USAID Conference
Promoting Democracy, Human Rights, and Reintegration
in Post-conflict Societies
October 30-31, 1997

Scientific Cooperation and Peace Building: A Case Study of USAID's Middle East Regional Cooperation Program

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The views expressed in this paper are those of the authors and not of USAID.

Policy makers view scientific research as a universal enterprise with a common language and methodology that transcend national boundaries. They regard the joint pursuit of science, technology, and knowledge as inevitably and inexorably creating an intellectual climate and institutional structures conducive to peace and cooperation. These were the underlying premises of USAID's Middle East Regional Cooperation Program (MERC), launched in the aftermath of the Camp David Peace Accords of 1978 to support scientific and technical cooperation between Israel and its Arab neighbors. Congress, in funding the program, assumed it would advance the normalization of relations between Israel and Egypt, as well as promote peaceful relations where hostilities continued between Israel and other Arab states.

The Center for Development Information and Evaluation's (CDIE) recent assessment of the MERC Program,"Scientific Cooperation and Peace Building: A Case Study of USAID's Middle East Regional Cooperation Program," critically examines some of these premises to determine their validity. The report studies scientific cooperation between Israel and the Arab states, primarily Egypt, reviews various modalities of cooperation and considers their implications for peace building. This paper is drawn, in part, from that report. It raises, and seeks to answer, three questions. Did scientific cooperation contribute to peace building between the two countries? If so, how did it contribute? What lessons can be drawn from the MERC experience about the employment of scientific cooperation programs in peace-building efforts elsewhere?

The MERC Program

The Camp David Peace Accords paved the way for scientific and economic cooperation between Egypt and Israel. The accords were a watershed in Israeli–Arab relations. It was the first time that an Arab state had agreed to Israeli preferences for a bilateral, as opposed to multilateral, peace process. The peace-time accords offered recognition of Israeli sovereignty by Egypt in exchange for Israel's return of the Sinai Desert to Egypt. As envisioned by the accords' supporters, both Israel and Egypt would enjoy the fruits of peace, as normalization of relations generated bilateral trade agreements, joint research, transfers of technologies, cultural exchanges, and an exchange of ambassadors.

The U.S. Congress established the Middle East Regional Cooperation (MERC) program soon after ratification of the accords. Congressman Henry Waxman (D-CA), a member of the Subcommittee on Europe and the Middle East, sponsored an amendment to the 1979 Foreign Assistance Bill. The amendment set aside $5 million of the USAID budget for activities to promote Israeli–Arab cooperation. Congress assumed it was giving peace a modest, but important, push in the right direction. Since MERC's inception in 1979, the U.S. Congress has continued to earmark funds for it—$5 million a year until 1990 and $7 million a year thereafter. USAID administers these funds in the form of direct grants. Scientists and research institutions submit project proposals to USAID for review and selection. U.S. intermediary institutions and participating Middle East research institutions administer the

individual projects, allocating resources and providing direction and guidance to Middle Eastern participants.

Over the years, the USAID/Washington office managing the MERC program has refined project selection criteria to reflect the changing situation in the Middle East. The original criteria emphasized development of the scientific infrastructure in participating states. Revised guidelines put more stress on fostering collaborative research efforts through regional networks of participating scientists and institutions and developing local institutional capacity. New projects work in greater concert with the demands of regional economic development and the objectives of the peace process.

MERC has supported a wide range of cooperative scientific and technical projects. While some projects focus exclusively on scientific research, most also have training and institution-building components. Some provide technical assistance like traditional USAID projects. The majority of early projects involved scientists from Egypt, Israel, and the United States; after Oslo I, other Middle Eastern countries, including the Palestine Authority, have participated as well.

As the data in Table 1 indicates, the agricultural sector, followed by the mariculture and health sectors, received the major share of funds. Out of $73 million, more than $29 million have gone to agriculture, accounting for about 40 percent of allocated resources. If mariculture and livestock projects are included in the agricultural sector, the percentage rises to nearly 60. During the past few years, MERC has started diversifying its grants. It has funded projects in the environmental sector, water resources, and direct institutional peace building.

Initially, the projects were large. Agriculture or mariculture projects, with multiple sub-projects or phases, received millions of dollars in MERC funding. For instance, Phase I of the cooperative marine technology program received $6,933,000 and the first cooperative arid lands agriculture project $6,362,000. Recent projects in resource management, environment, health, and water tend to be much smaller in scope and size. Examples include the international coral reef conference funded at $128,000 and the elimination of childhood lead poisoning at $189,000.

The MERC Program and Peace Building

Although USAID has studied and evaluated the scientific and economic impacts of individual projects, no attempt has been made, to date, to directly examine the effects of the MERC program on peace building, presumably for two reasons. First, it was

Table 1. List of MERC Projects

Name of Project	0158	Amt (000)	DATES		Sector
			Autho.	PACD	
Cooperative Marine Technology - I/II	.01	6,933	8/80	9/86	M
Cooperative Arid Lands Agriculture - I/II	.03	6,362	5/90	3/95	A
Tri-national Agricultural Technical Exchange and Coop	.05	3,686	7/84	7/91	A
Cooperative Marine Technology - III	.08	6,362	8/85	4/93	M
Vector Borne Diseases	.13	5,538	7/89	6/93	H
Integrated Agro-Industrial Development - Maryut I	.14	2,655	6/89	11/92	A
Tri-national Nubaseed Development	.17	3,439	12/88	9/93	A
Regional Infectious Disease Research -NAS/IOM	.18	4,293	9/89	9/96	H
Tri-national Animal Health Research	.21	3,403	7/90	6/95	L
Wastewater Reuse-Shared Mountain Aquifer	.24	1,010	7/90	5/93	E
Cooperative Marine Technology - IV	.26	2,964	10/92	3/97	M
Integrated Agroindustrial Development - Maryut II	.27	5,964	8/92	7/97	A
Morocco Cooperative Agricultural Development II	.28	4,599	9/92	6/97	A
Tropical Disease Research -NIH/NIAID	.34	3,000	9/93	9/97	H
Crop Devastation by Parasitic Weeds	.35	3,000	9/93	9/97	A
Saltwater Intrusion Monitoring	.36	423	7/94	2/97	E
Wastewater Reuse-Shared Mountain Aquifer	.37	847	7/94	12/97	E
Jordan/Israel/West Bank Arthropod Control	.38	2,754	7/94	9/00	H
Education for Peace	.41	433	9/95	9/97	D
Regional Environmental Network-EcoPeace	.42	492	9/95	3/97	D
Regional Water Data Banks	.43	1,100	8/95	8/98	E
Aqaba Regional Marine Peace Park	.44	150	8/96	9/97	E
Dead Sea Transboundry Park	.46	150	9/95	9/97	E
Animal Disease and Zoonoses Control	.47	2,307	5/97	5/00	L
Elimination of Childhood Lead Poisoning	.48	189	5/97	5/99	H
Neoplastic & Immunosuppressive Poultry Diseases	.49	1,189	5/97	5/00	L
International Coral Reef Initiative Conference	.51	128	5/97	5/98	E
Dead Sea Rift in Jordan and Israel	.52	197	5/97	5/98	E
TOTAL		**73,567**			

A-Agriculture D-Democratization E-Environment H-Health L-Livestock M-Mariculture r:\fy1997\evaluation

considered unwise to gather systematic information on this subject, lest it give the impression to participating scientists and their institutions in the Middle East that a primary purpose of the program is political. Second, the effects of the program on peace tend to be difficult to conceptualize, much less put into operation.

The evaluation team discussed this subject extensively with participating scientists, administrators, and scholars during its trip to the Middle East. Open-ended discussions indicated that while the MERC program does make a contribution, its effects are modest. By creating and facilitating contacts at the individual and institutional levels, the program has helped strengthen constituencies for peace.

Positive Images and Perceptions

The Israeli and Egyptian scientists who came into contact with each other in MERC projects were clearly affected by the experience. Initial encounters, which began with considerable hesitation, if not overt hostility, blossomed, in many cases, into close professional and then personal relationships. Many of the researchers regularly contact their present and past counterparts, exchange gifts, arrange for family visits and phone each other after unpleasant political incidents.

Such relationships have helped dissipate long-held stereotypes, negative images, and perceptions of peoples from the antagonistic countries. For most Israeli or Egyptian scientists, MERC conferences or workshops constituted the first chance to meet one another in a peaceful environment. A recurrent theme in the team's interviews was that the contacts drastically changed negative images of the **?**other," first of colleagues, and later of their compatriots. Many scientists and technical counterparts found they had the same yearning for peace and coexistence. The scientists were acutely aware of the need for consolidating peace in the Middle East.

Transformation of Stereotypes

Israelis saw us as terrorists, and we invariably saw them as oppressors who have taken our lands and continue to deny us our legitimate rights. But our gradual engagement eroded these stereotypes. When I gave a lecture at [an Israeli] university, the hall was packed to the full. My lecture was attended by professors, scientists, students and senior university officials.

—A Palestinian Scientist

As one who participated in all three wars with Arabs, I must confess that I see them differently than I did in the past. My contacts with Egyptian scientists have changed my whole thinking. They are nice, friendly people who want peace as much as we do. I hope that our leaders realize that.

—An Israeli Agricultural Specialist

Despite their concern for peace, there is little evidence that the scientists had a direct

influence on the foreign policies of their governments. An overwhelming majority of the scientists interviewed defined their mission as doing science and not peace. As a result, they had little or no involvement in politics. Only a few played any advocacy role to promote peace in the region. And fewer still were asked by their governments to give policy advice on foreign affairs. Thus their influence on foreign policies seems to be marginal.

Promoting Institutional Cooperation

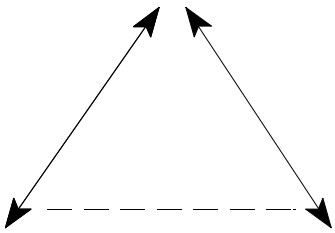
Second, and more important, the MERC projects promoted cooperation between Egyptian and Israeli institutions. Two features of this cooperation with implications for peace building include:

Evolution from Indirect to Direct Cooperation. No direct scientific cooperation existed between Israel and Egypt before the MERC program. The very notion of such cooperation was considered **?**unrealistic," if not politically dangerous. In Egypt, public sentiment was against it, many professional organizations and syndicates were opposed to it, and the universities did not favor it. In Israel, mainstream scientific communities were skeptical of the prospects for meaningful scientific interactions with Egypt. The Israeli government was indifferent, though not hostile. In such circumstances, cooperative projects were a path-breaking institutional innovation.

It is telling that Egyptian and Israeli institutions did not sign formal bilateral or even trilateral (including the United States) cooperative agreements for early MERC projects. Rather Egyptian and Israeli institutions entered into separate agreements with the same U.S. institutions. Cooperation between the participating organizations of the two countries was mediated through the U.S. intermediary institutions, as indicated in Figure 1.

US Institution

Figure 1



Egyptian Institution

Israeli Institution

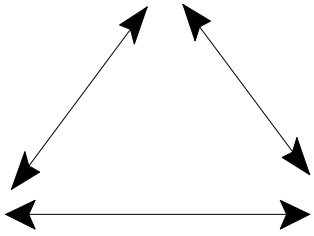
The first MERC project, cooperative marine technology–I (CMT–I) provides a good example. In this project , two separate agreements were signed: one between the New Jersey Marine Science Consortium (NJMSC) and the Oceanographic and Limnological Research Institute (IOLR) in Israel and the other between the NJMSC and the Egyptian National Institute of Oceanography and Fisheries. The meetings of the participating institutions were organized by the New Jersey consortium and were held in the United States or a third country acceptable to both Israelis and Egyptians. Often

communications by Israelis and Egyptians were addressed to the U.S. institution, which then sent it to the participating institutions. The first health project, epidemiology and control of arthropod-borne diseases, relied on the same type of arrangements. In the first era of the MERC program, only the cooperative arid land agricultural research program could be labeled a truly trilateral endeavor, as all parties signed the agreement.

In the highly volatile environment of the early 80s, such arrangements were often a political necessity to protect the participating scientists and their organizations from extremists, particularly in Egypt. They shielded scientists from possible political criticisms, and, indeed, from potential physical harm. For example, Egyptian scientists in CMT– I insisted they only had a bilateral agreement with a U.S. institution, and not a trilateral relationship that included Israeli institutions. When questioned by critics, they would argue that while they themselves did not favor institutional cooperation with Israel, they were not in a position to prevent U.S. institutions from entering into separate cooperative agreements with the Israelis.

The absence of formal agreements between Israelis and Egyptian institutions, however, did not pose major obstacles to institutional cooperation. Scientists from participating institutions could share their data and findings, attend workshops and meetings, and undertake collaborative research activities. Once the initial ice was broken and the political climate improved, there was less need for cooperating institutions to hide behind such informal arrangements between Israel and Egypt. They entered into trilateral (involving the United States) and multilateral (with or without United States) agreements as presented in Figures 2 and 3. A survey of current MERC projects shows that more than 50 organizational entities in Israel, the Arab states, and the United States are or have been involved in ongoing trilateral and multilateral cooperative relationships.

US Institutions



Institutions Egyptian Institutions

Figure 2

US Institutions Institutions in other Arab States

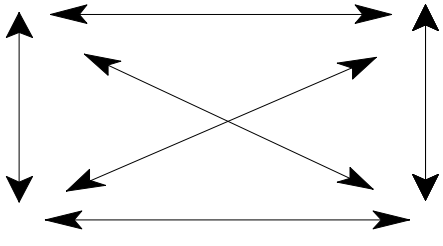


Figure 3

In their interviews with the CDIE field evaluation team, government officials, scientists, and other experts in Israel and Egypt indicated that, in the absence of MERC or a similar program with guaranteed funding and the U.S. imprimatur, scientific collaborative projects would not have materialized between their institutions. MERC grants provided an inducement to reluctant scientists and concerned institutions to enter into cooperative arrangements in spite of the obvious political risks and a hostile environment.

Institutionalization of Cooperation. Second, MERC projects helped institutionalize scientific cooperation activities, albeit on a small scale, between selected Israeli and Egyptian educational and research organizations. Because of ongoing and past MERC projects, these institutions now have established procedures, organizational structures, and more important, networks for collaborative pursuits. As a result, they do not depend as much on the U.S. intermediaries as they did in the past. For example, in the cooperative marine technology–IV project, the U.S. partner played a diminished intermediary role, and the lakes management subproject had no U.S. research partner. Moreover, they have been able to seek funds from other bilateral and multilateral donor agencies for their joint projects.

So far, the fruits of such institutionalization are most visible in the agricultural sector. Over the past few years, Israeli institutions established training programs for thousands of Egyptian farmers. Hundreds of farmers have visited agricultural fairs held in Israel. Institutional cooperation has facilitated an easy two-way flow in agricultural technology. Not surprisingly, trade in agriculture has also grown.

Routinization of Institutional Interactions

It was apparent to the evaluation team that not only was there a desire on the part of each and every participant to continue the collaborative relationship, but, in fact, many of the scientists had already taken steps to ensure that the collaborative efforts would continue into the future. Joint proposal planning sessions had occurred prior to the arrival of the team in the region...There is
great enthusiasm to develop this activity into an even more regional concept by endorsing the inclusion of other country participants in the follow-on activities.

—Final Evaluation Report, 1995
Tri-national Animal Health Research

The activities carried out by EcoPeace represent a substantial contribution to regional cooperation and collaboration. Almost without exception every activity was found to involve extensive collaboration between Israel and Arabs.

—Final Evaluation Report, 1996
EcoPeace

There are also indications that the MERC program is helping develop institutional infrastructures for scientific cooperation between Israel and other Middle Eastern countries. MERC's highly successful tri-national animal health research project (TAHRP) generated the 1996 formation of a Regional Veterinary Oversight Council (RVOC) with the chief veterinary officers of Egypt, Israel, Jordan and the Palestinian Authority. The council will initiate and

coordinate regional veterinary projects. The MERC program also funded a nongovernmental organization (NGO), EcoPeace, which has begun to play an important role in facilitating regional cooperation to solve environmental problems. The new generation of MERC projects have a greater regional focus.

Constituencies for Cooperation

Cooperation has enhanced the research capacities of all agricultural institutions and has generated a body of knowledge that is being utilized to increase agricultural production and productivity, benefitting farming populations. This has helped generate and nurse constituencies that have a stake in continuing agricultural cooperation between Israel and Egypt, thereby indirectly contributing to peace building.

In Egypt, strong constituencies for cooperation include: research institutions and scientists who participate in cooperative projects, business people involved in international trade of agricultural commodities and equipment, and progressive farmers interested in obtaining technology from Israel. The Egyptian Ministry of Agriculture, led by Deputy Prime Minister Youssef Walli and supported by these constituencies, has pursued its own agenda for cooperation, downplaying the concerns of the foreign policy establishment. In this regard, two eminent Israeli scholars have noted:

> Fifteen years of close agricultural cooperation...have made significant differences in the governmental relations between the two countries...Cooperation has created a stronghold of friendship with the Egyptian MOA and created at least one strong supporter of normalization between Israel and Egypt at the highest level of the Egyptian Cabinet. This is no small achievement.

In sum, despite the modest size of the MERC program, it has contributed to peace building on three levels. MERC projects have promoted individual contacts, albeit on a small scale, among scientists in the region. Initial contacts have produced professional and personal relationships, dissolving old stereotypes and reducing feelings of hostility. The MERC program has initiated and sustained important linkages between a number of universities and research institutions in Israel and Egypt. These institutions now take their own initiative in expanding regional cooperation. Finally, the scientific and economic benefits generated by MERC projects, particularly in the agricultural sector, have nurtured political constituencies.

Limitations of Cooperation in MERC Projects

MERC projects have contained two inherent limitations in the promotion of cooperation and peace building.

First, cooperation has been limited in a majority of the MERC projects. Most of the studies undertaken could be described as parallel investigations, rather than collaboration, in the sense that the scientists worked independently on similar, though not the same, research problems in their own countries. Participants in earlier projects did not work jointly on a research problem following a single research design, gathering and analyzing data for joint publication. A

consequence of this strategy has been that opportunities for individual and institutional cooperation have been reduced.

Problem Areas in Scientific Cooperation

The Wastewater Reuse Project has strengthened the ties among a relatively small group of Israeli and Egyptian researchers that first came together under the Marine Technology subproject activity. This group consists of approximately 10 Israeli and Egyptians who periodically visit each other's countries, remain in contact by telephone and fax, and meet at professional meetings and conferences.

—Final Evaluation Report, 1993
Technological and Environmental Health
Aspects of Wastewater for Irrigation

The scope of this project has been quite narrow, concentrating on modeling of salt-water intrusion in coastal areas. Consequently the number of parties involved in the project has been quite small as has the number of personnel from governmental agencies.

—Final Evaluation Report, 1996
Monitoring and Modeling of Salt-Water
Intrusion in Gaza and Morocco

Cooperative activities were often confined to participation in annual or biannual meetings and workshops, some technical advice, and occasional site visits in many MERC projects. The case was different with those agricultural projects and mariculture projects that had research stations and training components. In such projects, more intensive interactions were required, resulting in greater individual and institutional relationships.

Second, the number of scientists and administrators who came into constant contact with their counterparts in a typical project was limited. In most projects, a national coordinator, principal investigators, and occasionally a few scientists met once or twice a year. As joint collaborative research was limited, junior scientists did not interact with their counterparts. Interviews with scientists indicated that, in most projects, only 10 to 20 scientists from Israel and Egypt regularly interacted with each other during the life of a project. Well-funded international research projects tend to have an "elitist bias" and MERC projects were no exception.

Factors Affecting Performance and Their Impact on Peace Building

Political climate, national priorities, institutional asymmetries, availability of and access to managerial resources and funding have influenced MERC project performance, with implications for peace-building efforts.

The overarching climate of mutual distrust and hostility between Arab states and Israel has been the most critical element. General bureaucratic inertia and political opposition to scientific cooperation have placed obstacles in the way of project progress both during periods of political tension and, to a lesser extent, during periods of relative peace. Egyptian scientists have had

difficulty obtaining visas for overseas trips or the exchange of data; Israeli censors have not permitted Palestinians team members access to materials considered politically sensitive. The political climate had an effect on project viability, limiting opportunities for cooperation.

The governments' commitment to and support for cooperative projects has been the second most important factor. When governments considered a MERC project of prime national interest—producing tangible economic benefits and consonant with the political agenda—the roadblocks created by an unfavorable political climate have been overcome. These projects generally make a strong case for further cooperation, contributing to peace building.

For example, Egypt has viewed cooperation with Israel as essential to modernizing Egyptian agriculture in a cost-effective manner and the Ministry of Agriculture has supported MERC projects. However, MERC projects in the mariculture, health, or environment sectors, despite their practical relevance and applicability, have not been perceived as matters of prime national interest and have not evoked like support from the government, influential leaders, powerful ministries, and their clientele. As a result, their possible contribution to peace building has been minimized.

Asymmetries in the institutional infrastructure for science have influenced project design, implementation, and output, at times constraining the nature of cooperation. The Israeli scientific infrastructure in certain sectors is highly developed and at par with the industrialized countries; the academic scientific community is relatively free from direct government interference in project implementation. In Egypt, the scientific infrastructure is relatively less developed; direct ministry project management is still evident in Egyptian public sector research institutions. Israeli scientists were reluctant to engage in joint research based on a common design and methodology partly in light of these differences; the first generation of MERC projects has generally involved independent, parallel, and not collaborative research activities. Of note, improvements in Egypt's scientific infrastructure in the last decade have narrowed the divide between Israeli and Egyptian research capacities, which may permit more meaningful interactions and more extensive linkages between the two countries.

The quality of management was another critical variable for performance. U.S. intermediary institutions, responsible for the administration of individual MERC projects in often unfavorable political environments, have performed a host of functions: finding qualified scientists, developing joint research proposals, negotiating with USAID, obtaining the necessary clearances from governments, providing technical assistance, disbursing grants, organizing site visits and workshops, and publishing reports. To discharge these responsibilities, the intermediary institutions have required not only scientific expertise but also managerial skills and political sensitivity. When the intermediary lacked these capacities, the projects suffered and opportunities for cooperation were reduced.

Most of the MERC projects have faced some financial and managerial problems, albeit at varying levels. First, differences in reporting requirements and accounting procedures between USAID and participating institutions prevented projects from obtaining allocated resources on schedule. Second, when intermediary institutions lacked experience with USAID regulations, the procurement of necessary materials (such as equipment and machinery) was often delayed. Third,

in Egypt, principal investigators have often lacked the authority to manage the planned activities. Such authority was frequently vested in an administrative staff not always conversant with technical details and research outputs. These problems frustrated cooperative efforts.

POLICY LESSONS FOR FUTURE PROGRAMS IN CONFLICT SITUATIONS

1. The impacts of scientific cooperation on peace building are discernable at three levels.

This analysis of the MERC program indicates three ways in which it has contributed to peace building between Israel and Egypt. First, participating scientists from the hostile countries developed professional and then personal relationships, which helped dissipate old stereotypes and enmities among them. Scientists from the two countries began to see each other as colleagues, with a shared yearning for peace. Second, the projects helped to initiate and solidify institutional linkages. For example, the participating institutions jointly prepared MERC-type collaborative research proposals for other donor agencies, further strengthening the institutional relationships between them. Finally, the projects that produced tangible benefits helped build political constituencies for cooperation. While not always effective, these constituencies were often integral to continued support for peace building. The constituencies surrounding the Ministry of Agriculture in Egypt were the most conspicuous example of this.

2. The overall impact of scientific cooperation on peace building tends to be quite limited.

The MERC experience demonstrates that the overall effects of a scientific cooperation program are likely to be limited for several reasons. First, the political context continues to affect the nature and frequency of scientific interactions. Second, only a relatively small number of scientists are apt to be involved in collaborative pursuits, even under the best of circumstances. Despite expenditures exceeding $100 million during the past two decades, the number of Israeli and Egyptian scientists who came into personal contact with each other has been small, not more than 100. Third, attitudinal change in a small cohort of scientists does not affect the foreign policy behavior of the concerned countries. In neither Israel nor Egypt did participating scientists demonstrate political activism. Nor did their governments call on them for policy advice concerning relations between the two countries.

3. In addition to conforming to the norms of "good science," cooperative science projects should pursue a scientific agenda that broadens support for peace building.

Good science is a necessary, but not sufficient, condition for peace building. MERC's experience suggests that in conflict situations, scientific cooperation projects should meet a few other requirements as well. While such requirements will differ from country to country, the following three requirements are mentioned by way of illustration.

First, as far as possible, the projects should focus on those problem areas perceived to be of prime national concern by the participating governments. Such a focus helps gain political support for cooperation. As explained in the previous chapter, one reason agricultural cooperation between Israel and Egypt thrived, despite continual political tensions, has been that the MOA in Egypt regarded cooperation with Israel as extremely useful in solving the agrarian problems

facing Egypt.

Second, as a corollary to the first, applied research projects that produce visible, positive results have a better chance of winning government approval and, if successful, can demonstrate the benefits of scientific cooperation. None of the projects funded by MERC was designed to solve a theoretical puzzle; all focused on applied research, including furnishing the infrastructure to execute it. This proved to be a prudent policy. Basic research is a long-term endeavor; it does not produce the more immediate results that can rally constituencies for cooperation.

Third, the projects should be designed to facilitate the participation of a large number of scientists on both sides. As mentioned earlier, one limitation of many MERC projects has been their reliance on a small number of scientists. Consequently, the contribution of such projects to generating professional and institutional linkages across national boundaries has been limited. However, those agricultural development projects with larger training and agricultural demonstration components expanded opportunities for cooperation at all levels.

4. Two prerequisites must precede scientific cooperation projects.

MERC's experience points to two essential prerequisites for initiating scientific cooperation in conflict situations. First, scientific cooperation cannot be undertaken in times of military conflict or extreme political hostilities. A political settlement is the primary prerequisite to scientific cooperation. The MERC program was only feasible when the peace accords had been signed and all active hostilities had ceased between Israel and Egypt. Only in the aftermath of OSLO I and the Israeli–Jordanian Treaty did it expand to other countries. Second, the involvement of a third party that has friendly relations with the hostile countries is essential. In the absence of USAID involvement, for example, the prospects for cooperative projects were negligible, if not nonexistent. State Department and USAID support provided legitimacy to the idea of scientific cooperation and substantial grants to induce resource-starved scientists and institutions to cooperate with one another.

5. Different modalities of cooperation need to be appraised and pursued.

Scientific research projects, as opposed to technical assistance interventions, generally focus on collaborative research based on one research design using a common theoretical framework and research methodology to solve the same problem. The MERC experience demonstrates that such joint collaborative research is often not politically feasible during the early stages, when considerable distrust remains and hostilities prevail among the scientists and their institutions. MERC projects utilized different modalities of cooperative research.

In the post-conflict setting, scientists may initially cooperate only at the design phase. Or they may focus on parallel research, in which separate teams work more or less independently on different, but related, topics. Interaction may be limited to occasional workshops. Later, when some trust has been established, cooperation has become more routine, and the benefits more widely visible, the scientists can initiate and engage in collaborative joint research.

6. Conflict situations often pose major problems for project participants. Solutions to these problems should be developed during the planning stage.

Because of continuing political tension, cooperating scientists in MERC projects faced two sets of problems. First, the threat of personal and professional ostracism loomed large, especially when tensions were high. Indeed, many Egyptian and Palestinian scientists took considerable risks in cooperating with their Israeli counterparts. Second, as a result of political resistance to their efforts, the scientists encountered problems in exchanging information, visiting cooperating institutions, and inviting their counterparts for site visits. These obstacles delayed implementation or made deadlines difficult to meet. The obvious lesson is that project design in conflict situations should allow for these problems and some practical remedies. For example, MERC project designs have incorporated greater flexibility with deadlines, budgetary allocations, and fungibility, as well as a readiness to hold meetings in third countries.

7. Multilateral scientific initiatives are better situated to overcome political obstacles than bilateral projects.

In conflict situations, multilateral research projects are more acceptable politically than bilateral ones. Many of the recent MERC projects involve three and even four countries in the Middle East, giving them a regional character. Project leaders indicated that this regional focus has facilitated public acceptance and legitimization and helped to marshall the necessary political and scientific support.

8. Donor agencies should use caution in promoting scientific cooperation programs as a tool for peace building.

In light of the obstacles, prerequisites and other lessons highlighted above, donor agencies should be extremely cautious in replicating scientific cooperation programs and in selecting the contexts for their implementation.

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ANNEX 1

PARTIAL LIST OF PERSONS MET

Israel

Daniel Bar-Tal, Professor of Education, Tel Aviv University, Associate of Common Cause

Gershon Baskin, Israeli Director, Israel–Palestine Center for Research and Information, MERC 0158.41

Arthur Braunstein, International Development Expert, Former USAID Officer, now with the Truman Institute

Ben-Ami Bravado, Professor of Horticulture and Viticulture, Hebrew University, Faculty of Agriculture, MERC 0158.27 and 0158.28, CALAR II and MARYUT

Gidon Bromberg, Executive Director, EcoPeace, MERC 0158.42 , Met in the U.S.

Ilan Chet, Vice President for Research and Development, Hebrew University of Jerusalem

Marwan Darweish, Director, MERC 0158.41, Education for Peace, IPCRI

Badri Fattal, Professor, Division of Environmental Sciences, Hebrew University, MERC 0158.37

Jonathan Gressel, Professor of Plant Sciences, Weizmann Institute of Science, Rehoveth, MERC 0158.35

Nedal R. Jayousi, Israel Palestine Center for Research and Information (IPCRI) and Palestinian Coordinator, Education for Peace, MERC 0158.44

Jaacov Katan, Professor of Plant Pathology, Faculty of Agriculture, Hebrew University

Edward Kaufman, Executive Director and Senior Researcher, Truman Institute, Hebrew University of Jerusalem

Alex Keynan, Hebrew University, Professor Emeritis

Shmual Kessler, Director, State of Israel, The Hydrological Service and Member of the Water Commission, MERC 0158.43, Middle East Water Data Network

Yeshaiahu Kleifeld, Ministry of Agriculture, Agricultural Research Organization, MERC 0158.35

David Mullenex, Science Attache, American Embassy, Tel Aviv,
Principal MERC field contact

Lechaim Naggan, Vice President and Dean for Research and Development, Ben Gurion University

Haim D. Rabinowitch, Professor of Vegetable Physiology, Head of Faculty Research Committee, Hebrew University

Irena Rylksi, Professor of Vegetable Crops, Agricultural Research Organization, The Volcani Center, MERC 0158.27, CALAR II and MERC 0158.28,MARYUT

Batia Sarov, Professor, Ben Gurion University, Head Epidemiology Dept

Bert Schneider, Professor, Ben Gurion University, Deputy Director, Center for Biological Control

Dani Shohan, Hebrew University, Collaborator with Professor Keynan

Adiva Shomer-Ilan, Professor, Ben Gurion University, Dept. of Biology

Elinor Slator, Coordinator for U.S. Sponsored Programs, Hebrew University

Shelly Tairre, American Student at Technion, Faculty of Agricultural Engineering, Member (and Host) Yagur Kibbutz, Haifa

Dan Yaron, Professor, Ben Gurion University, MERC TATEC I and II

Hon. Ehud Olmert, Mayor of Jerusalem

Israel (West Bank)

Gaby R. Abboud, Project Development Specialist, USAID/West Bank/Gaza

Tom Dulaney, MERC Contact, USAID/West Bank/Gaza

Basil Ghattas, General Director, The Galilee Society

Hassan Jabarteen, Arab Israeli Human Rights Lawyer working in Israel on Israeli/Palestine issues

Mohammed Omran, Director for West Bank/Gaza, IPCRI

Rina Rosenberg, American Human Rights Lawyer working in Israel on Israel/Palestine issues

Dan Shanit, Professor, Faculty of Medicine, Al-Quds University and Israel Center of Telemedicine, Ben Gurion University

Palestine Authority

Ziad Abdeen, Dean of Scientific Research and Graduate Studies, Al-Quds University, Jerusalem

Karen Assaf, Water Geologist, American Technical Advisor to Palestine Water Authority, Ramallah

Khuloud K. Dajani, Assistant Professor, Director of International Cooperation Dept., Al- Quds University, Jerusalem

Marwan Haddad, Dean, College of Engineering, An-Najah National University, Nablus, MERC 0158.43

Jad Isaac, Director General, Applied Research Institute, MERC 0158.37, Mountain Aquifer and author of other proposals

Issa Khater, Director, Palestine Consultancy Group, MERC 0158.22

Fadil Kaawash, Deputy Director, Palestine Water Authority, Ramallah

Daoud Kattub, Director, Institute of Modern Media, Al-Quds University, Jerusalem

Moham Al-Hamaidi, Palestine Authority, Director of West Bank Office and Member of the Ministry of Planning and International Cooperation, Environmental Planning Directorate

Jordan

Moh'd Zafer Al-Alem, Assistant Director General, Jordan Valley Authority

Ali Arbaji, Medical Doctor, Jordan Ministry of Health, Masters Degree from Harvard University School of Government, Jordanian PI/MERC 0158.18, Regional Infectious Disease Research

Lara Aryan, Economic Officer, Regional Environmental Office, AmEmbassy, Amman

Jonathan Addelton, Program Officer, USAID/Amman

Don Blome, Political Officer, AmEmbassy/Amman

Adnan Budieri, International Liaison Director, EcoPeace/Jordan

Alonzo L. Fulgham, Director, Office of Economic Cooperation, USAID/Amman

Raja Gedeon, Director, Water Authority of Jordan, (Met in Jerusalem)

Claire Oxley-Gluck, Political Officer, Jordan, State Department

Mohamed Hafez Ali, Board of Directors, EcoPeace/Jordan and former Deputy Director, Ministry for Housing and Physical Planning

Alia Hatough-Bouran, Member, Board of Directors, EcoPeace/Jordan and National Coordinator for Jordan to IUCN

Izzat Jaradat, Secretary General, Jordan Ministry of Education, MERC 0158.41, Education for Peace

Lewis W. Lucke, Mission Director, USAID/Amman

Akram Masarwa, Secretary-General for Tourism and Antiquities

Jeff Miller, Chief of Party for USGS on MERC Middle East Water Data Project, stationed at USAID/Amman

Munqeta K. Mehyar, Royal Jordanian Diving Society, Board Member, EcoPeace/Jordan

Tim Miller, Director, Water Resources and Environment, USAID/Amman

Khalid A. Al-Nair, Regional Banking and Finance Advisor, USAID/Amman

Eilene Oldwine, Director, Office of Population and Health, USAID/Amman

Ali Saliba, PI/MERC 0158.18, Regional Infectious Disease Research

Marjorie Shovlin, Environmental Officer, USAID/Amman

Seta Tyrtunjian, Water Resources Environmentalist, USAID Amman

Yassar Toukan, Assistant to Director General, Jordan Valley Authority

<u>Egypt</u>

Mohamed Hafez Ali, Consulting Architect Planner, Former Deputy Minister for Housing and

Physical Planning

Magdy Allam, Director General, Egyptian Environmental Affairs Agency and Secretary General of Eco Peace

Reuvan Azar, Second Secretary, Economic and Agricultural Affairs, Embassy of Israel to Egypt

Aly El-Badry, Under Secretary, Ministry of Agriculture

Fawkia Labib Bahna, Soil and Water Use Scientist, National Research Centre, National Research Centre, MERC 0158.35 Devastation/Biological Control of Weeds

Stafford Baker, Chief, Strategy Implementation and Support, USAID/Cairo

Maher El-Borolossy, Specialist, Biological Control of Weeds, National Research Centre, MERC 0158.35, Devastation/Biological Control of Weeds

Nadia Chours, Moroccan Project Assistant, MERC 0158.27, MARyUT II/Agroindustrial Complex

Toni Christiansen-Wagner ,Deputy Mission Director, USAID/Cairo

Medhat Darwish, Professor Doctor, Ain Shams University, Faculty of Medicine

Mohamed M. Diab, Plant Pathologist, National Research Centre, MERC 0158.35 Devastation/Biological Control of Weeds

A. Abdel El-Hafez, President, Ain Shams University

Esmet A. Hassan, General Scientific Coordinator, National Research Centre, MERC 0158.35 Devastation/Biological Control of Weeds

Kadry Mohamed Hefny, Professor Ain Shams University

A.El-Ibiery, Co-National MERC Coordinator, Ministry of Scientific Research, National Institute of Oceanography and Fisheries

E.A. Ibrahim, Principal Investigator, MERC 0158.38, CMT-IV, and Co-National MERC Coordinator, Ministry of Scientific Research, National Institute of Oceanography and Fisheries

Mohay Issa, Ministry of Scientific Research, National Institute of Oceanography and Fisheries

Moamena Kamel, Medical Doctor in Private Practice, PI/MERC 0158.18, Regional Infectious Disease Research Subcontractor to Ain Shams University

Ahmed Koraem, Professor, Plant Protection Dept, National Research Centre, MERC 0158.35,Crop Devastation/Biological Control of Weeds

Abd-Elradi Korashy, Professor, Plant Protection Dept, National Research Centre, MERC 0158.35,Crop Devastation/Biological Control of Weeds

Driss Lahlou, Moroccan Project Director, MERC 0158.27, MARYUT II/Agroindustrial Complex

Fathi M. Maklad, Plant Pathologist, National Research Centre, MERC 0158.35 Devastation/Biological Control of Weeds

Mahmoud M. Mafouz, Chairman of the Egyptian Radiology Society, Member of the Shura Assembly, Committee on Education and Youth

Atiat El-Menshawy, Administrator, Agricultural Foreign Relations, Ministry of Agriculture

Hamdy Abdel-Aziz Moursy, President, Egyptian Academy of Scientific Research and Technology

Almotaz B. Mobarak, Medical Doctor, Scientific Coordinator at Ain Shams University for MERC Projects 0158.03 and .18

Abdel M. Moustafa, Agricultural Development Officer, Office of Agriculture, USAID/Cairo

Ishak K. Moustafa, Co-Chairman, Egyptian Wildlife Society, Board Member, EcoPeace/Egypt

Abd El-Radi K Nasr, Professor Dr. Pests and Plant Protection, National Research Center, MERC 0158.35

Reda Ramzy, Coordinator for MERC Programs, Ain Shams University

Thomas Rishoi, Associate USAID Mission Director, Program Development and Support

Vincent Battle, DCM, AmEmbassy/Cairo

Y. Walli, Deputy Prime Minister and Minister of Agriculture and Irrigation

United States

Robert Abel, President, New Jersey Marine Sciences Consortium, Cooperative Marine Technology Program project

Moham M. El-Assal, Coordinator, San Diego State University Foundation, MERC 0158.28 Cooperative Arid Lands Agriculture Research Program. Met in Egypt

Sharif Elmusa, Director, Institute for Policy Studies, Met in Jordan at wastewater workshop organized by the Galilee Society

Bonnie A. Stewart, US Program Director, San Diego State University Foundation, MERC 0158. Met in Egypt

David L. Moore, Deputy Director, Fred J. Hansen Institute for World Peace and San Diego State University Foundation, MERC 0158.27 and .28. Met in Egypt