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**REVIEW OF MIDDLE EAST
REGIONAL COOPERATION PROGRAM
(PROJECT NO. 398-0158.25)**

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EXECUTIVE SUMMARY

The Middle East Regional Cooperation (MERC) program has achieved, during its ten years of existence, a remarkable record of success. Egyptian/Israeli scientific and technical cooperation has yielded significant achievements in the fields of agriculture, public health, and marine technology. The projects have dealt with subjects of high priority in which both Egyptian and Israeli efforts resulted in work of considerable utility to both countries. Good professional relationships have been established, as well as cordial personal friendships. Despite a background of political tensions and violence in the area, the scientific work was not affected significantly.

A. Organization for Collaborative Action

The very favorable environment for collaboration that has emerged can be attributed to five factors. First, US academic entrepreneurs have been present from the beginning to stimulate interest in the program, bring the various parties together, assist in the development of concrete projects, and help to overcome difficulties in implementation.

High-level host government support has been a second important contributor to program success. Especially in Egypt, such support has served as an important buffer for participating scientists facing opposition from their colleagues and home institutions. The US Government and institutions have also provided an important umbrella of support.

Project coordinators are a fourth key element. Several of the participating Egyptian and Israeli scientists have had an association that antedates the program, and the program has strengthened that association significantly. Less successful projects, like TATEC, have been characterized by greater turnover of key personnel and consequent failure of strong professional and personal relationships to develop. Finally, the continuing interest and financial support on the part of Congress have been essential.

Despite the generally warm and relaxed associations that have evolved, continuing sensitivity to certain key aspects of the relationships must be acknowledged. In particular: those relationships must represent a partnership among equals; US evenhandedness in dealing with the two parties is essential; and a low profile regarding publicity is necessary to minimize the risk of media distortions.

A congressional initiative thrust the MERC program upon A.I.D., which already had large bilateral programs to monitor with limited staff. Despite its initial reluctance to undertake an activity at variance with its normal work, A.I.D. has turned in a performance of considerable merit. Nevertheless, we have heard some criticism of its burdensome bureaucratic methods. Our recommendations in this area concern, first, the strengthening and greater flexibility in the administrative arrangements. A second, even more important set of recommendations, seeks closer integration of activities among the various collaborators who individually are functioning quite well.

Recommendations:

- o A three-person US Policy Oversight Board should be formed, supplemented when need arises with high-level representation from each of the country partners.
- o Each individual project should have a steering committee to perform comparable functions at the project level.
- o Project oversight in Egypt needs to be strengthened in a way that clarifies the respective roles of the A.I.D. mission and the Political Section of the Embassy.
- o Project leaders and individual researchers in Israel would benefit from greater interaction with Egyptian counterparts through periodic formal meetings designed to exchange experiences and, thereby, to gain a better understanding of Egyptian society and outlook.
- o Evenhandedness in US administration of the program is essential.
- o Additional support and closer top-management scrutiny should be given to the AID/Washington office charged with responsibility for the program.
- o A management study should be carried out to establish better procedures for financial disbursement and accountability.

B. Actions Taken and Results

The program's productivity has been remarkable considering the loose manner in which projects are initiated, carried out, and evaluated. Unsolicited proposals are prepared in the absence of an overall A.I.D. strategy on priorities. Moreover, because of the political/technical dualism in the program, A.I.D. responsibility for technical review and oversight is diffuse, unclear, and essentially ad hoc.

Nevertheless, the subjects approved for investigation are generally acknowledged to be important, and measurable results have been attained, especially in agriculture. Success has been clearly dependent upon the formation of good working relationships between country partners from the project design stage through implementation and evaluation. Results have been mainly disseminated within the scientific community. Tangible benefits to the general public are less apparent, though not entirely lacking. The link between research, demonstration, and routine practice must be constantly borne in mind.

Some of the organizational recommendations already cited also apply to the action issues. Additional ones are summarized below.

Recommendations:

- o To be successful, project activity among Egyptian and Israeli scientists must be an association among equals throughout the process of planning, implementation, and dissemination of results.
- o Greater emphasis needs to be paid in the future to the practical, widespread application of project results so as to benefit directly the people of both countries.
- o Project funds should be devoted to the maximum extent possible to collaborative research in Egypt and Israel. US institutions should play a strictly cooperative role and not a direct research engagement.
- o Overhead charges should be carefully negotiated so as to minimize their cost.
- o At their outset, projects should have explicit, clear-cut performance indicators, related to expenditures, so that the cost of producing a defined project benefit can be determined.

C. Future Sustainability and Thrust

The evident success of the MERC program over the course of its first decade naturally leads to considerations of continuation and growth. The review team has not entertained any thought of discontinuation, though sustainability is clearly dependent upon continued US Government funding. The question is not simply a matter of recommending change or not, however, for change can take various forms ranging from simple fine-tuning to radical restructuring.

Specifically, four possible levels of change from present practice might be contemplated. First, the scope of existing projects might be altered and new investigators brought in. Second, additional subjects of research might be introduced by institutions already engaged in program activity. The third level of change would bring new institutions and individual scientists in Egypt and Israel into the program. Ultimately, a fourth level of expansion might bring additional countries into the program.

During our Washington briefings, we noted the A.I.D. desire to engage in new areas of endeavor with "more new faces." While there should always be an opportunity for new departures, in fact, the existing projects have moved from one phase to succeeding phases and, in the process, are enlisting new people and widening the scope of the project. Our visits to the field have confirmed the importance of solid

associations of trust developed slowly over a long period of time. We expect, therefore, that the present collaborators will continue to play major roles in the program, but serious attempts should be made to broaden the participation and to avoid problems of inertia.

Recommendations:

- o Every effort should be made to involve more scientists, especially younger participants, in the projects.
- o Consideration should be given to modest extension into new, though related, areas, such as energy use.
- o Consideration should be given to the inclusion of new institutions in the program provided that adequate additional funding can be found, so that existing collaborative and productive efforts are not jeopardized.
- o Private philanthropic support should be welcomed so long as the funds can be administered in an acceptably neutral way under the US Government-support umbrella.
- o Opportunities for scientific collaboration involving additional Arab countries should be explored with suitable sensitivity and care as this becomes feasible.

I. INTRODUCTION

A. Background

In the euphoric days after the completion of the Camp David accords, a Congressional initiative took shape which sought to give greater content to Israeli/Egyptian amity and, perhaps later, to include other Arab countries.

The vehicle created to forward this end was the Middle East Regional Cooperation Program (MERC). The program, which began in a preliminary way in FY 1979, was included at a \$5 million level in the Foreign Aid Bill for FY 1981. In each of the years thereafter, through FY 1989, funding continued at that same annual level. For FY 1990, \$7 million was earmarked. Congressional support remains strong and there is no indication it will diminish in the foreseeable future.

The 10 projects initiated to date have been approved for funding at varying levels that total just under \$60 million. The largest number (five) are concerned with agriculture; two with health; one relates to marine technology; and one, recently approved, concerns waste-water treatment and usage.

Our team--Ambassador C. William Kontos, Dr. William A. Reinke, and Dr. Quentin M. West--was engaged by A.I.D. through a contract with Devres, Inc. to conduct a program review of this decade-long activity. The first week was devoted to Washington briefings followed by two weeks in Egypt and two weeks in Israel. We visited most of the project sites and spoke at length with officials and technical staff in both countries (see Annex 2). A report in draft was prepared before leaving Israel, so that we were able to leave a copy with the US Ambassador in Tel Aviv. We then proceeded to Cairo for final meetings and left the report with the US Ambassador there before returning to Washington.

B. Assessment

In the entire range of USAID activities there are few programs in which foreign policy and developmental objectives have been matched so well as in the MERC. Egyptian and Israeli scientists and academics, in cooperation with US colleagues, are generating and applying useful knowledge and, in the process, contributing in tangible ways to the cause of peace.

Among the engaged community of participants, the program has cemented solid, professional ties and has led to cordial personal friendships. In the course of collaboration a remarkable ease of discourse and communication has evolved. These are, for the most part, apolitical men and women working together amicably in what can only be described as a very volatile and, at times, tense political context. Joint meetings are held from time to time in both Israel and Egypt, as well as abroad, with active US participation. Scientific papers are produced and published jointly. New methods and

techniques successfully applied on one side or the other are exchanged and a transfer of technology occurs.

It has taken 10 years to establish these links. When we consider the gap in understanding that had to be covered and the biased preconceptions on both sides to be modified, it is a considerable feat. The potential for failure has been limitless; yet associations remain unbroken and, in fact, are continually being strengthened. External political events, suddenly erupting, have caused delays in project planning. Once formal agreement was reached by the three partners, however, projects became less vulnerable to outside incidents and steady progress in implementation was usually made.

Factors contributing to program success are elaborated in later sections. Five key elements deserve to be highlighted here by way of summary. First, credit must be given to certain persons who can only be described as American "academic entrepreneurs"; they were the conceptualizers and operators who stitched the three-way fabric together and produced project proposals meeting A.I.D. funding criteria, and who stayed with the program for most of its life.

Second, US coordinating institutions--notably NIH, San Diego State University, and the New Jersey Marine Sciences Consortium--have served important intermediary roles from the beginning. Here also, particular individuals who believe strongly in the program devoted themselves wholeheartedly to its success and effectively complemented the zeal of the private "academic entrepreneurs."

Strong and sustained government support, forcefully articulated by policymakers in both Egypt and Israel has been a third important contributor to program success. The scientists who served as project coordinators have been a fourth related constituent of success. Almost without exception, these men came to the program at its beginning, with a strong sense of commitment and remained to provide a remarkable degree of continuity; all the while they were forging solid professional and personal ties with each other. The trust thus built up among these coordinators helped to cushion the external political shocks that occurred from time to time and kept them working together through the plethora of paperwork engendered by three different bureaucratic systems.

Continuing financial and moral support from the US Congress represents the fifth noteworthy element underlying program accomplishments.

C. Scope of Review and Procedure

Detailed terms of reference are annexed to the report. Here we merely present a set of headings as aspects of the program review we were asked to consider. Discussions in the field addressed each of the issues listed. Although our findings are organized somewhat differently, the following topics formed the framework for our inquiries.

- o level of cooperation achieved in specified respects
- o level and continuity of government support

- o effects of project content on cooperation
- o factors stimulating participation
- o project selection, design, and scope
- o role and effectiveness of US institutions
- o research results, impact, public awareness
- o prospects for private sector involvement
- o sustainability and alternative funding sources

We next reviewed the program's evolution. Ten projects emerged, each having unique features. Following our project-specific commentary, we underscore certain common features and issues we have discerned as a basis for discussion of past performance and future prospects. That discussion deals with: program size and scope; funding levels and sources; administrative matters, including questions of organization; and program monitoring, evaluation, and reporting.

II. PROGRAM FINDINGS

A. Overview

1. A.I.D. role

When the program originated by Congressional initiative, administrative responsibility was assigned to A.I.D. That agency assumed its responsibility somewhat reluctantly, because it was fully preoccupied with the oversight of very large bilateral programs in Egypt and Israel. The MERC program was viewed as labor-intensive, an administrative effort that would be large compared to the relatively small amounts of money involved. In fact, during the 10 years of MERC's regional program, total support for agricultural research added up to about \$27 million; in contrast, the present bilateral program in Egypt includes \$300 million over a five-year period for agricultural research alone.

Throughout the MERC program, A.I.D. has taken the position that its role as executor of a Congressional initiative is not to formulate a strategy and then solicit submissions, but only to examine unsolicited proposals to determine if they are clearly trilateral and technically sound. Moreover, because of the political/technical dualism in the program, A.I.D. responsibility for technical review and oversight is diffuse, unclear, and essentially ad hoc. This laissez faire policy has somehow produced favorable results, but it nevertheless deserves reconsideration.

Projects on subjects of mutual interest are prepared jointly by cooperating American institutions in collaboration with Egyptian and Israeli scientists, or investigators. Funds to support a successful proposal are awarded to the American institution which, in turn, works out detailed arrangements with the Egyptian and Israeli entities. The rather complex administrative chain can be cumbersome, especially with respect to disbursements.

2. Project summary

Information about the type and timing of approved projects, along with financial data, is summarized in the following table. Nearly half of the funds available were devoted to agricultural projects, while health and marine technology acquired almost equal shares of the remainder.

Table 1: MERC Program Funding for the Life of Project

PROJECT	YEARS	(\$000)
<u>Agriculture</u>		
CALAR	82-94	15,550
TATEC	84-90	3,990
Maryut	88-90	2,000
Nubaseed	88-90	1,660
Animal Health	90	<u>3,500</u>
Total (44.9%)		26,700
<u>Health</u>		
Vector Diseases	81-90	12,158
Infectious Diseases	89-94	<u>4,293</u>
Total (27.6%)		16,451
<u>Marine Technology</u>		
Coop Marine Technology	80-91	13,269
Wastewater	90	<u>1,010</u>
Total (24.0%)		14,279
<u>Other</u> (3.5%)		2,075
<u>Grand Total</u>		59,505

Projects differed in subject matter, size, and scope; similarly, the form of collaboration took among investigators varied. In the early projects, investigators typically worked separately in each country, regularly exchanged information informally with colleagues in the other country, and, from time to time, collaborated more formally through participation in conferences and joint publications. It has become more common in newer projects--such as Nubaseed, Maryut, and the waste-water reuse project--to limit fieldwork to sites in Egypt. The Israeli contribution then takes the form of technology, tangible items such as seedlings, and personnel. Collaboration has grown to the point at Nubaseed and Maryut that three Israeli technicians have actually taken up residence at the Egyptian field sites. Although the precise form of cooperation has varied, the lowest common denominator for success seems to have been active collaboration from the earliest stages of project development through implementation to dissemination of final results.

Considering the political aims of the program, the mere feat of sustained cooperation is an indicator of success, regardless of the topic that brings the collaborators together. The program is expected, however, to yield technical advances and substantive contributions to scientific knowledge on matters of mutual importance.

B. Accomplishments

The subjects approved for investigation are generally acknowledged to be important, and measurable results have been attained: project reports and published papers; workshops, conferences, and other professional exchanges in Egypt, Israel, the US, and other countries; and short-term and long-term training. On several projects, gains made in an initial phase were extended into later phases. For example, work in marine technology is in the third phase, and a fourth phase is already under consideration.

Project results have been mainly disseminated within the scientific community. Tangible benefits to the general public are less apparent, though not entirely lacking.

1. Agriculture

Much of the land in Egypt and Israel is arid. Water is the most important limiting factor to agricultural production. Yet expanding populations in both countries require that these arid lands be developed.

Some eight years ago A.I.D. concluded that economic returns on investments from farming the desert of Egypt would be low, and that a greater gain in agricultural production could result from improving technology in the Delta. Therefore, its huge bilateral agricultural research program is directed to the old lands of the Delta, and has increased productivity.

The agricultural projects of the trilateral MERC program, on the other hand, have been concentrated on the arid lands of both countries. In spite of their relatively small size, the projects have made a substantial contribution to the dramatic advances in agricultural production now taking place in the deserts of Egypt and Israel.

Drip irrigation results in a much more efficient use of water. Protected (under plastic) agriculture is greatly increasing vegetable yields. Selecting and genetically engineering crops for tolerance to saline water, previously thought unfit for agricultural use, has expanded water resources. These three technologies are causing some rethinking about the profitability of farming the desert.

In Egypt, the use of these techniques is growing rapidly, illustrated by the MERC project farms of Maryut and Nubaseed and to be seen along the desert road from Cairo to Alexandria which is studded with new farms with their drip-irrigation tubing and plastic greenhouses. Egypt is now exporting high-quality fruits and vegetables to the Gulf and Europe. Israel, with a long experience in dry land farming, is a leader in this export marketing.

Livestock production also has benefitted from MERC research projects. For example, crossbreeding Damascus and Barki goats in Egypt increased milk and meat production substantially, and some 5,000 head of this new breed are in bedouin herds.

2. Public health

Extensive travel within three countries to conferences and meetings, the support of 50 graduate degree students, and more than 150 scientific articles published have been important end products. Serious research results in epidemiology and control of vector diseases have been applied usefully to the public health needs of both countries. In addition, Egypt has been assisted with the development of a surveillance system and control strategy for vector-borne diseases.

Scientists in the public health services of Egypt and Israel are now working cooperatively as a result of contacts through the MERC health projects. For example, when an outbreak of leishmaniasis occurred in Egypt in 1982, just after the Israeli invasion of Lebanon, Egyptian health officials nonetheless risked inviting Israelis to come to Egypt to help control it.

3. Marine technology

Improved systems of fish production have resulted from the MERC marine technology projects. High-quality fish from salt water ponds in the southern tip of Israel's Negev are flown to European markets and sold at a very high price. Improved systems for reuse of waste-water both in fish production and irrigation advance productivity. One marine technology project is designed so as to predict the effect of construction (marinas, jetties, etc.) on erosion along the coast from the Nile to Haifa.

From a primary focus on marine activity the project has expanded to include work on shore protection, fisheries, aquaculture, and waste-water reuse. The marine program has involved a dozen projects in more than 20 laboratories in Egypt, Israel, and the US.

A series of joint planning and reporting conferences have been held, as well as annual workshops, mainly in Cairo, Alexandria, and Haifa. Frequent exchange visits and the drafting of joint academic papers for publication have also characterized the program. Joint research on shoreline protection has resulted in data predicting coastal erosion. Very successful work is underway on raising fish in salt-water ponds and in producing cage-culture fish for export.

C. Program Organization

1. Overview

Individual projects within the entire MERC program have had their separate origins and records of accomplishment, and each encountered unique difficulties as well. Certain generalizations, however, can be drawn from these experiences. Although many of the generalizations underscore the wisdom of existing program strategy, some point to new directions for the future.

The first general feature to note is the remarkable continuity of collaboration among the three partners that was exhibited from the earliest planning stages to the present. Collaboration was sustained despite recurrent obstacles imposed by external political developments, as well as internal bureaucratic impediments and delays.

Certain factors common to the various projects can be cited as important contributors to this success. First, is the high level of political support the program enjoyed from each of the partners. Such support, in Egypt especially, encouraged scientists concerned with the peace process to exercise program leadership in spite of the personal and professional risks involved.

While political support from the two governments provided the requisite backing for collaboration, its good execution depended upon dedicated scientific and administrative leaders who came forward early on and remained active in the program. In the health field, especially, strong leaders emerged--Egyptians and Israelis, as well as Americans of the US coordinating institution (NIH). In addition, a private American scientist-entrepreneur, with strong personal interests and political ties to the Middle East peace process, served an important catalytic role.

The marine technology effort also benefitted from comparable leadership; a key American scientist-entrepreneur has been an active project participant as well as catalyst. The agricultural projects attracted similarly dedicated host country leadership, but the American supporting institutional role has been less evident.

In summary, enthusiastic project promotion and coordination on the US side can truly make a difference, and such dedication on the part of Principal Investigators in Egypt and Israel has been, if anything, even more essential. The fact that at least some of the key actors had some prior association seems also to have led to the steady, albeit slow, process of trust-building. The process was formalized and strengthened in some of the projects by the formation of steering committees that were able to provide stability during the periods of tension caused by external political events.

Turnover has been somewhat greater among individual investigators working on various aspects of sub-projects than among the leadership. As might be expected, the source and extent of motivation has been largely an individual matter. For some scientists, the quest for peace was an important stimulus. For others, the opportunity to exchange expertise was valued. For still others, motivation seems to have been mainly limited to the availability of funding to pursue subjects of personal interest.

2. How collaboration can best be achieved

Important as the presence of devoted individuals has been, this in itself is not a guarantee of successful collaboration. The working environment in which persons and institutions function is equally important. Repeatedly, we were made aware of three areas of sensitivity that must be recognized in the collaborative relationship.

First, the association must be one among equals. Each of the partners must contribute some substance to project development. Then, implementation must be perceived as a shared endeavor, not as a form of technical assistance in which one party imparts superior knowledge to the other.

Second, evenhandedness in US administration of the program is essential. While arrangements, for the most part, seem to have been equitable, some resentment was expressed in Egypt over health and language requirements imposed upon Egyptian travellers to the US, but not demanded of Israelis.

Finally, and most important, is an Egyptian sensitivity to outside pressures. University investigators must take cognizance of anti-Israeli feelings among students, faculty, and university administration. Medical practitioners must consider objections to collaboration from the powerful medical syndicate. All are concerned about attitudes of other Arab states. As a result of these pressures, it is necessary that the program maintain a low profile with minimal media attention. Moreover, it requires explicit government endorsement by Egypt and Israel, and the umbrella of strong US government support.

Without exception, the Israelis with whom we met were well aware of Egyptian sensitivities to publicity in the mass media concerning program activities. The Egyptian opposition press, from time to time, picks up on some event connected with the program and invariably gives it a distorted spin. Particularly when seeking a scapegoat for some untoward event (a tomato crop failure or outbreak of blight), Israel serves as a

convenient target. Far-fetched though these press accounts are, they create a climate that inhibits freedom to exchange information or travel from Egypt to Israel.

3. Project research and its application

Greater attention needs to be paid to the applications of program results.

Specifically, a well-defined link should be established between research, demonstration, and, where appropriate, commercial application. Research undertaken must have a distinctly applied orientation; the technical feasibility of research results should then be demonstrated on a larger scale; and, finally, their economic viability should be established.

Individual projects should be subjected to these criteria, but need not reflect all. Thus, for example, the Maryut project focuses on research and demonstration, whereas Nubaseed has greater commercial applicability. The two projects, therefore, could interact and exchange information much more than they do at present. When commercial viability is demonstrated, of course, the project would no longer need support under the MERC program. This consideration should be applied to any request for extension of the Nubaseed project.

4. Individual projects

To summarize, we would underscore the importance of three factors in the approval and successful conduct of all projects:

- o they should fall within areas that represent a high national priority for both sides;
- o both sides should be equally and fully engaged from the beginning of project planning; and
- o they should have a project life of at least 3-5 years.

Research on the part of US institutions is not endorsed. Given the limited funds available to MERC, we feel that the maximum amount possible should be devoted directly to research by Egyptians and Israelis. We recommend that overhead costs be minimized and that separate research by US institutions, ostensibly supplementing joint Egyptian/Israeli endeavors, be precluded.

Concomitant US research has been mentioned as a feature of a new agricultural project proposal. The team views such a use of funds to be at variance with the main purpose of a program whose basic objectives are to increase and deepen Egyptian/Israeli (and not American) scientific collaboration.

There was a clear consensus in both Egypt and Israel that as many younger participants as possible should be enlisted in the projects. They carry less ideological baggage, are trained in more or less similar methodologies and approaches to scientific

work, are more open to new ideas, and more prone to creativity. One possible way to broaden the base of participation would be to invite these younger scientists to symposia in which current project findings are discussed and ideas for further study solicited.

III. FURTHER PROGRAM DIVERSITY

A. New Projects

The evident success of the MERC program over the course of its first decade naturally leads to considerations of continuation and growth, and the desirability of redirection and/or expansion. The question is not simply a matter of recommending change or not, for change can take many forms covering a range of possibilities from simple fine-tuning to radical restructuring.

During our Washington briefings, we noted the A.I.D. desire to engage in new areas of endeavor with "more new faces." While there should always be an opportunity for new departures, in fact, the existing projects have moved from one phase to succeeding phases (e.g., CALAR I and II), and, in the process, enlisted new people and widened their scope.

Program modifications that might be contemplated involve three possible levels of change from present practice. First, the scope of existing projects might be altered and new investigators brought in. Second, additional subjects of research might be introduced by institutions already engaged in program activity. A third level of change would bring new institutions and individual scientists in Egypt and Israel into the program.

The most modest recommendation for the future would have present collaborators continue their good work through the extension of present projects. This has already happened in the case of CALAR, of marine technology, and the investigation of vector-borne diseases. In the latter instance, teams of biomedical experts, who had established strong ties of mutual trust through working together on a set of problems that included malaria and Rift Valley Fever, shifted attention to filariasis and rickettsial diseases mutually recognized to be of greater current relevance. The Maryut project stands at an early stage of investigation of a number of factors associated with dry-land agriculture, and some of its studies are likely to produce findings deserving of follow-up in a later phase of research.

Other topics of scientific investigation, clearly within present boundaries, could be developed to provide collaborative opportunities for additional scientists, while retaining present institutional relationships where associations of trust have been nurtured with such care and success. Investigation of solar and other sources of energy has been suggested as one possibility, and there are obviously many others. The specific subject chosen is of less importance than the interest and dedication to the topic present on all sides. The review team supports this modest expansion in program scope.

Where expansion would launch new institutions in Egypt, Israel, and possibly other countries, misgivings arise. Though desirable in principle, the team could support expansion of the kind only if it did not jeopardize existing productive endeavors and

associations. Therefore, it would undoubtedly require additional funding by means considered in a later section of this report.

B. Prospects for Other Arab Countries

The relationships so laboriously, but soundly, established over the past ten years will no doubt continue to provide the basis for extending project activity to related or allied areas. As the political climate permits, however, priority should be given to new projects of mutual interest that would bring in other Arab countries.

An environmental study of the Gulf of Aqaba has been discussed informally in Egypt, with Jordanian and Israeli participation. Earlier, there were some Egyptian/Sudanese exchanges on malaria and leishmaniasis that could have drawn on Israeli research results, but went nowhere. Finally, Israeli interest in the possibility of Turkish and Moroccan participation has been suggested to us.

While these efforts can only be considered hypothetical at the moment, a favorable outcome of the Gulf crisis and some significant progress in the Israeli/Palestinian impasse could give dramatic impetus to Middle East regional cooperation, even if Israeli participation were initially indirect. Separate projects involving Egypt and Israel on the one hand and Egypt and Jordan on the other, for example, might effectively link the three countries, along with the US, in the scientific study of a single topic--for instance, efficient water use.

Until now, the Egyptian government has given steadfast support. The program has moved forward in the face of external shocks that could have seriously damaged the existing relationship had not the Egyptian side remained solidly behind it. We trust that this approach will be continued.

There is, nevertheless, a constant underlying anxiety in Egypt lest events in Israel and the occupied territories create such heightened tensions as to cause an Egyptian public outcry that would gravely impede what is a successful ongoing program. Beyond this, and given the present state of Middle East politics, the prospect for enlisting other Arab countries in the program seems remote. Interest within the scientific community in some of these countries suggests, however, that we remain alert to any possibility for extending similar collaborative arrangements at some time in the future.

IV. FUNDING LEVELS AND SOURCES

A. Sustainability

The viability of various options and preferences among the trilateral states depends upon the availability of adequate funding. Even continuation at the present level of activity assumes that the current level of Congressional support will be maintained or that other sources will be substituted.

On the basis of discussions and observations in each of the country settings, the review team sees little evidence that the program can be sustained by Egypt and Israel on their own at any time in the foreseeable future, though both governments, in due course, should be willing to support the projects within their regular budgets. In some cases it is now being done. Scientists working on the projects are directly dependent upon project funds and cannot easily turn for support to the institutions with which they are affiliated. To illustrate this, Egyptian scientists repeatedly emphasized the hardships created by delays in receiving reimbursement for project costs because their institutions are not prepared to carry them on credit in the meantime. This is not so great a problem in Israel where credit advances are more feasible.

Use of bilateral funds for trilateral purposes appears, on first examination, to be an attractive possibility. On further reflection, however, it is clear that the competitive environment and concerns over turf engendered as a result would, at least in Egypt, make it impracticable.

Government support from other countries is another possibility for which precedents can be cited. The Nubaseed Company currently receives German assistance for developing an irrigation system and a training center. The Dutch aid program earlier had supported the Nubaseed enterprise. While such initiatives involving other country aid programs are welcome, they need not alter US aid policies. In any event, they could not be counted upon to replace the US regional cooperation program.

B. Private Sector Funding

This leaves the option of private philanthropic support. Considering the number of organizations concerned for peace in the Middle East, revenues from these sources would probably be far from negligible, given a concerted effort in this direction. Indeed, the existing US regional cooperation program already has a history of modest support from private foundations.

The main issue, then, is control over use of such funds. Governmental and non-governmental agencies are always free, of course, to establish working relationships under terms and conditions satisfactory to both parties. Our misgivings go beyond such basic two-party relationships to arrangements that preserve the regional concept. There are understandable fears that country interests could be impaired if reliance were placed upon support from private institutions with specialized narrow perspectives. (At the

extreme, consider the effect in Egypt if American Jewish philanthropy were the sole source of funding for a particular activity). In short, Egyptians feel that support through A.I.D. has been administered in a reasonably effective manner and that continuation of the program under the US government umbrella in the future is essential.

To address these concerns, a mechanism for administering some combination of private and public funds might be devised. The executing agency could be a disinterested public body; the National Academy of Sciences or the Smithsonian Institution have been suggested as possibilities. These, or others, must obviously be willing and able to play the intended role. Equally important, the body chosen must be accepted by all parties as genuinely neutral and sympathetic to collaborative interests and desires in Egypt and Israel, and able to cushion effectively the pressures of funders. Until such ideal conditions can be satisfied, it seems reasonable to continue to assign overall administrative responsibility to A.I.D.. For this reason improvement in A.I.D.'s oversight function is increasingly important and is, therefore, a matter to be addressed next.

V. PROGRAM MANAGEMENT

Because the program is both political and technical in scope, its administration is necessarily somewhat complex. Moreover, technical considerations range widely from matters of agriculture to health to marine technology. Finally, responsibility is presently split between A.I.D. and the State Department. In Washington responsibility lies with A.I.D., whereas in Israel, where there is no A.I.D. office, it is in the Embassy. In Egypt, both because of A.I.D. Mission reluctance to take it on and because of its special foreign policy objective, it is based in the Embassy as well, though A.I.D. does offer some ad hoc technical guidance.

The kind of difficulty that can arise as a result of these complicated arrangements is illustrated by the distressing lack of funding continuity that hinders some extremely worthwhile scientific projects. In one instance (marine technology), the gap in funding an ongoing activity which had come to the end of its project time was as long as three years. That lag nullified much of the previous work and required an expensive and time-consuming new start. Similar gaps of lesser duration have occurred also in some of the public health projects.

It should not be beyond the realm of good management to allow the necessary paperwork to be done in a timely manner so as to avoid such long and crippling delays. Agricultural project funding has somehow managed to maintain sufficient flexibility to avoid them. Similar flexibility should be extended to all projects.

Despite the rather complex and seemingly irrational administrative arrangements, they seem to work reasonably well most of the time. We, therefore, would not suggest major changes, but do recommend certain ways to augment, strengthen, and sharpen existing arrangements.

A. AID/Washington Administration

In Washington, program administration rests with one mid-level officer. He handles the entire program alone without the assistance of even a secretary. He has long experience in the job, however, in contrast to his immediate superiors who have changed positions frequently. Perhaps because the MERC program does not have A.I.D.'s usual bilateral character and possesses a clearly political flavor, it is treated as something of an "orphan." We feel that additional support and closer top-management scrutiny should be given to the Washington office.

The program's productivity has been remarkable considering the loose manner in which projects are initiated, carried out, and evaluated. Unsolicited proposals are prepared in the absence of an overall A.I.D. strategy on priorities. Moreover, because of the political/technical dualism in the program, A.I.D. responsibility for technical review and oversight is diffuse, unclear, and essentially ad hoc.

Throughout our trip we heard from both sides complaints of burdensome A.I.D. regulations, complicated by the tripartite character of the program and the nature of the participants: government to government; university to university; and private US institutions vis-a-vis A.I.D. and overseas counterparts. (An obvious, but little noted, drag on prompt decision-making, even in this day of the fax, is that all three countries observe different weekends, thus effectively eliminating several working days each week).

Clearly, Egyptian and Israeli bureaucratic methods differ. It appears somewhat easier for Israeli institutions to carry project costs during the inevitable reimbursement delays that can run from three to six months. In Egypt this advantage does not obtain, so that, frequently, project execution stops or is severely impaired. In short, this program cannot be handled by the same administrative procedures A.I.D. uses for its regular bilateral programs. Much greater flexibility is required. We recommend that A.I.D. conduct a special internal management study designed to achieve a much more efficient modus operandi and, in particular, to deal with currently slow and inadequate methods of reimbursement. The study should also include a financial review to ascertain whether necessary safeguards have been established for the proper accounting of funds sent to the field.

B. Role of Participating US Institutions

The US partners for these projects include universities (such as San Diego State), US government entities (NIH and USDA), and an office that represents a consortium of universities offering marine technology. In probing to determine the kind and quality of services rendered by these institutions, we elicited a few criticisms of what was described as a growing "intrusiveness" on the part of a handful, but nearly unanimous criticism of the increasing share of project funds spent on overhead charges. Obviously, every dollar devoted to administrative expenses leaves less for direct project support. Overhead charges should be very carefully negotiated so that they be kept at a minimum.

Concerning the intrusiveness charge, we seriously question its validity (though AID/W should be constantly alert to the possibility). On the contrary, the role of the US institutions came in for much praise and expressions of appreciation for their considerable help, in all sorts of ways, to facilitate the smooth operation of the projects. Indeed, solid relationships of mutual respect have been forged.

C. Field Relationships

As noted earlier, projects are handled differently for Egypt and Israel. In the latter, where there is no A.I.D. mission, the embassy's science attache coordinates; he reports directly to the ambassador (who follows the program closely) and has established a good network of contacts with the various project heads. The science attache is not always kept fully informed by AID/W on all aspects of his charge. It should be a matter of routine that copies of all relevant reports and other documents be sent to him. We understand that this is not now the case. In general, however, the present arrangements with Embassy/Tel Aviv are satisfactory.

Israeli program management is divided among four entities: the Hebrew University, Ben Gurion University, the Oceanographic and Limnological Research Institute, and the Ministry of Agriculture. While, undoubtedly, informal exchange occurs between the project leadership and individual researchers, it appears to us that they would benefit further from periodic formal meetings of all concerned, to exchange experiences and gain a better understanding of Egypt's society and its social, economic, and political outlook.

On the Egyptian side, all the participating institutions, including universities, are governmental, and, given the overall direction provided by Deputy Prime Minister Wali, there seems already to be close coordination and mutually beneficial exchanges among project participants. These exchanges are particularly evident among senior-level officials.

In Egypt, for reasons, we presume, that relate to this program's political sensitivities and to its already burdensome bilateral program, the A.I.D. mission was most reluctant to take on the MERC program. Hence, the ambassador assigned coordinating responsibility to a very able officer of the political section. This arrangement worked well because the officer concerned took considerable interest in the program, attended most of the meetings between Egyptians and Israelis, and earned the respect of those senior Egyptians handling the projects. The A.I.D. mission plays a very limited facilitating role for ongoing projects, provides technical scrutiny from time to time, and assists in reviewing new proposals.

The present arrangement in Egypt is workable with two provisos. First, we recommend that the A.I.D. mission be given technical review responsibility of projects. This would have two advantages. It would bring technical expertise to project monitoring and would more closely link the work, especially in the agricultural field, with A.I.D.'s large bilateral program. As noted earlier, much of the work done through the MERC program on dry-land farming and irrigation should be of direct relevance to US/Egyptian agricultural collaboration.

The second condition is that the person who assumes overall coordinating responsibility make it a major part of his job and become an active, energetic interlocutor with the Egyptian leadership. If the Political Section role declines to that of a post-box or message carrier, we would recommend that the responsibility in Egypt then be placed squarely within the A.I.D. mission. Ambassador Wisner sees advantages for its continuing in the Embassy, but is sympathetic to a shift to A.I.D., if that later appears to be needed.

D. Policy Oversight Board

In preceding sections, we discussed the need to strengthen existing program administration and communication at the various levels. In addition, we believe that overall program management needs a coherent strategy that could ensure future program stability and rationality. At present, no high-level, ongoing policy review and priority-setting function exists.

We propose a high-level US Policy Oversight Board whose members would possess a deep understanding of Egypt and Israel, a first-hand knowledge of the program, and, thus, ability to offer advice and counsel periodically. The sympathetic, but detached, scrutiny provided would be helpful in charting program direction, avoiding some of the misunderstandings and delays experienced in the past, and, generally, in promoting cooperative relationships.

The three-person Board would be comprised of one member conversant with Egyptian and Israeli affairs, and two distinguished scientists. Meeting periodically--perhaps two or three times per year--members would keep abreast of program developments by travelling, from time to time, to Egypt and Israel for meetings with the senior-most concerned official of both governments, as well as project leaders. High-level scrutiny and unimpeded execution of projects would then be assured. It would be useful to the Board's deliberations if, at times, appropriate Egyptian and Israeli representatives were invited to participate in its meetings.

When in Egypt, the Board would report its views to Deputy Prime Minister Yuossuf Wali; in Israel, to his equivalent(s). On the US side, the primary contact would be the Administrator of A.I.D. and his principal advisors.

The Board's principal functions would be: to monitor and review the total program, determine priorities, recommend courses of action to deal with trouble spots, and propose policy guidelines for the future. When feasible, the group would explore--with suitable sensitivity and care--possible areas of other Arab scientific cooperation.

E. Monitoring and Evaluation

The uniqueness of the MERC program underscores the importance of careful monitoring based upon reasonable procedures for periodic progress reports. Its very singularity, however, makes evaluation unusually difficult.

The first source of difficulty rests with the dual nature of program objectives: political and technical. While the primary purpose is to engage as many Egyptian and Israeli institutions and individuals as possible in sustained collaboration, their researches should have substantive importance for both countries.

The time required to reach effective collaboration cannot be minimized; the consequent long-term nature of the program imposes a second burden on the process of monitoring and evaluation. It is unrealistic to expect too much too soon, but progress must still be monitored continuously, even though external events affect political relations between the two countries.

A third element that complicates program assessment is the number and variety of actors involved. Several individuals and institutions in Egypt and Israel relate in different ways to each other and to American coordinating bodies. US embassies in Israel and Egypt play a part and, in Egypt, the A.I.D. mission also. Because the

program is centrally funded, the separate responsibilities of US country missions and Washington monitors must be recognized. Finally, the Congressional initiative and continuing interest represents a unique undertaking between the executive and legislative branches.

Regardless of the multiple features of program evaluation, the result expected is effective action. While the review team concurs in a general expression of satisfaction with the program, there is little concrete evidence to show any significant policy impact. A number of reasons for this are cited, and specific recommendations are made to tighten future evaluation procedures.

First, we have the impression that reporting requirements vary and are not always met. A.I.D. should carefully monitor reporting procedures and apply corrective measures where necessary.

Simple reporting is useless, of course, unless it is coupled with evaluation and decision-making. This requires in the first place that specific indicators of effective collaboration be identified and agreed upon. This is not simply a matter of playing with numbers; the purpose is to be able to present concrete evidence of collaboration. One specific indicator, that has been suggested, might total the number of papers jointly published, but publication is a more important result in some fields--health, for example--than in others. Another indicator might show a project's technical effects, including public awareness of the collaboration, derived from practical application of research results.

A system of reporting and evaluation should take note of the links between research, demonstration, and commercial application. This means that financial information will be included in the evaluation, along with project results, so that the cost of achieving those results can be assessed. To cite a concrete example of the importance of this association, it would be useful to know, given conditions of dry-land farming using drip irrigation, how many tons of tomatoes were produced per feddan and their cost per ton.

VI. PRINCIPAL RECOMMENDATIONS

Without question, the MERC program has contributed in a modest way to the Middle East peace process. Its accomplishments have been remarkable in view of the obstacles faced almost from the beginning. Thus, the program should be continued with strong US support. As with any program, however, possibilities for improvement are recognized and several specific suggestions made. Since the recommendations, along with the reasoning behind them, are dispersed under various headings throughout the report, the principal ones are restated here in summary form for ready reference.

- o Establish a three-person US Policy Oversight Board, supplemented as needed with high-level representation from each of the country partners. The Board's functions would be: to monitor program activities, to recommend corrective action on emerging problems, and to offer guidance on future policy and priorities.
- o Create a steering committee to perform related functions for each individual project.
- o Give additional support and closer top-management scrutiny to the AID/Washington office charged with responsibility for the program. The office should receive clearer policy direction and should have enhanced executing capability.
- o Strengthen project oversight in Egypt in a way that clarifies the respective roles of the A.I.D. mission and the Political Section of the Embassy. Specifically, if the latter is unable to exercise active, energetic leadership among Egyptian colleagues, we recommend that the responsibility be placed within the A.I.D. mission. Technical oversight of projects should be immediately assigned to the A.I.D. Mission.
- o Facilitate periodic, formal meetings to encourage project leaders and individual researchers in Israel to exchange experiences and, thereby, to gain a better understanding of Egyptian society and outlook.
- o Emphasize participation from both sides to achieve successful project activity among Egyptian and Israeli scientists throughout the process of planning, implementation, and dissemination of results. Every effort should be made to involve younger scientists in the projects.
- o Emphasize the necessity for evenhandedness in the US administration of the program.
- o Emphasize in the future the need for practical, widespread application of project results so as to benefit directly the people of both countries.

- o Consider a modest extension of the program into new, though related, areas, such as energy use and the inclusion of new institutions in the program provided that adequate additional funding can be found, so that existing efforts are not jeopardized.
- o Devote project funds exclusively to collaborative research in Egypt and Israel. US institutions should play a strictly cooperative role and not engage in direct research.
- o Seek private philanthropic support so long as the funds can be administered in an acceptably neutral way under the US government-support umbrella.
- o Seek opportunities for scientific collaboration involving additional Arab countries with suitable sensitivity and care.
- o Conduct a management study to establish more flexible procedures for financial disbursement and accountability and the general administration of this program.
- o Negotiate overhead charges rigorously so as to minimize their cost.
- o Include explicit, clear-cut performance indicators related to expenditures, so that the cost of producing a defined project benefit can be determined at the outset.

ANNEX 1

Review of Individual Projects

A REVIEW OF INDIVIDUAL PROJECTS

COOPERATIVE ARID LANDS AGRICULTURE RESEARCH: (CALAR I & II)

Background

In March 1980, a Memorandum of Understanding was signed between the Ministry of Agriculture and Land Development of Egypt, and the Ministry of Agriculture of Israel in Tel Aviv outlining a program for Egyptian-Israeli cooperation in agriculture. In June 1981 the Fred J. Hansen Institute of World Peace, a privately funded organization linked to San Diego State University, arranged a conference in San Diego with representatives of Egypt, Israel, and the United States to plan the CALAR project.

Their prospective cooperation was to include laboratory research, nursery plantings, and field trials in both Egypt and Israel, concentrating on:

- 1) use of saline water for crops in arid areas;
- 2) improved fodder shrubs for sheep and goats;
- 3) new industrial crops.

The project was approved in FY82 for \$5 million for 5 years, later increased by \$4.25 million for a total of \$9.25 million extended to FY90. Coordinating organizations included the Ministry of Agriculture and Land Development in Egypt, the Ben Gurion University of the Negev in Israel, and the San Diego State University Foundation of the United States.

A mid-term evaluation of the project was made in 1984 and a "final" evaluation in October 1988. Because of the long-term nature of agricultural research many experiments had only begun to show results. The 1988 evaluation was positive.

CALAR II, a continuation of CALAR I, was approved in FY90 for \$6.3 million over 5 years. Research will shift from the triple focus mentioned above to emphasis on protected (plastic-covered) agriculture in arid lands to produce for export and domestic use. Objectives also include:

- 1) expanding cooperative applied research between Egypt and Israel;
- 2) improving the socioeconomic status of farmers;
- 3) developing new arid lands and preserving their fragile ecosystems.

Accomplishments

From the viewpoint of the three participating countries, CALAR's success led to an extension into CALAR II. From a technical point of view, some of its highlights follow:

-In spite of the fact that salinity problems are more site-specific than anticipated, scientists from both countries worked together to produce practical results which are already being used on-farm in Egypt and Israel.

-Milk and meat production increased substantially by crossbreeding Damascus and Barki goats in Egypt. Their hybrid progeny are already being adopted by bedouin herders in Egypt (5,000 head) and tested on demonstration pastures in Israel.

-A potential breakthrough in salt-tolerant forage shrubs, using *Medicago arborea* from Syria was made by Egyptian scientists. Its seeds were made available to CALAR scientists in Israel, who otherwise could not have obtained them. Considerable research was then done in Israel using these shrubs in a forage rotation. They proved profitable, however, only if subsidized.

-An improved salt-tolerant tomato variety (Edkawy) was identified in Egypt and made available to Israel. It is now being grown on several hundred feddans of sand-dune in Egypt's El-Bousseily district. Israel has done some basic genetic engineering research to introduce a salt-tolerant gene from wild tomatoes and other vegetables into domestic varieties, as well as studies of the timing and proportion of saline water released for irrigation, and the marketing of new products.

-Investigation on industrial crops (guayule and jojoba) has evoked little interest in either Egypt or Israel.

Indications are that even though funding for most of these activities will not be available in CALAR II, some further research will be subsumed under domestic programs, with some cooperation between the countries continuing.

Indeed, CALAR I resulted in a degree of cooperation between Egyptian and Israeli scientists far greater than was anticipated at the beginning of the project. At the first workshop they met as strangers apprehensive of each other. By the time of the last workshop--of 75 participants--they had become warm friends, a relationship that carries over to other international meetings. The project's outstanding feature has been its annual workshop, attended by scientists from all three countries involved in the research. More than 65 papers, some with joint authors, have been presented and later published in scientific journals.

Post-graduate and short-term training has been provided to more than 70 scientists from Egypt and Israel. Most participating researchers have visited each other's country.

Another significant feature of the project has been the importance placed on the end-use of the research product. This use not only benefits the scientific community and the

respective governments, but local farmers. An unprecedented level of cooperation now exists between bedouin herders and Egyptian Ministry of Agriculture scientists because the CALAR researchers had the foresight and skill to organize direct on-farm goat and fodder trials with bedouins as full participants. This is also true of local Egyptian farmers and saline water researchers. In Israel similar research is being done at the Ramat Negev Experimental Station, which is made up of seven kibbutz and one moshav, and run by the regional kibbutzim council.

Observations

The CALAR project is achieving the twin objectives of applied scientific research and of cooperation between Egyptian and Israeli scientists and administrators. It can be expected to do so throughout the project's second phase.

Insofar as possible, CALAR scientists operated as a single trilateral team, even though sub-projects were rather diverse. This feature is being emphasized in the plan for CALAR II which focuses on only one area-protected agriculture.

CALAR I enjoyed an advantage over some other MERC projects because it had support from the Ministries of Agriculture and several universities in both countries (five universities in Egypt and two in Israel), and thus drew participants from the range of a larger community.

INTEGRATED AGRICULTURAL DEVELOPMENT: MARYUT AGROINDUSTRIAL COMPLEX

Background

This project builds on the experience of the CALAR Project and incorporates the work of the Albert Einstein Peace Prize Foundation in arid-land development in the Maryut area of Egypt's western desert. Its purpose is to establish a 60-feddan agricultural research, development, and training center within the 2,000-feddan Maryut agroindustrial complex. By means of protected cultivation (greenhouse or plastic tunnels), vegetables, fruit tree seedlings, protected and open-field ornamental crops are raised experimentally.

The project was approved in September 1989 for a two-year period at \$1 million per year. Participating organizations include: the Ministry of Agriculture, Ain Shams and other universities in Egypt; the Ministry of Agriculture and Ben Gurion University in Israel; and San Diego State University Foundation and the Albert Einstein Peace Prize Foundation in the United States.

An evaluation, made in April 1990, commended the progress to date and recommended the project be extended for 5, or even 10 years.

To extend Maryut II, a proposal for an additional five years, at the same annual rate and with the same objectives, was submitted to A.I.D. in July 1990.

Accomplishments

The MERC review team visited Maryut and observed its outstanding development, much of it occurring in less than one year. Most of the plastic greenhouses were in place. A second vegetable crop was in full growth, the first having yielded over 70 tons. Tree plantings were well under way, and the ornamental crop planting was started. Also, a well-organized experimental research program was in progress. Already, neighboring farmers were coming to observe.

Israel assigned a full-time technician to Maryut (who is well received) and supplies plant materials and technology.

A special feature of this project is the establishment of a technical committee, composed of specialists from each of the three countries, who meet twice a year in Egypt to plan activities. The project coordinator and the Israeli advisor have almost weekly access to the Egyptian and Israeli members. A steering committee, composed of three top administrative officials from each country, also met twice in 1989 (London and Amsterdam).

Some of the Maryut project scientists have been invited to the next CALAR workshop to present their progress and research findings.

Observations

A project which has obtained such success in so short a period of time should be allowed to continue until it achieves its objectives. It has been estimated that, within five years, Maryut could be self-sustaining through its sales, including exports, of plant materials and produce.

The technical committee and the workshop are successful features which could be considered by other projects.

A closer relationship with the Nubaseed project would strengthen both activities.

TECHNOLOGY EXCHANGE AND COOPERATION IN AGRICULTURE (TATEC)

Background

The TATEC project purposed to promote innovative agricultural technology in Egypt and Israel through joint activities among their agricultural scientists. Sub-projects included:

- 1) Intensification of cropping systems/water use.
- 2) Economic evaluation of cropping systems.
- 3) Medicinal uses of desert flora.
- 4) Solar heating of soils for pest and weed control.
- 5) Economic evaluation of technological exchange.
- 6) Improved dairy production.

After an evaluation of several agro-technologies and their adaptability to selected Egyptian and Israeli farming systems, implementation of these technologies was to be initiated and evaluated on commercial farms in Egypt and Israel under arid conditions.

The project was started in FY84 with funding of \$4.1 million and will be completed in FY91. The coordinating agencies are: Egypt, the Ministry of Agriculture and Land Development; Israel, the Hebrew University; and the United States, Office of International Cooperation, USDA.

An evaluation made in January 1987, reported progress in all sub-projects and cooperation between Egyptian and Israeli researchers occurring in each area. It was too early in the life of the project to measure technical success fully.

Accomplishments

Participants interviewed by the MERC review team left the impression that the TATEC project was not too successful in Egypt. There was some scientific progress and trilateral cooperation in the solarization, cropping systems, and dairy sub-projects, usually with Israelis visiting Egypt.

Joint research probably benefited most in the solarization sub-project since contacts had already been established. Egypt even received requests for research results from other Arab countries.

Work with the Egyptians on dairy improvements changed their attitude from some skepticism to cooperation in animal sciences which led to an interest in a new project on intensive animal production. Cooperation on solarization will likely continue at some level after the project.

In Israel much more substantive research was achieved. Work on cropping systems yielded useful results for vegetable and grain rotation and water use. The economics sub-projects

brought together economists and biological and physical scientists to evaluate the feasibility of certain technologies. Some useful medicinal plants were identified.

A joint workshop was held in Alexandria, December 1989. Seven papers have been published by Egyptians, eleven by Israelis, and five jointly.

Observations

The Egyptian project coordinator was changed four times. The principal investigators on some sub-projects were also changed several times. Funds have been underspent in Egypt and over \$400,000 cancelled.

Egyptian authorities stated that they were not involved in the planning of the project and thus some of the sub-projects did not have high priority.

There were many and diverse sub-projects in TATEC and no team focus. It would have been more productive to concentrate on fewer areas.

A TATEC II is not planned. A new project, Trilateral Arid Lands Intensive Agricultural Research and Development, is in the planning stage. A trilateral planning meeting was held in Alexandria in September 1990. Three areas were included: animal production, forage production, and irrigation management. It is not clear if this will be a single integrated project, or if irrigation will be treated as a second project. At first, TATEC II was to be carried out on demonstration farms in Egypt's western desert. Apparently, research is now to be parallel in each country, not jointly by country teams. The present draft of the project also includes funding for research in the United States.

The MERC review team, after having reviewed all the projects and sub-projects in both countries, believes that joint research and development on integrated intensive irrigated livestock/fodder operations on specific farms in the western desert of Egypt, supplemented by R&D activity in Israel, would more nearly meet the objectives of the MERC program.

The Team would further recommend that the limited resources of the MERC program not be used for research in the United States.

NUBASEED AGRICULTURAL DEVELOPMENT

Background

This project originated in 1982 as a cooperative venture between Agridev, an Israeli Ministry of Agriculture Company, and the Gemeiza Experimental Farm in Egypt's delta region, to test and demonstrate drip and sprinkler irrigation for introducing new vegetable varieties. In 1986, it was decided to extend this activity to the Nubaseed parastatal seed farm in the Nubariya Region of the western desert.

The Nubaseed farm produces certified vegetable seed and fruit nursery stock, for which Agridev provides equipment and technology from Israel. Independent farmers in Egypt's western desert will benefit from this demonstration, as will Israeli farmers of the Negev.

The project was approved in FY88 for \$1.7 million and is scheduled for completion in FY92. The US coordinating agency is the Office of International Cooperation and Development, USDA.

Accomplishments

Nubaseed Company is a very successful commercial farming operation using drip and sprinkler irrigation in the western desert of Egypt. With some 80,000 feddans of new arid land being brought under such systems of irrigation each year, it is essential that a demonstration area of correct techniques be developed as model for expansion. An extension program is included in the project, as well as a training school financed by Germany. The addition of considerable fruit and vegetable produce to Egypt's food supply is also important. Improved Israeli varieties of fruits and vegetables are being introduced into Egypt through the project.

Cooperation with Israel is through Agridev Company, which provides one Israeli technician under the project and one bilaterally. Other Israelis come on short-term assignment. Agridev also supplies plant materials and equipment.

Nubaseed, we were told, has already paid off a \$12 million loan received in 1978 from the World Bank.

Observations

To fulfill the criteria of the MERC program, a project should include research, field demonstration of technical feasibility, and on-farm demonstration of its economic feasibility. The Nubaseed project has no research component. It is unfortunate that Maryut was not planned in coordination with Nubaseed to combine the best features of both. At present there is not much communication.

Without some modification of the project to include a research element or better cooperation with other research projects, it is difficult to justify continued allocation of scarce MERC funds for these successful commercial companies.

TRINATIONAL ANIMAL HEALTH RESEARCH PROJECT (TAHRP)

Background

The objective of this multi-disciplinary project conducted by scientists in Egypt, Israel, and the US is to improve the health of both animal and man, by developing practical, advanced diagnostic and animal protection techniques. These have application within both the modern, intensive animal husbandry industries as well as the traditional, extensive systems prevalent in the region.

The project will concentrate resources and collaborative research efforts by Egyptian and Israeli veterinary institutions on three sub-projects.

- 1) Neonatal diseases of cattle and water buffalo calves.
- 2) Diagnosis and control of Brucella Melitensis.
- 3) Studies on foot and mouth disease.

The coordinating agency in Egypt is the Ministry of Agriculture and Land Reclamation, and in Israel, the Ministry of Agriculture. The US coordinating agency is the Office of International Cooperation and Development, USDA.

After three years delay because of unavailability of funds, the project was approved in FY90 for \$3.5 million and is to run for five years.

Accomplishments

The project is still in the first stage of implementation. There was full cooperation among scientists from the three countries throughout the planning phase. The chief veterinarians of Egypt and Israel, and other principal investigators, met in October 1990, in Denver, Colorado, with their US counterparts, at the meetings of the International Animal Health Association to establish the plan of work for the project.

During the three years of planning, cooperating veterinarians have met together many times and become good friends. As an example of cooperation already under way: upon a recent outbreak of lumpy skin disease among cattle in Egypt, the Egyptian veterinarian called his Israeli counterpart to warn him of the danger and advise about proper treatment. Israel thus was prepared and when the disease struck a border village it was controlled immediately.

EPIDEMIOLOGY AND CONTROL OF VECTOR-BORNE DISEASES I&II

Background

A conference was held in January, 1980, at The National Institutes of Health in Bethesda, MD of representatives of Ain Shams University of Egypt, Sanford F. Kuvin Center of Hebrew University of Israel, and NIH and other US representatives to plan a trilateral project to investigate vector-borne diseases of the Middle East. A later meeting was held at Bellagio, Italy. Diseases to be covered included: Rift Valley fever, malaria, and cutaneous leishmaniasis. Filariasis and rickettsia were added later and, after 8 years, RVF and malaria were phased out.

The project was approved in FY81 for 5 years for \$7 million. In FY87 Phase II was approved for \$5 million for an additional five years. Coordinating agencies are the three listed above. In addition, Ben Gurion University took on the Rickettsial Project in order to expand new scientific ties between Israeli and Egyptian scientists.

The project was evaluated in 1985 by a team of scientists covering each of the diseases. They reported that the project had been very successful in its cooperation and institution building.

Accomplishments

Excellent collaboration and coordination have been achieved among scientists of the Research and Training Center on Vector-Borne Diseases at Ain Shams University, the Kuvin Center at Hebrew University, and US universities and the National Institutes of Health. This includes travel within the three countries, joint workshops, and training courses.

Seven conferences were held: Stockholm-1982, Aswan-1983, Sharesh, Israel-1985, Hurghada, Egypt-1987, Tel Aviv-1988, Tel Aviv-1989, and Taba, Egypt-1990. Few Egyptians attended those held in Israel but many attended the last one at Taba.

Fifty PhD and MS degree students received support from the project. Over 150 scientific articles have been published, 25 of these jointly.

In Egypt, the Ministries of Health and Agriculture have been assisted in developing a surveillance system and control strategy for vector-borne diseases.

One high point of this program came in 1982 when, just after the Israeli invasion of Lebanon, an outbreak of leishmaniasis occurred in Egypt. The Egyptian authorities risked inviting Israelis to help battle it, even taking them into remote areas to work in the field. Jointly, they controlled the outbreak.

An interesting mode of cooperation has characterized the research on filariasis and rickettsiosis: Egyptian and Israeli scientists meet regularly and, at one time took a short course together at the laboratory of the US consultant.

A high-point for the project was reached when two groups of young Egyptian scientists, totaling 11, visited Israel in 1989.

Observations

This project is in its second five-year phase which will carry it through 1992. It would appear advisable for future activities in the health field to build on this highly effective organizational structure. It demonstrates the necessary trilateral trust and dedication of leaders and scientists required for a successful regional cooperation project.

INFECTIOUS DISEASE RESEARCH

Background

This project had its origin in discussions among an Israeli scientist and Egyptian counterparts with US scientists from, at different times, various US institutions. The Institute of Medicine (IOM) of the National Academy of Sciences was selected to be the US coordinator. Diseases to be covered include chronic diarrhea and hepatitis B with emphasis on institution building and research.

The project was approved in FY89 for 5 years for \$4.3 million. A grant agreement was signed with Ben-Gurion University of the Negev to coordinate the project in Israel, and perform research on hepatitis B. Research on diarrhea will be at Hebrew University.

According to plan, Egypt's coordinating organization will be Ain Shams University, with Cairo University doing the chronic diarrhea research. The agreement with Egypt has not yet been signed.

Accomplishments

Despite delay over the administrative arrangements to start the project, close relationships have already developed among scientists of the three countries, and there is regular communication.

Observations

Several problems arose to cause the delay in the project's initiation:

- Technical leadership was not provided directly by the US coordinating institution (as was the case for all the other projects), apparently resulting in unnecessary project rewriting.

- The project does not have a steering committee to provide high-level support, coordination, and communication.

- Egyptian and Israeli cooperators feel that the Institute of Medicine imposes management procedures of undue complexity.

- IOM's overhead and other charges are far higher than those for any other project. The Israelis have reluctantly accepted, but the cost, apparently, is the principal reason Egypt has not yet signed.

COOPERATIVE MARINE TECHNOLOGY IN THE MIDDLE EAST I, II & III

Background

This project was the first to be inaugurated under the Middle East Regional Cooperation Program. It began as purely marine research on Nile River ecology, but expanded in later phases to include fisheries and aquaculture, shore protection, lakes management, climate prediction, seafood toxins, waste water reuse, and productivity of the eastern Mediterranean Sea. The current phase includes the following sub-projects:

- 1) Shoreline protection along the Nile littoral
- 2) Lakes management
- 3) Fish nutrition
- 4) Fish breeding
- 5) Reuse of waste water for fish
- 6) Seafood toxins
- 7) Circulation of Mediterranean Sea currents

Phase I was approved in FY80 for \$4.2 million, Phase II was approved in FY83 for \$2.7 million, and Phase III in FY85 (amended in FY87) for \$6.4 million. The project is to be completed in FY92.

A Phase IV has been drafted and is ready for submission to AID. It is for three years for a total of \$5.8 million and includes the following sub-projects:

- 1) Production of carotenoids by marine unicellular algae
- 2) Fish in the southeastern Mediterranean
- 3) Lake ecosystems in Egypt and Israel
- 4) Intensive fish cage culture
- 5) Seafood safety
- 6) Diseases of wild and cultured fish and shellfish

The US coordinating institution is the New Jersey Marine Sciences Consortium in collaboration with Texas A&M University. The Egyptian coordinating organization is the National Institute of Oceanography and Fisheries of the Academy of Scientific Research and Technology. In Israel it is the Institute of Oceanographic and Limnological Research at Haifa and Elat.

Accomplishments

The project has given substantial support to research in many aspects of marine technology, both in Egypt and Israel, that otherwise could not have been undertaken. It has encompassed a dozen projects in over 20 laboratories in three countries.

The project has benefited from continuous, strong, and dedicated leadership and active government support from all three countries throughout the decade.

Egyptians and Israelis have conducted 19 joint planning and reporting conferences, mainly in Cairo and Alexandria at first, but increasingly in Haifa. Workshops are held annually for all principal investigators. Planning and operations procedures increasingly have been developed by the Egyptian and Israeli scientists.

The most recent annual workshops were held December 1986 in Cairo, hosted by Egypt's Deputy Prime Minister; September 1987 in Haifa, hosted by Israeli's Minister for Energy and Infrastructure; January 1988 in Hurgada, Egypt (100 Egyptians attended); November 1988 in Kinneret, Israel; April 1989 in Aswan; and August 1990 in Cairo, then in Haifa (eleven Egyptians and one Jordanian attended).

Fifty trips have been made by Israelis to Egyptian laboratories to cooperate in research and assist in classroom and graduate student teaching. After the visits to Israel of Egypt's Under Secretary of State for Aquaculture and Director of Coastal Protection in 1987 (the latter was appointed a consultant to the Israeli Government), Egyptian teams were able to visit Israel routinely, especially for the planning sessions. The one in Haifa, August 1989, included interviews with Israel's Deputy Prime Minister.

In November 1988, a US Congressional delegation met in Haifa with Israelis and a large Egyptian delegation to discuss the Marine Science Project.

Joint research on shoreline protection and the establishment of wave-measuring stations--two off the coast of Egypt and two off the coast of Israel--have resulted in a model which can predict coastal erosion and changes resulting from coastal construction.

The project has contributed to very successful work on the development a system of salt-water ponds and cage culture for fish production and export.

Observations

The project has been funding research in this field for a decade. Although sub-projects have changed, some activities have continued throughout the period. Some activities are included in one project phase, excluded from the next, then reinstated. Others are halted to wait on funding and lose staff. This causes discontinuity that, probably, could be avoided by longer-range planning and coordination among the three cooperators and AID.

Available funds are spread over seven sub-projects (six in Phase IV) in two countries, amounting to about \$40,000 a year for each activity. Although helpful to the research effort, limited funding often does not provide a sufficiency for making a significant impact. Perhaps Marine Technology should concentrate its MERC resources more.

At the Hurghada meeting, the Egyptian Coordinator presented an "Aqaba Plan". This deals with the Gulf of Aqaba, a small, economically crucial, ecologically stressed, semi-enclosed

bouy of water shared by Jordan, Saudi Arabia, Egypt, and Israel. The Egyptian Academy proposes a collaborative program with other Arab nations, without giving up, but keeping separate, its cooperative projects with Israel.

This may be the direction toward which Marine Technology activities should point in the future. This "parallel bilateral" approach could bring about de facto cooperation among Israel and Arab neighbors, which is an objective of the MERC program.

TECHNOLOGICAL AND ENVIRONMENTAL HEALTH ASPECTS OF WASTEWATER REUSE FOR IRRIGATION

Background

This project was spun-off from a sub-project of Marine Technology. Its purpose is the development of innovative low-cost technologies for the treatment and reuse of domestic waste water for fish production and irrigation. The Egyptian coordinating institution is the National Institute of Oceanography and Fisheries. In Israel it is Hebrew University. For the US, it is Michigan University.

The project was approved in FY90 for \$1 million and will be completed in FY93.

Accomplishments

Since this activity has been underway within the Marine Technology Project, the MERC review team was able to visit the Egyptian site at Suez City and observe progress to date. Two treatment systems are being tested and Israeli scientists have advised modifications to one system that will greatly reduce costs under Egyptian desert conditions. The new project will extend the system through fish production to the irrigation of nonfood agricultural crops.

Several Israelis have visited the site and 30 Egyptians have visited Israel over the past three years. There are three joint publications.

The Egyptian Institute has received a letter of intent from the World Bank indicating its interest. The Egyptian Government has invested in the project; a Swiss firm is sponsoring a workshop; and the WHO has also shown some interest.

Observations

Research could be of considerable use to the GOE in planning the development of waste water treatment plants which may cost billions of Egyptian Pounds. However, the role of this research in future government developments is not under study.

IMAGES IN CONFLICT

Background

This is the only other project financed under the Middle East Regional Cooperation Program. It was a social science project designed and conducted in the years 1982-84 by Middle East and American scholars under the auspices of the Institute for Middle East Peace and Development and the Graduate Center of the City University of New York. Over 5,000 Egyptians, Israelis, and Palestinians were interviewed regarding attitudes within their group and "the other side".

ANNEX 2

Persons Contacted by the MERC Review Team in Sequence

Persons Contacted by the MERC Review Team (in order contacted)

WASHINGTON, D.C.

Joann Feldman	Coordinator, Devres, Inc.	Bethesda, MD	
Bert Porter	MERC Project Coordinator	ANE/MENA/E	AID
Vivikka Molldrem	Office Director	ANE/MENA	AID
Lewis Reade	Technical Resources	ANE/TR	AID
Nicholas Studzinski	Health Coordinator	LAC	AID
Lee Voth	Agricultural Coordinator	ANE/TR/ARD	AID
Thomas Johnson	Project Development	ANE/PD/ME	AID
Margaret Bonner	Past ANE Office Director	AFR	AID
John Barger	Egypt Desk	NEA/EGY	DOS
Karen Stewart	Israel Desk	NEA/ISR	DOS
Roger Sherman	Rep. Waxman's Staff	Congress	
Wendy Senor	Former Waxman Staff Member	AIPAC	
Gerald Kamens	Sen. Boschwitz's Staff Former MERC Coordinator	Congress	
Robert Gwadz	Health Project Coordinator		NIH
James Lange	Former US Resident Scientist	Cairo	NIH
Sanford Kuvin	Private Cooperator	Florida	
Polly Harrison	Director, International Health	Institute of Medicine	NAS
Stephanie Sagebiel	Program Officer	Institute of Medicine	NAS
Samuel Lewis	Former US Ambassador to Israel	US Institute of Peace	

Valdis Mezainis	Director	Office of International Cooperation & Development (OICD)	USDA
Jerry Walker	Agricultural Projects Coordinator	OICD	USDA*
Mohamed El-Assal	Agricultural Projects Coordinator	San Diego State University Foundation*	
Frea Sladek	Associate Manager	SDSU Foundation*	
Davene Gibson	Administration	SDSU Foundation*	
David Moore	Director, External Relations	SDSU Foundation*	
Timothy Hashem	Director, Research Management	SDSU Foundation*	
Robert Abel	Coordinator, Marine Technology Project	New Jersey Marine Sciences Consortium	
Khalil Mancy	Coordinator, Wastewater Reuse Project	University of Michigan*	

*By telephone

EGYPT

US Embassy/AID

Frank Wisner	Ambassador		
Robert Nemeth	MERC Coordinator	Political Section	Embassy
Franklin Lee	Agricultural Counselor		Embassy
Omer El-Arini	MERC Assistant Coordinator	Economic Section	Embassy
Marshall Brown	Mission Director		AID
Chris Crowley	Director	Program Office	AID
Douglas Clark	Director	Agriculture and Rural Development	AID
Edward Stains	Former Director	Agriculture and Rural Development	AID

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James Sarn	Director	Health	AID
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Marine Technology Projects

Aboul Latif	President, Academy of Sciences	Research and Technology	Cairo
Hussein Badawi	President, National Institute Oceanography & Fisheries (NIOF)		Cairo
A.M. Eisawy	Coordinator, Marine Technology Project Past President	NIOF	Cairo
Khayria Naguib	Principal Investigator, Food Toxins	NIOF	Cairo
Ahmed El-Ibiary	Administrator, Marine Technology Project	NIOF	Cairo
Mohamed Ihab Bebars	Director, Waste Water Station	NIOF	Suez
A.K. Hanza	Project Investigator Fish Nutrition	NIOF	Alexandria
M.I. Zaki	Project Investigator Fish Breeding	NIOF	Alexandria
Ibrahim Maiyza	Project Investigator Water Circulation	NIOF	Alexandria
Ahmed Khafagy	Project Investigator Coastal Protection	Institute of Coastal Research	Alexandria

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Health Projects

Mahmoud Mahfouz	Coordinator, all Health Projects, Steering Committee Maryut Project, Past Minister of Health	Cairo University
Fawzy El-Shaarawi	Vice President	Ain Shams University
Sherif El Said	Coordinator, Vector Diseases	Ain Shams University
Adel Merdan	Director, Vector Center	Ain Shams University
Alfons Hanna	Assistant Secretary General	Ain Shams University
Medhat Darwish	Project Investigator Rift Valley Fever and Hepatitis	Ain Shams University
Rifki Faris	Project Investigator Epidemiology	Ain Shams University
Bahira El-Sawaf	Project Investigator Leishmaniasis	Ain Shams University
Adel Gad	Project Investigator Filariasis	Ain Shams University
Reda Ramzy	Project Investigator Nutrition	Ministry of Health
Mohamed Kenawy	Project Investigator Malaria	Ain Shams University
Magdi Gebril	Project Investigator Leishmaniasis	Ain Shams University
Alfred Buck	US Resident Consultant	Johns Hopkins University
Gary Weil	Visiting Scientist	Washington University, USA

Agricultural Projects

Adel El-Beltagy	Coordinator, Agricultural Projects and Under Secretary Land Reclamation/ Foreign Agriculture	Ministry of Agriculture
Mohammed Dessouky	Steering Committee, all Agricultural Projects Past Under Secretary for Agriculture	Ministry of Agriculture
Atiat El-Menshawy	Agriculture Projects Administration	Ministry of Agriculture
Hisham Fahmy	Assistant to Administrator	Ministry of Agriculture
Adel Aboul-Naga	Coordinator, International Agricultural Production (new) Under Secretary for Animal Production	Ministry of Agriculture
Essam Shahata	Project Investigator Animal Production CALAR	Ministry of Agriculture
Esmat Metwally	Manager, Nubaseed Co. Nubaseed Project Coordinator	
Galal Ismaile	Field Foreman	Nubaseed
Avi Glick	Israeli Resident, Nubaseed	Agridev
Awad Hussin	Director, Maryut Project	Maryut
Atef Ali	Farm Manager	Maryut
Mohamed Hafez	Fruit Specialist	Maryut
Ahmed Rugheb	Plastic house I	Maryut
Harsan Zaki	Plastic house II	Maryut
Ahmed Zied	Vegetable Specialist	Maryut

ISRAEL

US Embassy

William Brown	Ambassador	
Charles Lawson	Embassy Coordinator for MERC	Science Attache
Henry Clarke	Acting DCM	
Charles Patterson	Political Section	
Phillip Wilcox	Consul General	Jerusalem

Israeli Government

Zvi Gabay Affairs	Egypt Desk Officer	Ministry of Foreign
S. Afek	Department for International Cooperation	Ministry of Foreign Affairs
Moshe Shahal	Member Knesset Past Minister of Energy	

Agricultural Projects

Samuel Pohoryles	Coordinator, all Agricultural Projects Director General Rural Planning/ Development	Ministry of Agriculture
Dov Pasternak	Coordinator, CALAR/Maryut Project	Ben-Gurion University
Yitzak Ayalon	Resident Israeli Advisor Maryut (in Egypt)	
Moshe Amir	Administrator, CALAR/Maryut/ Infectious Diseases Project	Ben-Gurion University
A. Braverman	President	Ben-Gurion University
Jaime Wisniak	Vice President & Dean R&D	Ben-Gurion University

Arnon Shani	Director, Institute for Applied Research	Ben-Gurion University
Yoel DeMalach	Vegetable/Saline Water CALAR I	Ramat Negev Experimental Station
Zvi Reich	Tomato/Saline Water CALAR I	Regional Kibbutzim
S. Mindlinger	Vegetable, Industrial Crops, CALAR I & II	Ben-Gurion University
Roger Benjamin	Fodder CALAR I	Migda Experimental Station
Dani Zamir	Breeding Tomatoes/CALAR I	Hebrew University
Na'am Seligman	Fodder/CALAR I	Volcani Center
Irit Rylski	Steering Committee/CALAR I&II	Volcani Center
Amos Feigin	Vegetable/Saline/CALAR I	Volcani Center
Yoash Vaadi	Vice President, Finances	Hebrew University
Yehuuda Haas	Vice President, R&D	Hebrew University
Shabtay Dover	Director, R&D Authority	Hebrew University
Eleanor Slater	Administrator, TATEC & Vector Diseases Projects	Hebrew University
N. Snapir	Dean, Faculty of Agriculture	Hebrew University
Diane Shekter	Public Relations	Hebrew University
A. Berman	Coordinator, TATEC Project Investigator, Dairy	Hebrew University
Elisha Tel-Or	Head Research Committee	Hebrew University
Y. Katan	Solarization/TATEC	Hebrew University
A. Grinstein	Solarization/TATEC	Volcani Center
H.D. Rabinowitch	Solarization/TATEC	Hebrew University
Moshe Pinthus	Crop Systems/TATEC	Hebrew University
A. Dovrat	Fodder/CALAR	Hebrew University
H. Voet	Economic Analyst/TATEC	Hebrew University

A. Rigev	Econ.Anal./TATEC	Hebrew University
D. Palevitch	Medical Plants/TATEC	Volcani Center
E. Bresler	Crop Systems/TATEC	Volcani Center
Yitzhak Abt	Chairman Board, Agridev Co. Director, Center for International Agricultural Development	Ministry of Agriculture
Zeev Bogger	Coordinator, Nubaseed Project	Agridev Co.
Arnon Shimshony	Coordinator, Animal Health Project Director, Veterinary Services	Ministry of Agriculture
Kalman Perk	Project Investigator, Neonatal/ Animal Health	Hebrew University
E. Pipano	Project Investigator, Brucella/ Animal Health	Ministry of Agriculture

Health Projects

Rachel Galun	Coordinator, Vector Diseases	Hebrew University
Dan Spria	Kuvin Center, Project Investigator Malaria, Vector Diseases	Hebrew University
S. Gazy	Project Manager, Vector Diseases	Hebrew University
C. Greenblat	Project Investigator, Leishmaniasis	Hebrew University
S. Frankenburg	Leishmaniasis Research	Hebrew University
L. Schnur	Leishmaniasis Research	Hebrew University
J. Hamburger	Project Investigator, Filariasis	Hebrew University
B. Sarov	Project Investigator, Rickettsia Project Investigator, Hepatitis, Infectious Diseases	Ben-Gurion University
Lechaim Naggan	Coordinator, Infectious Diseases	Ben-Gurion University
Maureen Friedman	Virologist, Infectious Diseases	Ben-Gurion University

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E. Manor Rickettsia, Vector Diseases Ben-Gurion University

Marine Technology Projects

Yuval Cohen	Marine Technology Coordinator Director General, Israel Oceanographic & Limnological Research (IOLR)	Haifa
Hillel Shuval	Waste Water Reuse Coordinator	Hebrew University
Badri Fattal	Waste Water Reuse	Hebrew University
Abidelfatah Nasser	Waste Water Reuse	Hebrew University
Abraham Golik	Project Investigator, Shoreline Protection	IOLR/Haifa
Ami Ben-Aamotz	Project Investigator, Algae Production (M.T.IV)	IOLR/Haifa
Steve Brenner	Project Investigator, Circulation of Waves	IOLR/Haifa
Hillel Gordin	Director, Mariculture Center	IOLR/Eilat
George Kissil	Project Investigator, Fish Nutrition	IOLR/Eilat
Yonathan Zohar	Project Investigator, Fish Breeding	IOLR/Eilat
Colin Porter	Project Investigator, Cage Culture (M.T.IV)	IOLR/Eilat
Sherwin Pomerantz	Solar Energy, Luz Co.	Jerusalem

EGYPT

Yousef Wali	First Deputy Prime Minister and Minister of Agriculture	
Fouad Abu Hadab	Vice President, General Organization and Program Development	Ministry of Agriculture
Yehya Hasan	Governor, Mennfia District	

ANNEX 3

Schedule of the MERC Review Team

SCHEDULE OF THE MERC REVIEW TEAM
October-November 1990

Oct. 5-13	Briefing and interviews in Washington
Oct. 13-14	Travel to Cairo, Egypt
Oct. 15-25	Review in Egypt
Oct. 18	Field trip to Suez City
Oct. 22-23	Field trip to Western Desert and Alexandria
Oct. 26	Travel to Tel Aviv, Israel
Oct. 26-Nov. 11	Review in Israel
Oct. 28-29	Visits in Beer-Sheva
Oct. 30-Nov. 1	Visits in Jerusalem
Nov. 7	Visits in Haifa
Nov. 8	Visits in Eilat
Nov. 9	Presentation of draft report to US Ambassador to Israel
Nov. 11	Travel to Cairo, Egypt
Nov. 11	Presentation of draft report to US Ambassador to Egypt
Nov. 13	Return to Washington, D.C.
Nov. 14	Presentation of draft report to Devres and AID

ANNEX 4

Scope of Work

Review of Experience with the Regional Cooperation Program:
Progress Toward Arab - Israeli Scientific Cooperation

Scope of Work

1. Purpose of the Review

After ten years of experience with the Regional Cooperation Program, A.I.D. is interested in learning more about: a) support for collaborative scientific research by the participating governments, b) the factors that have facilitated or impeded cooperation between Egyptian and Israeli scientists; and c) progress toward establishing sustainable scientific exchanges, networks and working relationships. This information will assist A.I.D. to improve the program's effectiveness in promoting cooperation on scientific research mutually beneficial to both countries and in strengthening peaceful relations between Israel and neighboring Arab countries.

2. Background

The Regional Cooperation Program was legislated by Congress to promote cooperation between Israel and its Arab neighbors through collaborative scientific research that contributes to the development of the participating countries. The program began in FY 79 and \$5 million was earmarked for this effort in both FY 88 and FY 89. The program is managed by a working group in the ANE Bureau in Washington. U.S. Embassies in Israel and Egypt and, to a lesser degree, USAID/Cairo handle field operations and project monitoring. Thus far, only Egyptian and Israeli scientists have participated in the program. A U.S. institution works with Israeli and Egyptian counterparts in each project.

The following briefly describes the seven recent and on-going projects funded by the program that will be part of the program review.

- Cooperative Arid Lands Agricultural Research (CALAR). Start: 1982. Completion: FY 90. Funding: \$9.25 million. U.S. Organization: San Diego State University Foundation

CALAR supports studies of arid-land use problems common to Egypt and Israel: crop production under saline conditions; improvement of sheep and goat varieties; improvement of forage plants in arid environments; and the study of plant species with potential use in industry.

- Technology Exchange and Cooperation in Agriculture (TATEC). Start: 1984. Completion: FY 90. Funding: \$4.1 million. U.S. Organization: USDA/OICD (Office of International Cooperation and Development).

TATEC promotes agricultural technology innovations in both countries focusing on: a) intensification of agricultural production systems (e.g., cropping systems, dairy production, pest and weed control); b) development of new resources (medicinal uses of desert flora; and c) economic evaluation of technologies selected for exchange. The current phase concentrates on economic assessment and technologies suitable for Egypt's Western Desert. The project is expected to select and promote adoption of innovative technologies; assess the potential for transfer of these technologies to other arid or semi-arid locations; and increase cooperation and exchanges among Egyptian and Israeli agricultural scientific communities.

- Maryut Agro-industrial Complex. Start: FY 89. Completion: FY 91. Funding: \$2 million. U.S. Organization: San Diego State University Foundation (& Albert Einstein Peace Price Foundation)

The project supports collaborative agricultural research on ways to increase food and industrial crop production in arid environments. A model complex involving agricultural and integrated rural development will be established in Egypt's Western Desert. Work in Israel and Egypt will focus on testing farm prototypes, selection and testing of crops, and development of related agricultural technologies. Exchanges of experts between Israel and Egypt will advance collaborative research in these areas.

- Nubaseed Agriculture Development. Start: FY 89. Completion: FY 91. Funding: \$1.7 million. U.S. Organization: USDA/OICD.

In Egypt, the project supports the development of a commercial fruit plantation, expanded breeding trials and seed multiplication work; and establishment of a horticulture and vegetable nursery to produce improved planting materials. This will be complemented by research and development activities on stone fruit varieties in the Negev desert in Israel.

- Cooperative Marine Technology. Start: 1980. Completion: FY 92. Funding: \$6.4 million. U.S. Organization: New Jersey Marine Sciences Consortium.

The project has supported 12 research activities in more than 20 laboratories in Egypt, Israel, and the U.S. focusing on fundamental research needs and productivity of the Eastern Mediterranean Sea, aquaculture, waste water usage and multi-use lakes management.

- Epidemiology and Control of Vector-Borne Diseases. Start: 1981. Completion: FY 92. Funding: \$12.2 million. U.S. Organization: HHS, National Institutes of Health.

The project supports research on the epidemiology and epizootology of arthropod-borne diseases prevalent in Egypt and Israel. The project has established a system of field facilities for the study of entomological and epidemiological aspects of designated diseases and has improve@ central laboratories in Cairo and Jerusalem to support and evaluate field-based activities.

- Infectious Disease Research Program. Start 1989. Completion FY 1995. Funding: \$4.5 million. U.S Organization: NAS/IOM.

The project is designed to strengthen the information base needed to prevent and control infectious diseases, specifically hepatitis B (HB) and chronic diarrhea (CD), in Egypt and Israel, through a collaborative program on institution building and research.

3. Content of the Program Review

The review will concentrate on: a) the factors that have facilitated or impeded cooperation among Egyptian and Israeli scientists; b) progress toward establishing self-sustainable working relationships in the areas of scientific research supported by the program; and c) whether this cooperative research has contributed to peaceful relations between Israel and neighboring Arab countries. The results of the research and the quality of work has been assessed in previous project evaluations. This review will cover these issues only to the extent that they might affect the level of cooperation among Egyptian and Israeli scientists.

a) Level of Cooperation

Review the level and nature of cooperation in each of the projects funded by the Regional Cooperation Program. This includes planning and implementation of scientific research, visits to project sites in each country, written and telephone communication, joint authorship and publication of research results, exchanges of experts among participating institutions, attendance at meetings and conferences, and informal meetings among project participants.

Have there been any discernable trends in the level or nature of contacts between Egyptian and Israeli scientists? What accounts for these changes? Have there been difficulties for Egyptian and/or Israeli scientists to participate in activities outside of their own country? What are the reasons for these problems?

b) Government Support

What has been the experience of program participants with obtaining government approval and/or support for cooperation with counterparts in the other country? What has been the level of involvement of the governments in the program? Has it been beneficial.

Has government approval of such contacts varied over time? Realistically, is there anything that the program could do to encourage greater support by the respective governments for cooperative scientific research? What measures are being taken to encourage sustainable relationships over the longer term?

c) Effects of Project Content on Cooperation

Does the type of research activity supported by the project influence the level of cooperation between Israeli and Egyptian scientists? Are there certain types of research that require or better lend themselves to such cooperation that the program should emphasize? Should the program concentrate support on research activities that require Israeli and Egyptian scientists to work together at the same project site?

d) Participation

Other than political reasons, what factors influence decisions by Egyptian and Israeli scientists to choose or to be chosen to participate or not participate in cooperative research projects? What criteria were used for selecting individuals to participate in the projects? What reasons are cited for participating or not participating? Have the results of the projects funded thus far contributed to encouraging greater participation by other Israeli and Egyptian scientists?

e) Project Selection, Design and Program Scope

Selection: Does the current project selection process encourage Egyptian and Israeli scientists to submit proposals for cooperative research activities? Are the process and criteria used for selection sufficient, or overly complicated? Do scientists in both countries understand clearly this process and the criteria?

Design: Two principal objectives of the Regional Cooperation Program are: a) promote peaceful relations between Israel and its Arab neighbors through cooperative scientific research and development, and b) support scientific work that will be economically beneficial to the development of the participating countries. To some extent, these objectives may conflict in that the peace/cooperation objective might best be achieved

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through long-term, open-ended projects. Scientific work that leads to developmentally useful results, however, may best be carried out through more structured projects that work toward resolution of specific research problems and have a definite point of completion or termination.

(1) What is the current mix of program funded activities in respect to these two objectives? Should this mix be changed to emphasize cooperation more than development utility, or vice versa. Are the projects currently funded through the program designed to address specific problems while at the same time supporting the establishment of longer term cooperative research? Are the projects leading to dependency among participating scientists - i.e., future work will require or is very likely to involve cooperation among Egyptian and Israeli scientists?

(2) Have there been specific project elements, activities or modes of operation that have contributed to increased cooperation or helped minimize impediments to cooperation? (As noted in section 5 - Reporting Requirements - this is a key question for the review.)

Scope: In addition to the current project areas, are there other areas of potentially fruitful cooperative scientific research that could be supported under the program? If so, what can the program do to encourage scientists in these areas to participate? Is reluctance or unwillingness on the part of the GOI or GOE or participating institution officials to come to closure on past project activities a factor in limiting the scope of the program? If so, What accounts for this reluctance? What can be done to encourage their support for funding new project areas?

f) U.S. Institutions

Has the role of U.S. institutions in the program been effective in facilitating cooperation between Israeli and Egyptian scientists? Could this role be improved, and if so how? Should the role of U.S. organizations be changed in future projects funded by the program? In what way?

Have participating U.S. institutions developed adequate management systems to monitor project activities (e.g., financial monitoring, commodity procurement, project outputs) to assure compliance with A.I.D. regulations where applicable? Should such systems be improved and standardized, including semi-annual or annual reporting to A.I.D.?

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g) Research Results, Impact and Public Awareness

Which results of the subprojects funded by the program have had practical application and have been adopted by farmers or other users? In general terms, what has been the impact of these results/technologies on productivity, production levels and/or income of users? Are there research results that have been produced or will soon be available that could be used for commercial purposes? Have there been any examples of "spin-off" or secondary effects of the research activities (e.g., unanticipated commercial applications)?

Public Awareness: Are users of these results/technologies aware that they are the product of cooperative research activities involving Egyptian and Israeli scientists? Should this fact be more widely publicized to heighten public awareness and, if so, how can it be done without producing adverse effects for participants, their respective governments, the institutions they are affiliated with and the overall program? Should there be public awareness campaigns?

h) Private Sector Involvement

Are there opportunities to encourage private sector involvement in the funding for and commercialization of cooperative research activities? What affect might this have on encouraging participation by Egyptian and Israeli scientists? Are there possibilities for establishing joint economic enterprises involving Israelis and Egyptians to commercialize the results of the research?

i) Sustainability of Cooperative Research and Alternative Funding Sources

Sustainability: Has the program fostered the development of working relationships between Egyptian and Israeli scientists who share common professional interests that are likely to continue after the program is completed? Has it strengthened linkages between Egyptian and Israeli institutions, in effect contributing to developing a regional scientific community, that are likely to endure after the program? If so, give examples. If not, discuss factors that account for this.

Funding: How can Egyptian, Israeli, and U.S. scientists more actively investigate the opportunities for obtaining funding from alternative funding sources, such as other donors or foundations, to expand the current program and to prepare for gradual reductions in A.I.D.'s funding for the program? What changes, if any, in program objectives or strategies are needed to work toward establishing sustainable scientific cooperation? For example, would the establishment of a regional scientific cooperation foundation or fund be feasible?

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4. Team Composition, Procedures and Time Requirements

A two person team (at least) will be required for the review. Team members will be U.S. citizens. The team members should be highly knowledgeable about the political context in which the program is operating and the sensitivities involved with participating in cooperative research activities. The team leader will have previous experience in planning and managing research and/or development activities in the region. The second team member will be a social scientist, agriculturist, health researcher, and/or marine scientist with previous work experience in the region and considerable experience in program evaluation. The team will work closely with Egyptian and Israeli scientists with expertise in subject areas corresponding to the current projects funded by the program. However, the report will be produced by the U.S. team members.

The project review team will review prior evaluations of the subprojects and be briefed by ANE working group staff, USDA, NAS, and NIH staff involved with projects funded by the program, representatives of other collaborating organizations and State Department representatives in Washington prior to field work. Prior to departing Washington, a team planning meeting will be held to assist the team to understand the nature of the assignment and to plan how it will address the scope of work (e.g., the methods or procedures it will follow). An important part of the planning meeting will be to identify key indicators that would underpin or substantiate the team's answers to the scope of work questions. Questions corresponding to these indicators should also be developed as a guide for the team's field interviews.

The team will conduct interviews in Egypt and Israel with program participants, representatives of participating institutions, government officials involved with the program, U.S. embassy staff in Tel Aviv and Cairo, USAID/Cairo staff, non-participating scientists in both countries and users of the research results. Selection of non-participating scientists for interviews should include individuals who are in the same academic departments and in other departments at the same university or institution. Embassies in Tel Aviv and Cairo may provide logistical support for the team, however, the team must be prepared to make arrangements for logistical support and for Egyptian and Israeli scientists to accompany and work with the team on an informal basis.

A total of six weeks are required for the entire review. At least five days will be spent in Washington prior to field work (one of which will be for a team planning meeting), including time to meet (or talk by telephone) with San Diego University and

New Jersey Marine Sciences Consortium representatives. At least four weeks will be divided between Egypt and Israel for data collection and production of a draft report by the end of that period. Briefings will be held in Egypt and Israel at the U.S. embassies for program participants, government officials and representatives of participating institutions. The draft report will be reviewed by GOE and GOI officials, U.S. Embassy representatives in Israel and Cairo, USAID/Cairo and the ANE working group. Comments will be provided within three weeks to the team leader who will devote up to one additional week for revisions. Ten copies of the completed report will be provided to ANE/MENA/E within two weeks after comments are provided to the team leader on the draft document.

5. Reporting Requirements

The review report will address the questions cited in section 3 above. The report will be organized by a standard format for each question/issue findings, conclusions and recommendations. The findings will present a brief statement (e.g., 1-2 pages) of the information the team has collected on the issue. In other words, the findings section contains the empirical evidence the team has to answer the question. The conclusion section (e.g., a paragraph or two) should state what that information means or what significance it has, drawing on the professional expertise and judgment of the review team members. Given those conclusions, the recommendation section (e.g., one paragraph) should state specifically what actions should be taken. In short, recommendations must follow logically from the conclusions, and similarly for the conclusions from the findings. (If necessary, more detailed discussions of specific issues should be placed in annexes).

The final report will consist of:

- a) a 2-3 page executive summary citing the key findings, conclusions and recommendations of the review;
- b) the main body of the report (25 - 30 pages);
- c) a final summary section that draws from the key recommendations pertaining to key project elements, activities or modes of assistance that have contributed to increased cooperation that have been giving concise guidance to A.I.D. on how cooperation can be better facilitated by the projects; and
- d) annexes including a copy of the scope of work, individuals interviewed, reference materials and a listing of basic project outputs.

The listing of basic project outputs should consist largely of simple counts of activities that reflect cooperative work on the research activities. This should include for each of the

six projects: the number of meetings project participants have jointly conducted (e.g., project site visits) in Egypt and Israel, the number of publications on the research findings (joint or otherwise), and the number of Egyptian and Israeli scientists participating in the project. A portable microcomputer with software may be leased by the program as part of this assignment for use by the team.