications"
- "Improving Distribution Operations and Service Quality"

B. EVALUATION QUESTIONS AND ISSUES

1. EMD Project Process

- Are project administrative, commodity, and financial control procedures effective and efficient? Do they meet all GOE and AID requirements? What improvements can be recommended?
- Is senior management of the three GOE agencies committed to the project? Are the agencies allocating sufficient staff resources to ensure the success of the project?
- To what extent is the achievement of project objectives being facilitated by the existing project organizational and administrative procedures, including participation of other organizations?
- What steps should be taken to improve the overall functioning of the project?

2. Training Courses in Egypt

- Do the courses being presented meet the most critical training needs of the GOE agencies? What steps should be taken to ensure that the courses optimally address training needs? What new courses should be offered?

- What is the impact of the training? Are course participants learning skills that will improve the effectiveness and efficiency of their agencies?
  - Has the project selected the appropriate Egyptians to train as trainers? Are the trainers learning the appropriate skills in the training of trainers program? Will the Egyptian trainers being trained by the project be able to teach the courses on their own?
  - Are the training programs sustainable? Will the agencies continue to provide needed training after completion of the EMD Project?
  - What are the major advantages and disadvantages of the training programs? What can be done to improve the programs?
3. Training in the U.S.
- Are the most appropriate candidates being selected for U.S. training? What can be done to improve the selection process?
  - Do the U.S. training programs meet the real needs of the EMD project? What can be done to enhance the contribution of the U.S. training to meeting EMD objectives?
  - What is the impact of the training? How will the GOE agencies benefit from the training? Will the participants be able to spread what they learned in the U.S. to their agency colleagues?
  - What are the major difficulties or obstacles to the success of the U.S. training? How can these be reduced or eliminated?
4. Electricity Executive Management Training (EMT) Program
- Does the EMT contribute to the objectives of EMD project?
  - Is the EMT Action Plan appropriate for the needs of MOEE? Can the Action Plan be successfully implemented? What

problems or issues may arise in implementing the Action Plan?

- Is the EMT consistent with management practice in MOEE? What impact will the EMT have on management within the MOEE?
- Will the MOEE be able to provide the appropriate personnel needed to establish and operate a successful EMT Program?
- Will the EMT Program be sustainable after completion of the EMD Project in 1994?

5. IHRDC

- What are the strong points and weak points of IHRDC's performance under their contract? Is the contract adequately focused on EMD objectives and goals? What can be done to improve the contract?
- Is IHRDC effectively and efficiently procuring commodities (including software), training, and consultants? What improvements can be suggested?
- Are there appropriate relationships and communications among the IHRDC/EMD, IHRDC/Cairo, IHRDC/Houston, and IHRDC/Boston offices? Is the balance of responsibilities and resources among the four offices appropriate? What can be done to improve the situation?
- Is IHRDC providing effective assistance to EMD? What overall improvements should be made?

6. USAID

- Is USAID effectively fulfilling its EMD monitoring and accountability responsibilities? Has USAID effectively communicated its requirements to the GOE implementing agencies, the pilot companies, and IHRDC? What improvements should be made?
- Has USAID provided effective guidance to the EMD project? Does HRDC/S&T have sufficient staff levels and skills to meet its project responsibilities?

- What changes can USAID make to improve implementation of EMD?
7. Overall
- Is the project on a track leading to achievement of its goal and purpose? What changes are needed?
  - How will the positive aspects of the project be sustained when AID's assistance ends in 1994? What changes are needed now to enhance sustainability?
  - How is the project contributing to the Administrator's initiatives, USAID's strategic objectives and GOE S&T priorities? What can be done to enhance the contribution?
  - What policy or program changes could the GOE or AID make to facilitate accomplishment of project goal and purpose?

## VII. EVALUATION REQUIREMENTS

### A. METHODOLOGY

1. Review relevant background documents including, but not limited to: Project Papers, Project Agreements, Contracts, Subcontracts, Sub-grant Agreements, RFPs and other procurement documents, Project Implementation Letters, Project Procedures and Manuals, Project Status Reports and Reviews, Newsletters and Promotional Materials, Feasibility Studies, Consultant Reports, Trip Reports, and selected correspondence.
2. Interview in person (or by phone if necessary) key individuals involved in design, start-up, implementation, and monitoring of the STD umbrella project and its four components including, but not limited to:
  - Senior and operational counterparts in all GOE implementing agencies and Secretariats.
  - Key individuals in USAID/Cairo and AID/Washington.

- Project participants including:
    - Principal Investigators
    - Technical Review Panel Members
    - Steering Committee Members
    - Principle Investigators in STC and SRP
    - Companies Participating in ECEP and STC
    - Participant and in-country trainees
  - Contractor/Consultant/PASA personnel in field and home offices including:
    - Medical Service Corporation International (MSCI)
    - RCG/Hagler Bailly (HB)
    - Institute of International Education (IIE)
    - International Development & Energy Associates (IDEA)
    - Overseas Bechtel Inc. (OBI)
    - International Human Resources Development Corporation (IHRDC)
    - NAMRU-3
    - Design Consultants: MSCI, HB, IIE, Clinton Stone, James Blackledge, Clive Shiff
3. Visit selected project sites such as factories of STC and ECEP end-users, laboratories of Principal Investigators, EMDP pilot companies.
  4. Using the evaluation issues and questions stated herein as a guide, compile and analyze relevant information and use professional judgment to draw conclusions and specify recommendations.
  5. Prepare oral and written reports of finds, conclusions, and recommendations.

#### B. REPORTING REQUIREMENTS

Each of the five evaluation report shall include, but not be limited to, the following sections:

Contents:

- Executive Summary
- Summary of Findings, Conclusions, Recommendations and Lessons Learned
- Main Body (details which support findings, conclusions and recommendations)

Annexes:

- List of Individuals Interviewed
- Bibliography of Documents Reviewed
- Scope of Work: Evaluation Issues and Questions
- Methodology and Team Composition
- List of Acronyms
- Others, as appropriate

The First Draft of each report shall be submitted to AID (4 copies) and to the GOE agencies (4 copies) one week prior to contractor's departure from Egypt. The evaluation team shall make an oral presentation of findings, conclusions and recommendations at AID four days before departure from Egypt. Final Evaluation Report shall be submitted to AID (15 copies) and to the GOE agencies (5 copies) prior to the team's departure from Egypt.

C. CONTRACT DURATION AND SCHEDULING

From start to final report, each of the five evaluation reports should take no more than six weeks (five weeks in Egypt and one week in the U.S. or in transit). USAID assumes that the five separate evaluation reports will be developed, more or less, simultaneously. The total evaluation effort under the contract should be completed during the second quarter of FY 1992 (January - March 1992).

D. OVERALL TEAM COMPOSITION

1. Skill Areas

USAID assumes that, in general, U.S. experts employed by the contractor will have more than one area of expertise. Furthermore,

USAID assumes that certain team members will have skills useful to all evaluation reports; for example, experience with AID's procurement of commodities, technical assistance and training; or experience with the design, implementation and evaluation of AID projects. The contractor shall budget for up to a total of 55 person weeks of U.S. experts and 20 person weeks of Egyptian experts (inclusive of the Chief-of-Party and Team Leaders for the five evaluation reports). Listed below are the skill areas that will be needed to complete the evaluation:

- Senior management of development projects with responsibility for review/approval of project designs and oversight of project implementation.
- Experience with AID regulations concerning procurement of technical assistance, commodities, and training.
- Design & implementation of USAID field projects involving research grant programs, technology transfer, administration of science and technology, and manpower/institutional development.
- Experience with conducting evaluations of AID field projects; ability to rapidly compile and analyze information from diverse sources and to produce quality reports within tight deadlines.
- Experience with S&T development strategies and the roles of S&T in third world economic development.
- Experience with S&T development strategic issues involving energy efficiency, industrial production, and manpower/institutional development. industrial minerals and chemicals, water and wastewater treatment, biotechnology, small scale industries, and industrial computer applications.
- Experience with S&T activities and issues affecting productive sectors in Egypt.

- Experience with Schistosomiasis research issues involving vaccine development; improved diagnostic methods; better chemo-therapeutic regimens; epidemiology of schistosomiasis; socio-economic factors that affect the disease; and, operations research to develop systems for delivering appropriate interventions.
- Experience with health research issues in Egypt.
- Experience with energy conservation technologies and issues such as cogeneration, power factor improvements, waste heat recovery, energy management systems, and combustion control.
- Experience with energy issues and technologies affecting industries in Egypt.
- Experience with management and human resource issues of energy agencies in developing countries; such as Egypt.

## 2. Nationality of Team Members

The evaluation team will compose of U.S./International experts and Egyptian experts.

The contractor shall hire an Egyptian national to work on the evaluations of each of the four components. Thus, the contractor is expected to hire four Egyptian experts: application of research for the solution of industrial problems, schistosomiasis research, industrial energy conservation, and human resource development in energy agencies. If requested, USAID and GOE counterparts will identify suitable Egyptian candidates for these four positions.

## 3. Example of Possible Team Composition

Given the diversity of activities to be evaluated and the range of skills required, there are a multitude of possible combinations of experts who could successfully complete the evaluation. Provided below is just one example of a possible mix of 15 team members and their potential input to the five evaluation reports.

Area of Expertise	Evaluation Report				
	STD	STC	SRP	ECEP	EMDP
1. Chief-of-Party	X	X	X	X	X
2. AID Procurement Expert	X	X	X	X	X
3. Training Expert (USA & In-country)			X	X	X
4. Project Implementation Expert	X	X	X	X	X
5. Team Leader - Technology Transfer to Productive Sectors		X			
6. Team Leader - Schistosomiasis Research			X		
7. Team Leader - Industrial Energy				X	
8. Team Leader - Developing Human Resources in Energy Agencies					X
9. S&T Strategy/Evaluation Expert	X	X	X	X	X
10. Schistosomiasis Expert			X		
11. U.S. Admin Assistant - Logistics/ Report Preparation Specialist	X	X	X	X	X
12. Egyptian Industrial S&T Expert		X			
13. Egyptian Schistosomiasis Expert			X		
14. Egyptian Industrial Energy Expert				X	
15. Egyptian Energy Agency Management Expert					X
Number of Experts Contributing in Each Evaluation Report	5	7	9	8	8

#### E. BUDGETING INFORMATION

The contractor shall budget \$10,000 local (non per diem) expenses in Egypt including: office rental, secretarial services, local transportation & car rental, duplication, telephone/fax, messenger services, etc.. Furthermore, the contractor shall budget up to \$20,000 to hire four Egyptian experts in subject areas of the four components.

ANNEX B

**BIBLIOGRAPHY**

**USAID/Egypt Publications**

Action Plan, FY 1990, March 15, 1989.

Annual Report, S&T for Development Project, Fiscal Years 1990 and 1991 (Draft), November 1, 1991.

Country Development Strategy Statement, FY 1989, January 29, 1987.

Country Development Strategy Statement, Update FY 1989-1993; July 4, 1989

Draft Mission Strategy Statement, November 18, 1991.

Energy Conservation and Efficiency Project (263-0140.3), Project Paper, June 13, 1988.

Energy Manpower Development Project (263-0140.4), Project Paper, June 14, 1988.

Environmental Reform In Egypt: Reduction of Pollution Subsidies, by Richard Rhoda, Development Studies Program, February 26, 1992.

Indefinite Quantity Contract, #OTR-0000-1-11-0035-00, Delivery Order No. 11.

Monitoring Program Performance: USAID Egypt, a report prepared by Management Systems International (MSI), February 4, 1992.

Schistosomiasis Research Project (263-0140.2), Project Paper, May 9, 1988.

S & T Strategy, March 5, 1985.

Science and Technology for Development Project (263-0140), Master Evaluation Scope of Work for All Components.

Science and Technology for Development Project (263-0140), Project Paper, July 30, 1985.

Structure of Macroeconomic Development in Egypt Since 1970 and Adjustment Efforts Of The Egyptian Government, by Richard Rhoda, Development Studies Program, February 13, 1992.

Successful Broad-Based Development in Egypt: But Is It Sustainable? by Richard Rhoda, Development Studies Program January 30, 1992.

### **Other Publications**

Development Associates, Inc., ECEP Evaluation Report, March, 1992.

Development Associates Inc., EMD Project Evaluation Report, March, 1992.

ECEP Technical Procedures, September 1990.

ECEP Study Report on Cogeneration In El-Nasr Company for Coke and Chemicals, prepared by Overseas BECHTEL, Incorporated.

Energy Conservation: Its Role in Environmental Protection in Egypt, Prepared by Richard P. Smith, Rincipal, RCG/Hagler, Bailly, Inc. for The Second International Conference on Environmental Protection Is a Must, Alexandria, Egypt, February 24-27, 1992.

The Political Economy of Dilatory Reform: Egypt in the 1980s Alan Richards, University of California, Santa Cruz.

Report on a Proposed Structural Adjustment Loan for Egypt, IBRD, June 1991.

USAID/Egypt Environment and Natural Resource Program: A Recommended Strategy Statement, Recommendations Proposed by the PRIDE Environmental Strategy Team (Draft), March 1, 1992.

U.S. Cooperation with Egypt in Science and Technology, Prepared by the International Development Cooperation Agency, April 1980.

ANNEX C

**LIST OF PERSONS INTERVIEWED**

**USAID/Cairo**

Associate Director, Human Resources and Development Cooperation  
Duncan Miller

Office of Science and Technology

Richard Rohda, Director  
Marc Madland, Project Officer  
Sherif Arif, Project Officer  
Salwa Wahba, Project Officer

Associate Director, Economic Affairs  
Samuel Skogsted

Mark Gellerson, Economist

Associate Director, Legal  
Theodore Carter

Associate Director, Financial Management  
Douglas Franklin

Hossam El-Shaffei, Chief Accountant

Associate Director, Program Development and Support  
Chris Crowley

Associate Director, Trade and Investment  
Lawrence Brown

Associate Director, Development Resources  
Paul Thorn

**Other Organizations**

Bechtel Corporation  
Ramses S. Khalil, Resident Project Manager

Energy Conservation and Efficiency Project  
Samer Elhaw, Executive Director

IHRDC (International Human Resources Development Cooperation)

William Knapp, Resident Project Manager  
W. Gordon Clay, Manpower Planning Consultant  
Soraya Fawzy, Administrative Assistant

PRIDE Project in Development and the Environment

Larry Morgan, Senior Resource Economist, Chief of Party  
John Priest, Specialist, Water Resources Management  
Eric Abbott, Institutional Development, Public Awareness  
James Cummings-Saxton, Urban/Industrial Pollution Control

RCG/Hagler, Bailly, Inc.

Richard P. Smith, Resident Technology Application Coordinator

Schistosomiasis Research Project

Sherif F. Zohdy, Financial & Administrative Manager