

AN ASSESSMENT
OF
SCIENCE AND TECHNOLOGY AND AID ASSISTANCE
IN EGYPT

VOLUME II

AN ASSESSMENT OF SCIENCE AND TECHNOLOGY
AND AID ASSISTANCE IN EGYPT

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PREFACE

Science and technology is an important factor in social and economic progress in both industrialized and developing nations. The United States Agency for International Development has been assisting the scientific and technological community since 1976 as part of a larger technical assistance program in Egypt. The Agency for International Development, recognizing the increased scientific and technical capacity in Egypt and the rapid advancement of science and technology worldwide, has engaged a team of American and Egyptian consultants to review progress and to recommend ways in which future scientific and technological cooperation might be strengthened.

The consultants and their fields of specialization are listed on the page following. The assessment was begun with a review of some of the sectors important to Egyptian development. This vertical analysis was followed by a horizontal, cross-cutting look at key issues and at methodologies. The report is presented in two volumes. Volume I contains the overview report, sectoral studies and selected related information. Volume II is a compilation of background studies and papers prepared during the assessment.

As in any team report, the observations, analysis and recommendations reflect inputs from all team members. Not every position presented was supported by every team member. However, in no case were there differences sufficient to warrant a minority report. This is an advisory report prepared by the consulting team. It does not necessarily reflect the views of the United States Agency for International Development nor of the Government of Egypt.

The team wishes to express its appreciation to the many Egyptians visited. They were generous with their time and patient with our many questions. A list of persons visited is found in Volume I. We also wish to thank Drs. Sherif Arif and Robert Mitchell of USAID/Cairo for their support and helpful comments. Special mention need be made of Tracy Felt and Mary Megalli who were responsible for the preparation of the many drafts as well as the final report.

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1. "THE PL-480 PROGRAM IN EGYPT FROM THE U.S. PERSPECTIVE,"

by H. Pollack and M. Hellmann

A STUDY

The PL-480 Program in ~~Egypt~~
From the U. S. Perspective

by

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March 1984

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Centers for Disease Control (CDC)	
Environmental Protection Agency (EPA)	
Fish and Wildlife Service (FWS)	
Food and Drug Administration (FDA)	
Health Resources and Services Administration (HRSA)	
National Bureau of Standards (NBS)	
National Institutes of Health (NIH)	
National Institute for Handicapped Research (NIHR)	
National Science Foundation (NSF)	
Office of Naval Research (ONR)	

PREFACE

The investigators for this study both have had extensive experience in the federal government (Department of State and National Science Foundation) in the administration of international scientific and technological programs. Both therefore were acquainted, but not in great depth, with the PL-480 program. They found that their perceptions of the government-wide program were more simplistic than turned out to be the fact. The investigation was enlightening to the investigators as we hope the report is to its readers.

This report was prepared under a short deadline which while demanding and challenging to the two investigators, was simply onerous and fatiguing to our secretarial assistant, Mrs. Lucie Raymond. Our appreciation and thanks go to her for unflappable, even tempered performance, endurance and the accuracy and quality she brought to the preparation of the report.

PART I - FINDINGS AND GENERAL COMMENTS

INTRODUCTION

This study collected and analyzed information (See Statement of Work at Appendix I) on 83 Egyptian projects conducted under the Special Foreign Currency Research Program, hereafter referred to as the PL-480 Program (legislative language at Appendix II) This includes approximately 25 to 30 completed projects and near one-third of those currently active or still on the books of the U.S. Embassy as of August 1983. Eleven U.S. Government agencies were in this study, counting the major units of the Department of Health and Human Services individually.

Department of Agriculture (USDA)
Centers for Disease Control (CDC)
Environmental Protection Agency (EPA)
Fish and Wildlife Service (FWS)
Food and Drug Administration (FDA)
Health Resources and Services Administration (HRSA)
National Bureau of Standards (NBS)
National Institutes of Health (NIH)
National Institute for Handicapped Research (NIHR)
National Science Foundation (NSF)
Office of Naval Research (ONR)

The Smithsonian Institution was not included. It should be noted that this study used only information available in the United States. Mr. Max Hellmann, one of the investigators in this study, will visit Egypt shortly to examine from the Egyptian viewpoint, 20% to 25% of the projects covered in this study.

Hard data were obtained from the agency files. In most instances such data were couched in government or scientific English and therefore limited in revelatory value. Oral interviews with agency program officials and with U.S. project officers and participants in the projects were more illuminating of the actual content of the projects and especially

their character and strengths and weaknesses. About 25% of the project reports in Part III incorporated information obtained in face-to-face interviews; the remainder are based on interviews by phone. Written questionnaires proved to be infeasible, and in any case would not have been as productive of insights.

The project was conducted under a short deadline of five weeks. The collection of information and its preparation for use in this report proved to be far more labor intensive than had been anticipated, leaving less time for perfecting the information and for analysis and presentation than had been planned. Consequently, there are minor gaps in the factual data in the project reports. Two investigators shared the task of preparing individual reports on the projects and the reconciliation of style and emphasis is incomplete, although the data are comparable. In sum, primarily because of lack of time for reflective and precision editing, this is not a polished report. However, we believe our sample was sufficiently large and dispersed and our interrogations sufficiently comprehensive and intense so that the nature of the program as a whole and the views and perceptions of the U.S. participants are accurately reflected. The two investigators have agreed on the judgments in this study, found for the most-part in the following section.

Overall Characterization of Program

The U.S. Government's PL-480 program is anything but monolithic. As a consequence the generalizations used in this characterization of the PL-480 program abound with exceptions which we do not attempt to deal with. Although usually considered a research program, many of the projects would

be better described as technical assistance or training. For example, FDA conducted as PL-480 projects a series of 20 training courses in Egypt. In other instances information systems were established (e.g., NIH 03-090-N, and HRSA 03-300-R) work was done on improving laboratory performance (e.g., NBS (G) 201 and NIH 03-028N), emergency medical capabilities were established, instrument repair centers were established (e.g., HRSA 03-181R). These projects were designed with immediate practical applications in mind. In our own subjective tabulations, about 25% of the projects in our sample are considered to be primarily technical assistance, training or conference support. Of the 75% which we consider research, we would describe slightly more than half as being in the applied category.

Closely correlated with the mission of the U.S. sponsoring agency, many projects were basic research in intent and character particularly in NIH, ONR, NSF and to a lesser extent in CDC and FDA. The subject was usually of special concern to Egypt. Moreover, in recent years greater emphasis was placed on applied research. Indeed the 1981 Agreement on Health Cooperation between the Egyptian Ministry of Health and the U.S. Department of Health and Human Services (Appendix III) provided that "priority consideration will be accorded to field or applied research that will help solve health problems of interest to both countries. Basic research will be considered to the extent that it supports this primary objective." That emphasis is well understood and endorsed by the program managers at HHS which actually began the shift of emphasis in 1977-78. This is not well reflected in a review of existing projects because funds began to run out shortly thereafter and relatively few new projects were initiated.

It should be also noted that the research supported by the Department of Agriculture was predominantly applied with immediate or short term application objectives. Similarly, the NBS, HRSA and FDA projects would, with few exceptions, fall comfortably into a discussion of technology transfer to Egypt.

It is customarily held that these projects all were justified in terms of supporting the sponsoring agency's domestic mission. And indeed over the years each agency stoutly insisted that this was the case. The Congressional authorizing committee would have been disturbed to hear otherwise. And for several agencies such as NIH it was in fact the case, though less insistently so in later years. However, in a considerable number of projects the connection was distant and sometimes contrived. This was generally true in those cases where technical assistance characterized the effort, but was true as well in some research projects. Often the benefit to the domestic mission was essentially the broadening experience acquired by agency staff. Speaking generally, the clarity of the domestic benefit became increasingly fuzzy with the passing years.

Further on this point, the Public Health Act contains an "American benefit" requirement. An HHS legal opinion^{1/} held that the Public Health Act, per se,

^{1/} Memorandum of August 15, 1979 on "The Scope of HEW International Health Authorities" from Deputy Assistant General Counsel to John Bryant, M.D.

provides broad general authority for virtually all international research activity, "since that kind of activity will almost always involve an American benefit." In contrast, "health service activities, not incidental to research, may not necessarily benefit the United States." However, subsequently in this same opinion, it was held that activities under PL-480 are not limited by the "American benefit" criterion because the Act authorizes programs or projects on diseases common to all mankind or unique to individual regions of the globe. Thus considerable flexibility is available to the program managers in HHS. Moreover, a requirement of domestic benefit does not appear in the language of Section 104(b)(3) of PL-430.

The motivations of the U.S. agencies were mixed. The ground rules for PL-480 funds made them additive to the regular agency appropriation. Moreover, the funds were "no year" funds, i.e. once appropriated they were available until expended. These ground rules were undoubtedly attractive to the agencies. There was a surge of PL-480 activity after diplomatic relations were resumed in 1974 and the State Department solicited additional activity in Egypt by the several technical agencies. In effect, they responded positively to a need by the government's political leadership. At the same time, they sought to take advantage of an opportunity to pursue their agency's special interests. Their scientific staff was similarly responsive to the political climate at that moment, but placed heavy emphasis on their more specific scientific interests.

In some instances the availability of unique situations or populations was appealing (e.g., USDA-EG-ARS 86 (FG-EG-189); EG-ARS-93 (FG-EG-197); CDC-03-327-C); NSF-INT- 78-01469);

in others a general interest in the problems of the developing world or the Mid-East were key factors; in still others prior relationships with Egyptian scientists played a role (e.g., FDA-03-657-F) and undoubtedly in some instances the opportunity for foreign travel and novel experiences was a factor.

Whatever the motivation, it appears clear, as has been demonstrated in part since 1981 when Egyptian pounds went off the excess currency list and were no longer available for purchase under PL-480 authority, that very few if any of the PL-480 activities would be sustainable or would have been initiated under regular appropriation processes. This may not be solely a question of comparatively easy access to PL-480 funds, but may be also attributable to the need for the far reaching PL-480 authority for international scientific activities. Only one or two of the U.S. PL-480 agencies have legislative authority to engage in international activities save in pursuit of their mission, which is universally domestic.

The term "PL-480 program" is itself misleading, since it implies a higher degree of coherence and central planning than was in fact applied to the PL-480 projects. There was no government-wide plan or coordination except in the narrowest fiscal sense. The "program" was essentially a

collection of projects reflecting interests of various agencies and individual scientists in the United States or Egypt. This was modified to the extent that in a number of instances the same U.S. or Egyptian scientist was involved in the initiation and/or implementation of several projects and to the extent that the process of Egyptian approval involved a single person or ministry administrative unit. For example, Dr. Zervos of the FDA was involved in several projects and many training activities which were interrelated. Similarly, in Egypt, Drs. El-Kholy, El-Bolkainy, El-Alamy and Hashem participated in initiating and executing several or more interrelated projects. The U.S. Department of Agriculture discussed all of its projects with the international office of the Egyptian Ministry of Agriculture. Health projects were processed by a Joint Working Group. Nevertheless, in general each project had a life history of its own. Even though priorities may have been established, as in health and agriculture programs, there were too many priorities and too few projects to admit the establishment of "programs." There was less interaction or dialogue among the U.S. agencies on the substance and management of their projects even when the subjects were related than might have been desirable. As is discussed later, this was true in Egypt to an exaggerated degree.

As will emerge from an examination of Agency PL-480 Profiles in Part II of this report, there was a great deal of variation in the way the several agencies approached their PL-480 activities. Reviews of proposals tended to be internal rather than peer although NIH, ONR and NSF made use of existing peer review procedures.

Progress and final report review were in all cases internal to the agencies. In monitoring performance, all agencies took into account the circumstances existing in Egypt with respect to the scientific enterprise.

There was undoubtedly in both the United States and in Egypt some "free loading" and other abuses of the PL-480 funds for travel, but the frequency of travel did not strike us as excessive. On the contrary, there were a number of projects particularly in the Department of Agriculture where the project officers felt that additional travel would have increased their contribution to the project. The value of additional travel was echoed to a degree by several of the health agency project officers (see especially project FDA 03-657-F) who argued that there was a need for more hands on participation to help ensure quality performance in Egypt and to enhance the actual collaboration. It was suggested that review of papers was an insufficient basis for cooperation. A frequent suggestion was that the greatest value for the expenditure of travel funds was obtained from travel of Egyptians to the agency's facilities in the United States for training and discussions with highly qualified experts in their field. The difficulty of obtaining dollars for U.S. expenses of Egyptian travellers was a common complaint. It may be noted that in many instances considerable ingenuity was used in providing the necessary dollar support.

Time was not available to pursue the question of the degree to which PL-480 projects played a role in the initiation of AID funded activities or were supplemented with AID funds. We do know that AID funds played a vital role in some HHS projects. Through the Commodity Import Loan Program Egyptian institutions were able to buy equipment and supplies

necessary for the PL-480 project. Also slots in the AID Training Programs were used for PL-480 participants. HHS also had a PASA for the purchase of small amounts of equipment for use in PL-480 projects. We do not have data on the dimension of these kinds of support or information on whether other agencies benefitted similarly. This question might most readily be addressed by the staff of the AID mission in Cairo. The answer would cast some light on the relevance of PL-480 activity to AID's development objectives.

Several comments frequently made by U.S. project officers may be of interest and value, though none are new. With respect to the conditions under which scientific endeavors are carried on in Egypt, the project officers were universally appalled at the low level of Egyptian salaries and the consequent necessity for second and third jobs. An American scientist is accustomed to total dedication and concentration to his scientific activity and assumes this is not possible for the typical Egyptian scientist. The rapid turnover and flight to the Gulf States and elsewhere of technical and professional personnel arising from low salaries was regarded as a major handicap to Egyptian scientists. In this connection, it may be noted that the Department of Agriculture followed a policy of limiting supplemental pay to 25% of base pay. In other agencies a proposed salary would be examined on its merits and reasonableness as one of the project costs when reviewing a new proposal and establishing a budget, but not against any policy criteria on supplementing salaries. We do not know how this difference in approach was viewed in Egypt. Many project officers also commented on the near absence of linkages and interactions among specialists and specialized facilities in Egypt which was viewed as a major weakness and considered to be constraining the development and role of science in Egypt.

Frequently, it was necessary to provide essential equipment and facilities as a preliminary to getting a project underway, in light of the rudimentary state of laboratory and other facilities in Egypt especially in the earlier years of the PL-480 program. In some instances Egyptian management of the project was not judged to be up to U.S. professional standards.

With respect to the operation of the projects, shortcomings of telephone and mail service were more than irksome.

The next four headings refer to specific items called for by the AID work order.

Accomplishments

In terms of the specific objectives of each project, the U.S. project officer usually expressed satisfaction with the results. This was often placed in the context of the constraints and handicaps under which Egyptian science is performed. To be sure though, there were several expressions of disappointment at the performance or results of a project.

It was rarely claimed that research results were on the forefront of the field, but frequently important or significant contributions to knowledge did occur, as demonstrated by the acceptance of many papers in prestigious international journals and meetings. Similarly, in the training and institution building efforts, it was generally felt that a functioning laboratory or facility had been put in place. However, in almost every such instance, the project officer felt that in the absence of continued outside funding the life of the lab or facility was fragile. This fragility was usually explained in terms of the need

of P.I.s and staff to find other means of supplementing their salary.

On the whole, the project officers were convinced that the PL-480 expenditures and relationships had a noticeable beneficial impact on the level of Egyptian science and specifically on the professional development of individual Egyptian scientists. The scientific infrastructure was strengthened by the PL-480 effort, regardless of the outcome of any individual project. Certainly hundreds of graduate theses were based on work done on PL-480 projects. Other training activities concomitant to or the heart of these projects and the conferences and symposia generated by projects have made major contributions to the capability of individual Egyptian scientists and to the infrastructure as a whole.

Relationship to Educational, Training and Other Development in Egypt

The language of Section 104(b)(3) of PL-480, which is exceptionally broad, was not directed at development objectives per se. Nor did it specify a domestic benefit requirement but the rubrics under which U.S. agencies conduct their activities effectively required a relationship to their fundamental mission. As indicated earlier, that relationship was sometimes distant. It is not surprising therefore that PL-480 projects were a mixed bag of basic and applied research, technical assistance, technology transfer, institution building, and short and long term benefits.

However, virtually all PL-480 activities related to Egyptian needs in agriculture, health, and science and technology. In most instances the project related directly to Egypt's development objectives, even though results obtained often did not have immediate applications. For

example, agricultural research dealing with plant and animal diseases, with the introduction and testing of germ plasms to improve major crops, with soil and irrigation problems and with forestation certainly contributes in the long range to an improvement of agricultural productivity which will not only improve the nutrition of the population but in some cases increase export earnings. In health much work has been on the study, control and potential eradication of major infectious diseases which lower the productivity of large segments of the population and therefore hamper economic and industrial development. Many projects in this area however, dealt with the immediate improvement in health care and delivery which are particularly relevant to rural areas of Egypt.

Furthermore, due to industrialization and the application of modern agricultural techniques, Egypt is being exposed to side effects resulting from industrial and agricultural wastes with resulting effects on health and ecology. Thus environmental research contributes towards a balanced view in development planning by calling attention to the need for protecting the environment. Research in standardization and measurements provides the necessary data and strengthens the national organizations charged with overseeing the quality and standards in industrial production.

However, perhaps the most important contribution to development made by the PL-480 programs of all U.S. agencies has been to the training of scientific manpower and the development of an S&T infrastructure without which the country could not pursue any meaningful development plans. Even though the principal investigators on PL-480 funded projects were chosen on the basis of their proven scientific competence the support they received allowed them to sharpen their

skills, to up-grade their facilities with modern equipment and to provide training and research opportunities to junior scientists and students many of whom will be the future leaders of science in Egypt. Last but not least, the links between Egyptian and U.S. scientists that were formed or maintained by this program are expected to last well beyond the termination of any formal cooperation. They provide an important reservoir of good will.

Egyptian-U.S. Scientist Collaboration

The standard practice for all PL-480 projects has been to identify a U.S. scientist as collaborator. However, the role of the collaborating scientists varied from agency to agency.

In the U.S. Department of Agriculture this role was usually assigned to a working scientist in one of the many Agricultural Research Service labs with special competence in the topic of the research project. In a few cases this scientist took an active part in the initiation and planning of the project, but in the majority of cases, his role was to review progress reports and indicate to the USDA administrative offices if the project had made satisfactory progress. Rarely did the USDA scientist get actively involved in the research activity, although at times they helped in getting the Egyptian researcher in contact with others working in their field in the U.S. Nevertheless, on the basis of interviews with about 30 USDA scientists it appears that most of them felt that a major accomplishment of the PL-480 programs was the establishment of close links between U.S. and Egyptian scientists and many felt that these contacts will continue. However, many were critical of the USDA policy which discouraged foreign travel and thus limited them usually to only one or two trips to Egypt for the duration of the project.

The Environmental Protection Agency established a similar system of using scientists from their own labs as collaborators. Although their role was also primarily to monitor the progress they seemed to play a much more active part in designing and directing the project and normally were permitted to visit it every year.

Similar arrangements existed in projects sponsored by the National Bureau of Standards, the Centers for Disease Control and the Food and Drug Administration. These agencies also often provided training for Egyptian scientists and technicians in their own laboratories.

The Office of Naval Research used scientists from their research grant division as project officers. In fact almost all biomedical research grants in Egypt were handled by a single person who kept in close touch with the projects and visited all of them every year. He often served as a middle man to expand collaboration to Navy laboratories and labs of other U.S. agencies. Furthermore most ONR projects in Egypt involved collaboration and consultation with the staff of NAMRU-3. Similar arrangements existed at HRSA and NIDDK where scientists from their administrative office usually were responsible for several projects. They kept in close touch with the projects and recruited U.S. advisors and consultants to participate in the project.

Where PL-480 grants involved collaboration of U.S. university scientists (i.e., all projects funded by NSF and some by HHS agencies) this collaboration was usually rather active involving both U.S. scientists working with their colleagues in Egypt and vice-versa.

The project sponsored by NIH also included a fair number of collaborators from NIH in-house laboratories. Their participation usually entailed rather active involvement in the research.

A significant number of projects with U.S. collaborators from universities or government laboratories involved both short and long term training of young Egyptian scientists and in a few cases even technicians in the U.S.

From an overall perspective U.S. project officers served more in an advisory and supportive role than in a truly collaborative partnership which would have required lengthier stays in collaborating laboratories than was customary in PL-480 projects. However, there was joint work leading to joint publications. There was not as large an exchange of younger scientists as would be necessary to truly collaborative enterprises and, of course, discussion of collaboration, as ordinarily understood in scientific activity, is not appropriate to projects in which the emphasis was technical assistance or training.

In summary, whatever the arrangement was, the U.S. collaborator played an important role in guiding the project, assessing its quality and progress, and acting as a link between the scientific communities of the two countries.

Implications for future Research

The foremost implication for future research and related activity in Egypt is that there now exists in the U.S. a considerable reservoir of scientists (500 or more) knowledgeable and experienced about science, scientists and scientific institutions in Egypt who are interested and available for use in future U.S.-Egypt scientific and technical collaboration. These men have tremendous resources in well equipped facilities and highly trained staff available to support their activities. They represent a wide variety of scientific and technical disciplines many of which are germane to AID programs in Egypt. Not least, those in government entail no salary cost to another government agency and therefore the cost of their participation would be low compared to comparable services by a commercial firm. On the other hand, their services would be contingent upon a mutuality of interest which would have to be accommodated. In short, though, the PL-480 program has over the past 20 years produced a pool of knowledgeable, experienced and highly skilled talent which under proper conditions could be utilized by AID to support its efforts in Egypt.

The PL-480 agencies in their bid for interim funding (HHS did so much earlier) have now accepted the concept that if AID funds are to be used to support the kinds of activities carried on by PL-480 funds, AID criteria regarding a relation to developmental objectives, to foreseeable practical results, and to applied as distinct from basic research will have to be met. This is no longer an issue. In most cases, enough of a justification in terms of the agency's mission will have to exist to warrant the devotion of staff time. However, this is a difference in degree rather than kind insofar as other bilateral activities in which these agencies participate.

About a third of the project officers canvassed in this study were asked for their recommendations on future activities. They universally stressed the importance of the American connection because of the scientific discipline, standards and support thereby provided. Most went on to urge U.S. agency control of the funds and their disbursements as a way of enforcing performance and sheltering the activity from some of the managerial and administrative shortcomings that might otherwise apply in Egypt.

Most wished that the previous connection had been closer and in particular that it had been possible to send American graduate students and young scientists to participate in the project and perhaps stimulate more effective performance. Similarly, most placed great value on visits to and training in the United States by performing scientists and technicians. They felt less benefit resulted from visits by supervising staff.

Considerable concern was expressed about lack of continuity in funding, mentioned previously. It might be desirable to build into the initiation of a U.S. financial project a commitment to its continuation by Egypt after the termination of its agreed life span.

The health agencies felt the joint working group mechanism was sound, even though it diminished their freedom of action. A joint mechanism for establishing priorities and selecting projects will undoubtedly be necessary in any case. The project officers and a few program officers hope that a tradition of acting on scientific grounds might become dominant. Some felt that past actions in Egypt were unduly influenced by political or bureaucratic considerations.

There can be little doubt that Egyptian science benefited substantially

from the PL-480 effort, both on an individual basis and in institution building. It should not be difficult to devise a program that would retain those beneficial capacities and at the same time fit closely specific AID programs and development targets. This will require a higher degree of trust and more of a willingness to work as partners than has been evident in the course of this study by either AID or the agencies. In the agencies, which we have probed, the spirit is willing.

Developments in the last year or so have led to a situation in which HHS on behalf of its agencies and NSF on its own behalf and that of NBS, ONR and the Smithsonian Institution have put together recommendations for interim funding by AID of some 33 projects in all. AID is now or soon will be considering its response to these recommendations. The key ground rules called for them to be based on past PL-480 projects, to be applied rather than basic if of a research character and to be limited in duration to two years. The agencies, not AID, have inspired the interim proposals. They represent the agency's views of what might fit in with AID's Egyptian program, but with knowledge of the Multi-Sector Science and Technology Project in whose development many of them participated. In preparing their interim funding recommendations HHS sought and obtained the views of Washington and Cairo AID health officials who were, of course, non-committal. Similarly, NSF exposed its preliminary interim funding plans to AID for reaction and comment.

AID has shown no enthusiasm for the interim funding process and its role has been passive. At the risk of exceeding our mandate, we would suggest a different procedure if AID is at all interested in PL-480 type activities. Would it not make more sense for AID, whose specialists have the capability, to review the PL-480 package of projects, and

any new ones that may be proposed, and make a tentative identification of those whose subject seems relevant to AID targets in Egypt. These could be then screened in cooperation with the U.S. agencies to determine which have the greatest potential for results valuable in terms of AID's criteria? The agencies could then make a determination of which of these projects from its own viewpoint it would wish to pursue. At that point a negotiation on what investments to make and on what terms should produce a program based on mutual understanding and compatible interests and motivations. Such a program would have a sharp focus on AID designated targets and have good prospects of being productive and harmonious.

Such an effort would require time and is not suggested as a substitute for interim funding but as a means of developing a longer range effort, if that is desired.

As the preparation of this report entered its final moments, our attention was called to the January 1979 Report of the Institute of Medicine, National Academy of Sciences entitled "Health in Egypt: Recommendations for U.S. Assistance." Prepared by a very distinguished group of medical scientists and administrators, some with extensive public policy experience, we were pleased to find that it contained a similar suggestion. Its other comments on PL-480 activities in the health field are also parallel to ours. The pertinent chapter of that Report is at Appendix IV.

PART II

AGENCY PROFILES

Introductory Remarks

Agency Comments on Value of PL-480

Without exception, each of the agencies in our canvas felt for the various reasons cited in this report that the PL-480 program was of value especially to Egypt, but also to themselves and their missions. Eight agencies, including the Smithsonian Institution, have made interim funding proposals. These agencies are all prepared to continue activities in Egypt provided the terms and arrangements permit them to satisfy their need to relate to or further their legislated mission and to have reasonable assurance that the work to be performed will be of suitable quality.

PL-480 funding was extraneous to the integrity of the agency's program. Participation in PL-480 activities did not require the difficult administrative and policy choices that characterize budget decisions affecting regular programs. This is the content in which agency views on the value of their PL-480 activities are propounded. They are unquestionably of value to Egypt no matter what the perspective. Their value to the agencies is largely contingent to their funding being non-competitive with dollar financed activities.

A Word on the Department of Health and Human Services (HHS)

Central coordination and leadership to PL-480 activities by HHS agencies is provided by a special assistant to the Surgeon General of the Public Health Service. He and a small staff develop general policies and guidelines and are responsible for the management of the machinery which implements the January 13, 1951 Agreement on Health Cooperation between HHS and MOH, enclosed at Appendix III.

This agreement continued the Joint Working Group established pursuant to the Principles of Relations and Cooperation between Egypt and the U.S. signed on June 14, 1974. The Joint Working Group whose structure is outlined in the Agreement, provides for the most formal agency to agency relationship in the U.S.-Egypt PL-480 program. It provides for establishment of priorities, approval of projects, and, in general, oversight over the PL-480 health activities. Although the 1974 language and the first Health Cooperation Agreement in 1975 provided for coordination broadly of all U.S. government health activities in Egypt, the Working Group has effectively operated only on PL-480 projects.

In its early years, the procedures of the Joint Working Group made it operate as a mechanism for approval of projects. A revision developed in 1978 made it possible to serve as a total decision body. However, with the pending cut-off of funds in 1981, relatively few new projects came to the Joint Working Group under its new procedural arrangements.

Should AID decide to invest funds in PL-480 type activities, careful study should be made of the Joint Working Group as a possible prototype for U.S.-Egyptian relations in a new program and for management of funds.

A Word on CDC and USDA Profiles

It was felt that a brief agency PL-480 profile would be of value in understanding the PL-480 effort as a whole. As will be noted, the standard format in which the agency profiles are presented is not used on CDC and USDA. In those instances, the agencies were provided with the agency interview worksheets and elected to complete them. Both agencies were very thorough and it was felt that it would be more useful to the contractor to convey as much information as possible than to provide a uniform format.

AGENCY PROFILE

U.S. Department of Agriculture (USDA)

1. History of agency P.L.-480 program.

A few projects were begun in the early 60's, shortly after the P.L.-480 program began. However, after the 1967 war between Egypt and Israel, cooperative activities with Egypt were halted. Active programs were permitted to continue until completion, but no new projects were begun until about 1973. The number of new grants peaked about 1977, when the average annual obligation for new grants ran between \$2 and 2.3 million equivalent. After FY 1981, no new projects were been begun. A very limited number have been extended using balances from terminated projects.

2. Profile of Agency P.L.-480 process.

A. How was subject of research identified?

A brochure describing the program with procedures for preparing a research proposal was circulated in the country. This brochure was prepared with input from the Agricultural Research Service and Forest Service as to priority areas for research.

B. By whom were projects initiated?

The majority of proposals were received unsolicited. In several cases U.S. scientists would communicate with counterparts in Egypt suggesting lines of work that would be of interest to the United States or an individual scientist. Projects generally were initiated by the Egyptian principal investigator.

C. Describe review system used in selection and funding of projects.

Proposals received by the European Regional Research Office were reviewed for completeness and were either returned for improvements or forwarded to the International Research Division headquarters in Washington, with comments concerning the principal investigator, the capability of the institution to conduct the proposed research, etc. The research proposal was forwarded by the headquarters office to the Agricultural Research Service's National Programs Staff or to the International Activities representative of the appropriate agency in USDA. The National Programs Staff evaluated the proposal with respect to value of the proposed work to U.S. agriculture, the technical merit of the proposal, and other criteria. A list of the criteria we now use is attached. The National Programs Staff also recommended a scientist who specialized in the subject-matter field to serve as sponsoring scientist, or later Cooperating Scientist. At the peak of the SFC Program, the approved proposals were ranked in priority order. As many as could be funded with that year's allocation of funds were approved for negotiatoin. Funds for the entire project were obligated at the beginning so that the principal investigator was assured of funds through completion of the project.

D. What was the approach to supplementing salaries?

There was a great deal of variation country-to-countryⁱⁿ honoraria or salary supplements paid to principal investigators and project staff. In the case of Egypt, an agreement was reached with the Ministry of Agriculture and ~~the~~ grantee institutions on a salary supplement equivalent to 25 percent of the "regular" salary for staff who worked on the project on deputation or part time from the institution or university. In 1977 or 1978 it became apparent that salary supplements were not being applied uniformly or fairly. Therefore, a fixed scale was agreed with the Ministry of Agriculture that would essentially equate to 25 percent salary supplement but would be uniform across all grants. In this scale a principal investigator would receive 1000 LE a year, a senior investigator 800 LE per year, a junior investigator 600 LE per year, etc. In a related area USDA required cost sharing of capital assets; that is, long-lasting equipment that cost more than \$200 equivalent. The usual cost sharing ratio was 75 percent of the cost borne by the grant and 25 percent by the grantee institution. Also, indirect costs charged the project by the grantee institution were limited to 10 percent of the recurring costs category.

E. Describe agency relationship with Egypt counterpart in selection of projects. Was joint approval required?

Proposals were supposed to reach USDA with Government of Egypt approval. As the program matured many replacement projects or new projects were developed between U.S. and Egyptian scientists who had worked together. Thus, many proposals received through official channels were familiar to USDA, which had received them informally before. The Egyptian counterparts did not participate in the selection of proposals for funding. The Egyptian Ministry of Agriculture could, of course, reject a proposal if it was not of interest to Egypt.

F. What were criteria for selection?

The basic criteria for selection are given above and also in the attachment. A proposal from an institution with a previous connection with a Cooperating Scientist and where well-qualified staff already were in place probably had a margin of preference over brand new proposals.

G. What was the selection/reject ratio?

Through most of the program the selection/rejection ratio was about 50 percent. However, at times of tight budget restraint, the rejection ratio got higher. Toward the end of our program in Egypt, as the program matured and the approval processes became more formal, the rejection ratio declined--partly because proposals had to be better to get through the Egyptian screening process.

H. Describe how the agency monitored research and controlled expenditures.

Investigators were required to send a fiscal report and technical progress report every 6 months. The research report was evaluated by the Cooperating Scientist. Based on his comments and approval, the subsequent payment was authorized. This payment usually was based on the principal investigator's estimate of requirements for the next 6 months, minus the amount remaining on hand. Under special circumstances the payment could be increased to cover the cost of special experiments, etc. At the end of the project, some funds were usually kept back pending receipt of the final report, in effect to "prompt" the delivery of the final report.

I. Was evaluation made of the final report?

The final report on each project was reviewed by the Cooperating Scientist, who then authorized release of the final report if there were no patent possibilities or questions. Copies of these evaluations were provided to your staff.

3. Agency assessment of P.L.-480 program

The program is of value to U.S. agriculture, largely because of aspects of the program that are not available in the United States. Examples are food and fiber genetic materials, access to insects and other biological control organisms.

A. Principal strengths and weaknesses of the agency program.

A strength of the program (now recognized by the AID Mission in Cairo) is the fact that research proposals are developed from the bottom up and the projects are conducted by the original proposers. This ensures keen interest on the part of the investigators and care in the conduct of the research projects. This is in contrast to many large programs that are imposed from the top down and are carried out with a certain lack of motivation on the part of the persons assigned to do the work.

A weakness may be the absence of any dollar funding to buy specialized equipment, secure foreign journals, etc. This has not been as serious a problem in Egypt as in most other countries with SFC programs.

B. Technical accomplishments

The technical accomplishments of the research have been many. The applicability of results often are quite widespread, benefitting not only the United States and Egypt, but many countries.

C. Other accomplishments (value to educational and training development in Egypt).

The Special Foreign Currency Program was not designed to provide training for Egyptian scientists. Rather, it was based on the premise that the institution conducting the research had the capacity to do a good job. A strong feature of the program, however, was the encouragement of post-graduate education, masters' degree thesis and PhD dissertations from research conducted in this program. From projects that terminated between March 1981 and March 1984, 70 M.S. degrees and 40 PhD's were received by persons working on USDA SFC projects. Several research associates also spent periods of from 3 months to a year in the laboratory of his/her Cooperating Scientists in the United States.

A number of principal investigators and senior staff of SFC projects are now prominent in the AID-supported agricultural research in Egypt. For example, Dr. Ahmad Montaz, Egyptian Director of the Egypt Major Cereals Improvement Project, is a former principal investigator. The present Minister of Supply also is a former principal investigator.

D. Need and value of continuing this type of research.

USDA has benefitted greatly from its association with Egyptian counterparts. In some areas, particularly those of animal production and health, the benefit to the United States is partly in helping monitor diseases that occur in Africa and spread to Egypt--such as rinderpest and Rift Valley fever. We are currently trying to develop an animal health project that would cover these subjects.

E. What changes would you recommend if P.L.-480 program were to be revived in some form?

1. I would suggest a dollar component to ~~some~~ ^{some} grants, on a selective basis
2. I would suggest that the Foreign Relations Department of the Ministry of Agriculture continue to administer the program as the Egyptian counterpart to the U.S. administering agency. At the beginning, individual projects were negotiated and signed with a variety of institutions. At the end of the program, nearly all grants (except those at Alexandria University) were administered through the Foreign Relations Department of the Ministry of Agriculture. Grant administration was handled on the Egyptian side quite well by the Foreign Relations Department.
3. USDA/OICD/International Research Division would be in a position to administer this sort of program for AID. Some of the terms of cooperation would have to be changed if the focus of the research was more on Egypt's developmental needs rather than on scientific collaboration for strictly mutual benefit.

AGENCY PROFILE

The Centers for Disease Control (CDC)

1. History of Agency PL-480 program (origin, objectives, number of projects, budgets)

See pages 2 and 3 ("Character of CDC PL-480 Activities") in the attached copy of Special Review CDC PL-480 Program - Attachment #1 - for comments on the origin and objectives of the CDC PL-480 program.

In Egypt, CDC sponsored a total of 23 projects (including active and completed), with their budgets totalling 8,702,767 Egyptian Pounds.

2. Profile of Agency PL-480 process:

How was subject of research identified?

In selecting the subject of their research, CDC scientists were guided by the following criteria:

- a. Significance of the research topic in relation to the HSMHA (Health Services and Mental Health Administration) Special Foreign Currency Program (SFCP) Domestic Goals - see Attachment #2. HSMHA used to be an Agency of the US Public Health Service. It included CDC as one of its organizational units.
- b. Significance of the research topic in relation to the public health priorities and concerns in Egypt.
- c. Programmatic needs of CDC and availability of scientific expertise in the area of the proposed research topic.

By whom were projects initiated?

In the majority of cases, the project proposals resulted from a joint initiative between the U.S. and Egyptian scientist(s). Frequently, the principal members of the collaborating team were already acquainted and decided to work on an idea that would be of mutual interest.

Describe review system used in selection and funding of projects

For the description of the system, see attached copy of "Developmental Procedure - SFCP Project/Attachment #3.

Describe Agency relationship with Egyptian counterparts in selection of projects. Was joint approval required?

Project proposals were developed in close collaboration with the Egyptian counterparts. The review process culminated by the selection and approval of projects by the US-Egypt Joint Working Group (JWG) on Health Cooperation which used to meet on an approximately annual basis. The joint approval for reviewed projects was always essential.

What were criteria for selection?

The projects were selected on the basis of their compliance with the US Public Health Service goals and with the public health priorities in Egypt. They also had to promote CDC mission, be responsive to the programmatic interests and comply with the policy and procedures governing the conduct of CDC scientific activities overseas (see Attachment # 1 and copy of "Policy Regarding Scientific and Program Approval of Project - Attachment #4).

What was selection/rejection ration?

CDC sponsored 23 projects. There were 22 project proposals that were not developed (this record is incomplete because many project proposals that were returned to OIH/PHS as being of no interest to CDC were not kept in CDC files.

Describe how Agency monitored research and controlled expenditures (what reports were required?

Request for annual or semi-annual fiscal and progress reports were incorporated in the Project Protocol and reinforced in the Reporting Requirements Subsequent to CDC Approval of Protocols Involving Human Subjects.

Was evaluation made of final report? (by whom and how used)

Final Report was reviewed by the Project Officer and distributed to the respective CDC Center, Institute and/or Program Office, International Health Program Office, and the Office of International Health, PHS. It was routed to those CDC scientists who were interested in scientific activities similar to those of the project. The report was also available on request to anyone interested.

3. Agency assessment of PL-480 program?

How would you describe the overall effectiveness of the PL-480 Program in your area?

The CDC sponsored SFCP PL-480 projects helped CDC scientists to enhance their knowledge of such diseases that are not prevalent in the United States (particularly some of the parasitic and tropical diseases). Without this program, the study of these diseases would be very limited or impossible because of the absence of appropriate target population samples. In Egypt, the PL-480 project activities heightened the national awareness of certain public health problems and a desire to control and prevent as many endemic diseases as possible.

Principal strengths and weaknesses of the Agency program:

The following are perceived as the principal strengths of the program:

- o It promotes international cooperation and understanding
- o It enhances protection of health of the American people by teaching other countries (Egypt) how to improve protection of the health of their people.

The following can be viewed as the weaknesses of the program:

- o Insufficient funding which often led to a hiatus in activities or direct discouragement of joint projects
- o Insufficient funding also resulted in the support of individual separate projects which were often limited in scope and duration and produced rather fragmentary results. When reviewing such project proposals, it was often difficult to fit these research topics into the overall research plans for CDC. The answer to such a problem would be a funding of sufficient magnitude to support long term projects of a significant scope.

Technical Accomplishments

- o The Bilharziasis Project (03-227-C) serves as an excellent example of very tangible technical accomplishments in the area of control and prevention of schistosomiasis in the Nile Delta region in Egypt. The project not only documented the levels of various kinds of infection (Schistosoma haematobium and/or S. mansoni) but also pointed out the feasibility of a public health program based on the treatment with a drug of proven efficacy (a 90% reduction in egg shedding up to 1 year after the treatment).
- o The Epidemiology Study Center (project No. 03-340-C) exemplifies a successful "selling" of the idea of the need for a central "clearinghouse" on demographic and epidemiologic data to be used as a baseline for the study, control and eventual prevention of various endemic diseases in Egypt.
- o The Laboratory Management Techniques in Health Care (project No. 03-337-C) promoted the understanding of the need for a quality laboratory support necessary for any successful public health program.

Other accomplishments (value to educational and training development in Egypt)

The CDC sponsored SFCP PL-480 projects provided ample opportunities for Egyptian scientists to further their post-graduate training and deepen their scientific knowledge. Joint publications and presentations at international scientific meetings also enhanced their experience.

Need and value of continuing this type of support

CDC would like to continue its support of activities under the US-Egypt Agreement on Cooperation in Science and Technology. The benefits of the SFOP PL-480 program far outweigh its shortcomings and are clearly supporting the promotion of further collaboration between the United States and Egypt.

What changes would you recommend if PL-480 program were to be revived in some form?

- o CDC would like to see a prospect of longer-term commitment of availability of funds which would assure the continuity of project activities.
- o CDC would incorporate the review process of future project proposals into the CDC new initiative and program review taking into consideration the opportunity cost of doing a particular project as compared with overall program needs and goals.

Prepared: International Health Program Office
Centers for Disease Control

March 12, 1984

Director, CDC

November 2, 1977

Director
Bureau of Tropical Diseases

Review and Recommendations on CDC PL-400 Program

Several months ago you requested Bill Griggs, Bob Hogan, and myself to review aspects of CDC's PL-400 Program as outlined in your memo of April 28, 1977. We have concluded our study and a report of our findings and recommendations is attached. The report was reviewed in draft with Mr. A. E. Hajjar prior to final draft.

As we understood your intent, our efforts were directed towards those specific facets of inquiry outlined in your memo and, therefore, the report is not a comprehensive analysis of the CDC PL-400 Program. We will be pleased to discuss it with you if you desire.

Robert L. Kaiser, M.D.
Medical Director

Enclosure

cc: Mr. Griggs
Mr. Hogan
✓ Mr. Hajjar

Special Review CDC PL-480 Program

In a memo of April 28, 1977, Dr. William Foege requested Dr. Robert Kaiser, Director, Bureau of Tropical Diseases, Mr. Billy Griggs, Deputy Director, Bureau of Health Education, and Mr. Robert Hogan, Chief, Special Projects Branch, Operations Division, Bureau of Smallpox Eradication, to undertake with Mr. A.C. Najjar, Director, Office of International Services a special review of the CDC PL-480 program with reference to the following questions:

1. Did the project answer the question or questions posed?
2. Was the question worth answering?
3. If worth answering, does it have immediate practical implications for health improvement?
4. How could we improve productivity of our PL-480 money?
5. Are there ways we could use PL-480 money for applied research, i.e., demonstration multiple antigen projects, etc.

An initial organizational meeting with Mr. Najjar was held to review the history of the CDC PL-480 program as well as current procedures for project development and management and to devise an approach to answering the questions posed. Mrs. Julia Campbell of the CDC Office of International Services was designated by Mr. Najjar to assist the team by securing the necessary project documents and information for review and was particularly helpful in the conduct of the study.

History of PL-480 Programs

A history of the PL-480 program is included in the appendix of this report. It is of interest to note that the objectives of the program, as defined in 1967, include; in addition to the biomedical research component which we commonly associate with the program, important aspects of public health practice and disease prevention. Of the 7 objectives, the following relate specifically to these aspects:

- (b) To help the host country establish and attain its national and community health goals.
- (c) To assist the host country in the demonstration and application of contemporary health practices for the prevention, control, and treatment of disease and the preservation of health.
- (d) To help create or strengthen institutional and organizational structures capable of dealing effectively with priority health problems, including the expansion or improvement of appropriate health facilities.

- (e), To assist in increasing the number and improving the quality of appropriate types of manpower involved in health research, delivery of health services, and in preparing additional health workers in the host country.
- (g) To assist the host country to acquire, assimilate, and disseminate the latest information regarding modern health practices, application of research developments, and advancements.

In addition, it is significant that the program priorities as defined in the Food for Peace Act include not only biomedical research but also nutrition, population, manpower, health services, disease prevention, and information exchange. These aspects of the program are important in considering CDC's future use of this resource.

Character of CDC PL-480 Activities

Since onset of the program at CDC in 1962 a total of approximately 110 projects representing the equivalent of over 31 million U.S. dollars have been initiated in eight countries. These include India, Yugoslavia, Arab Republic of Egypt (ARE), Poland, Israel, Morocco, Tunisia and Pakistan. It should be noted that nearly one third (34) of the 110 projects were acquired when NIOSH, Chronic Diseases and Nutrition became organizational parts of CDC. As of September 30, 1977, there were 38 active projects in four countries (ARE, India, Poland, and Yugoslavia) which are supported at the equivalent of approximately 13 million U.S. dollars. The remaining 72 projects are completed and inactive.

In order to further analyze these 110 projects, summary sheets from each were reviewed and the projects were broadly categorized as outlined in the attached table. It should be noted that the category "Disease Control" was defined by the team to include, as a minimum, disease control projects of a "pilot" nature which if extended would constitute full-scale operational programs. Hence, this definition excluded from that category a number of projects dealing with drug and vaccine evaluation which are usually associated with disease control programs. In most instances the objectives of these drug and vaccine evaluation projects related to efficacy testing of a vaccine or drug regimen. Using this strict definition the category "Disease Control" included only a single project, and this project concerned schistosomiasis control in Egypt. Although the category "Epidemiology" had the largest number of projects of any of the categories, the "Environmental/Occupational Health" category is underrepresented in that many of the projects included under toxicology and physiology are occupational health related.

As noted in the introduction there were several priority areas of activity established by law aside from biomedical research including disease prevention, nutrition, and information exchange, however, in reviewing the CDC projects individually or by category, it is apparent that a clear majority of these 110 projects constitute efforts in biomedical research.

The exceptions here include ten international conferences on subjects ranging from malaria research to microbiological specifications for food, one disease control project, one nutrition project and two disease surveillance projects. This in no way implies criticism of the preponderance of biomedical research efforts among the CDC projects but points to our lack of utilizing this source of support for projects in priority areas other than biomedical research.

Analysis of Project Objectives and Health Implications

In attempting to respond to the first three questions posed by Dr. Fooge, the team planned to review the final reports from all 72 completed projects. This was not possible as only 16 final reports were available. It should also be noted that 25 of 72 completed projects were inherited when NIOSH, Chronic Diseases and Nutrition became an organizational part of CDC. Thus the analysis is based on review of these 16 final reports and included international conference projects. A review of the distribution of categories included in these 16 final reports indicates general comparability to the total group but cannot be regarded as a representative sample. The criteria for judging the three parameters are clearly subjective but reflect a consensus of the team.

Review of 16 CDC PL-480 -
Final Project Reports

	<u>NO</u>	<u>YES</u>		
Was question clearly posed?	7	9		
If yes, was question answered?			<u>NO</u>	<u>YES</u>
			2	7
Do results have practical health improvement implications?	6	10		

In addition as a further measure of scientific productivity, an attempt was made to determine the frequency of scientific publications resulting from this program. A review of the records and a medline search revealed that less than 25 percent of the projects resulted in scientific publications. As nearly half of the total projects are still in an active phase, it is anticipated that this proportion will rise as these projects are completed.

Suggested Ways to Improve the Productivity of CDC PL-480 Funds

1. Proposed PL-480 projects should be evaluated on their merit and compete for funding in the same manner that regularly funded projects are selected or rejected. Each proposed project should be evaluated in relation to the overall organizational mission and objectives rather than simply on interest or relationship between two researchers.
2. Consider PL-480 funds as a way of working with CDC's international health priorities rather than as a special source of funds to be used primarily for biomedical research.
3. Pay closer attention to sound project management. As long as PL-480 projects are looked on as special activities done with "free" money, it is understandable that the same rigor is not applied to their management as to projects done with regular program funds. The same standards should be applied irrespective of the source of funding.
4. Expand PL-480 activity beyond the narrow range of research interests represented by past projects. Although the legislation includes priorities such as nutrition, population, and disease prevention, very few projects have been developed in these areas. Instead, there has been a concentration of activity in biomedical research. Work in these areas could continue while broadening activities beyond research and into other areas and programs.

Suggested Ways to Use PL-480 Money for Applied Research

1. Unless there are unwritten restrictions, there does not appear to be any reason why funds could not be used for applied and operational as well as "basic" research. The list of priority areas in the legislation suggests that this in fact was part of the intention of the law.
2. Use of funds for applied and operational research should also help to solve two chronic problems, the difficulty of identifying suitable host-country counterparts and the meshing of U.S. and host-country priorities. Developing country priorities are appropriately concentrated on testing and using existing knowledge and technology rather than developing basic research. Host-countries are more likely to be interested in projects with direct health benefits. Such use of PL-480 funds should also be more consistent with the Carter administration's expressed interest in health delivery and improvement.
3. Explore the feasibility of obtaining commitment for using local currency for personnel and local expenses for specific health projects in connection with "food for work" or other similar programs.

Categories and Cost of 110 CDC P1-480 Projects
1962 - 1977 *

<u>CATEGORY</u>	<u>NO. PROJECTS</u>	<u>PERCENT</u>	<u>DOLLARS</u>	<u>PERCENT</u>
Epidemiology	30	27.2	\$14,494,400	46.7
Environmental/ Occupational Health	27	24.5	4,902,400	15.8
Serology/Immunology	1	.9	34,200	.1
Vaccine Development Evaluation	4	3.6	3,909,960	12.6
Pathogenesis	9	8.2	1,860,734	6.0
Physiology	6	5.5	663,700	2.1
Toxicology	10	9.1	1,145,235	3.7
Disease Surveillance	2	1.8	481,235	1.6
Disease Control	1	.9	1,009,100	3.3
Drug Evaluation	7	6.4	995,000	3.2
International Conferences	10	9.1	891,800	2.9
Other**	3	2.7	657,471	2.1
	<u>110</u>		<u>\$31,045,175</u>	

* Includes 33 active & 72 completed projects as of Sept. 30, 1977

**Includes 1 nutrition project

History
Special International Research Program
Public Law 83-480
(As Amended)

The Scientific Activities Overseas (Special Foreign Currency) Program was initiated in the Public Health Service in 1961. In that year authority to carry out programs under Section 104 of P.L. 83-480, the Agriculture Trade Development and Assistance Act of 1954, was vested in the Secretary of the Department of Health, Education, and Welfare by the Bureau of the Budget. The Secretary subsequently redelegated program authority to the Surgeon General.

The general objective of the PHS Special Foreign Currency Program is to support health research and research-related activities overseas that are within the program interests of the DHEW health agencies and are of mutual interest to the host country, its institutions and its scientists. The appropriate provisions of the International Health Research Act of 1960 (P.L. 83-610) require that the support of foreign research and the development of health research potential overseas with "excess" currencies ultimately enhance the status of the health sciences in the United States. Thus, all research projects are collaborative in nature and must represent the mutual research interests of domestic and foreign investigators in order to be funded.

The Public Health Service received its first appropriation for the Program in 1961. During 1961 only the National Institutes of Health developed projects. By 1970 all of the health agencies (the National Institutes of Health, including the National Library of Medicine and Bureau of Health Manpower Education; Health Services and Mental Health Administration; Food and Drug Administration; and Environmental Health Service) were actively involved in the development of projects under the Program.

The Program is supported entirely by U. S. owned "excess" foreign currencies that have accrued through the sale of surplus U. S. agricultural commodities abroad. Each year the U.S. Treasury Department designates those countries in which the supply of U.S. owned currency exceeds the amount needed to meet normal U.S. needs for a period of about two years. At the present time there are eight "excess currency" countries. These countries are: Arab Republic of Egypt, Burma, Guinea, India, Morocco, Pakistan, Poland, and Yugoslavia.

The Scientific Activities Overseas Appropriation has two unique and essential fiscal provisions. These are: (1) funds remain available until used and are not subject to fiscal year restrictions, and (2) funds are in addition to other agency appropriations. These provisions provide the flexibility necessary to develop and maintain a successful foreign research program.

Under project agreements, funds in support of a specific work protocol are awarded to foreign institutions or government agencies in the country where the research is to be conducted and with which the foreign investigators are associated. Funds for projects are obligated for the full project period at the beginning of a project and are awarded on an annual basis. The average project is for a period of three years.

An effort is made to take advantage of a wide variety of important and unique research opportunities which exist in the participating countries. Such opportunities include a high incidence of disease or clinical materials; cultural and anthropological environments; trained scientific manpower; multi-lingual competence, health literature of contemporary and/or historical importance; outstanding research institutions; laboratory facilities; or special epidemiological or ecological conditions not found in the United States.

Program Objectives: Even though the program was initiated in 1961, it was several years before the potential value of the utilization of excess currencies for research activities abroad was fully and widely recognized by Department personnel. In 1967 a number of specific program objectives for the utilization of funds was clearly defined:

- (a) To obtain knowledge and/or experience that will aid in the achievement of the goals of the domestic programs of the Public Health Service.
- (b) To help the host country establish and attain its national and community health goals.
- (c) To assist the host country in the demonstration and application of contemporary health practices for the prevention, control, and treatment of disease and the preservation of health.
- (d) To help create or strengthen institutional and organizational structures capable of dealing effectively with priority health problems, including the expansion or improvement of appropriate health facilities.
- (e) To assist in increasing the number and improving the quality of appropriate types of manpower involved in health research, delivery of health services, and in preparing additional health workers in the host country.
- (f) To contribute and participate in the development of a sound and appropriate basic biomedical and health science research capability for the utilization of indigenous research opportunities, facilities, and manpower of mutual interest in the United States and the host country.

- (g) To assist the host country acquire, assimilate, and disseminate the latest information regarding modern health practices, application of research developments, and advancements.

It was determined that program priorities should reflect those health areas of importance to U. S. foreign policy. These were defined in the Food for Peace Act as follows: nutrition, population, manpower, health services, disease prevention, biomedical research, and information exchange.

HEALTH SERVICES AND MENTAL HEALTH ADMINISTRATION
SPECIAL FOREIGN CURRENCY PROGRAM FIVE-YEAR PLAN, FY 1973 - 1977

DOMESTIC GOALS

1. Programs to provide a better understanding of the effects of environmental factors on man's health (physical and mental) and safety;
2. Disease control (measles, rubella, venereal disease, trachoma, middle ear infections, tuberculosis, hospital infections, kidney diseases, etc.);
3. Correction and prevention of malnutrition, especially in children;
4. Reducing the complications of pregnancy and prematurity;
5. Improving the quality and availability of emergency care, ambulatory care, and family planning services;
6. Establishing standards for safe exposure limits to chemical, physical, and climatic hazards (noise, heat, vibration, lead, mercury, etc.);
7. Improving our health statistics in the U.S., including vital registration systems;
8. Improving the utilization of health resources and reducing the cost of medical care;
9. Early detection and treatment of congenital and acquired handicaps;
10. Child and family mental health;
11. Organization and delivery of rural health services; and
12. Improving the diagnostic competence of clinical and public health laboratories.

Developmental Procedure - SFCP Project

Procedure for the review, processing and monitoring an SFCP proposal and/or project including a new proposal funded, an amendment to existing project or monitoring an existing project:

1. CDC SFCP Coordinator receives an SFCP proposal submitted by a CDC staff member or an international scientist. SFCP Coordinator reviews proposal to determine relevancy to the mission, goals, and program priorities of CDC.
2. If not relevant to CDC interest, Coordinator returns proposal to OIH to determine if there is any other PHS Agency whose interest would be relevant. If not, it is returned through channels to the appropriate agency in the foreign country of origin with an explanation of why it will not be considered further by PHS.
3. If proposal is relevant, Coordinator determines appropriate Project Officer, if such has not been determined. Coordinator then assigns the proposal to a staff member of CDC who is knowledgeable in the scientific area covered in the proposal and who will serve as Chairman of an ad hoc committee to review proposal. Chairman will select three or more other CDC staff members to form the ad hoc review committee. Scientists outside CDC may be included on this committee if Chairman decided that competence outside of CDC is advisable for this review. SFCP Coordinator will serve as an ex-officio member of the ad hoc review committee.
4. Ad hoc review committee will make scientific review of the proposal in accordance with the general guidance contained in instructions regarding the protection of the individual as a research subject. On completion of scientific review of this committee, a report is submitted to the SFCP Coordinator recommending acceptance or rejection of the proposal with any revisions of the objectives and research plan. The ad hoc review committee will also certify if research plan meets the PHS requirements for human subject participation in a study or will state modifications and/or additions as required to meet the requirements. SFCP Coordinator will maintain liaison with Project Officer to assure continuing adherence to requirements.
5. If the ad hoc review committee recommends CDC sponsorship of the proposal, the Project Officer is notified accordingly, and with the assistance of the Office of the Coordinator, prepares the official versions of the project which is then reviewed for final approval and signature of appropriate officials (Center Director, Bureau Director and Coordinator). Coordinator's Office prepares obligating document (face sheet), payment authorization and cover airgram which are sent through the Office of International Health to the responsible foreign agency and Principal Investigator through the appropriate U.S. Embassy.
6. A copy of the approved research agreement with all the required signatures will be held in the official research agreement folder in the Office of the SFCP Coordinator. The original or a copy of all correspondence, interim research and fiscal reports, airgrams, telegrams and final reports are also maintained in the research agreement folder.

7. Additional payments are made on an annual basis after fiscal and progress reports are received in the Office of the Coordinator and forwarded to Project Officer for his review and approval.

8. Travel for the Project Officer to visit site of research are processed through the Office of the Coordinator to ensure funds are available for such travel.

9. Reports related to active projects and pending proposals are prepared each fiscal year and as requested by appropriate agencies.

10. A SFCEP chart listing all active and inactive projects is prepared each fiscal year.

Scientific Activities Overseas (P.L. 480)

Policy and Procedures, 69-6

Policy Regarding Scientific and Program Approval of Project

Before any project in the Special Foreign Currency Program (P.L.480) is funded, there must be evidence that it has received an objective scientific and program review. Determination of the steps in the review within each Agency may be made by the Agency, but when an agreement is forwarded to the Office of International Health, it must be accompanied by a summary endorsement from the Office of the Agency Administrator giving evidence of the factors which led to the recommendation.

In order to ensure that procedures are comparable for all operating units and Agencies of the Public Health Service, Agency endorsement of a project must be based upon adequate information regarding: 1) membership of the scientific review group, 2) scientific merit, 3) program merit, and 4) administrative considerations such as staff and dollar involvements. It is expected that the summary endorsement will reflect these four areas.

The following represent suggested procedures within the four areas which Agency Administrators may wish to submit as guidelines to their operating units.

1. Membership of Scientific and Program Review Committees

- a. Individuals outside the immediate program area sponsoring the project should be included.
- b. Non-government consultants may be included.
- c. Project Officer should not be included - a report from him may be considered.

2. Scientific Review - suggested areas of consideration may include:

- a. Adequacy of staff - training, experience, and competence of promise of the investigator or group of investigators.
- b. Adequacy of the experimental design or plan of the project.
- c. Importance of the proposed problem within the scientific area

- d. Availability of facilities
 - e. The reasonableness of the proposed budget in relation to the work proposed.
 - f. Overall evaluation of the unique features of the proposal, such as the nature of the talents, skills, biological or clinical materials, epidemiological opportunities or study population not available in the United States.
3. Program Review - suggested areas of consideration may include:
- a. Significance
 - (1) How is the information to be derived expected to advance the status of the operating unit's knowledge in the related program area?
 - (2) In what respect is the project likely to advance significantly the status of health sciences in the United States?
 - (3) In what respect will the project contribute to national and international health priorities?
 - (4) In what respect will the project help the host country to establish and attain its national and community health goals?
 - b. Priority - what is the relative program priority of the project?
 - c. Contribution of host country resources to the project.
4. Administrative Considerations
- a. Impact upon staff time

Can the demands of the project be accommodated without interference with other staff responsibilities of equal or higher priority?
 - b. Dollar costs

To what extent will dollar costs be incurred, directly or indirectly? What provisions will be made for such needs?

c. Supervision

Can assurance be given that an appropriation level of scientific and technical surveillance will be provided for the PL-480 project?

AGENCY PROFILE

Environmental Protection Agency (EPA)

1. HISTORY

EPA's program in Egypt started about 1970. The earliest projects were transferred from HEW which up to then had responsibilities for environmental health research. The justification for the program was primarily to supplement domestic research activities in selected priority areas. Most of the projects related to water quality and pesticide residues.

2. MAGNITUDE OF THE PROGRAM

Twelve projects - \$9,000,000

3. GENERAL GUIDELINES AND CRITERIA

EPA scientists took an active part in identifying projects and Egyptian scientists and encouraging submission of proposals.

4. PROPOSAL REVIEW AND SELECTION

Review of proposals was done internally by EPA scientists and laboratory directors. Final decision on funding was made by EPA's Office of Research and Development.

5. BINATIONAL REVIEW

No formal arrangement with an Egyptian government organization existed. Projects approval were negotiated on an ad-hoc basis.

6. PROJECT MONITORING

EPA required annual fiscal and technical reports which were reviewed by designated project officer.

7. GENERAL COMMENTS

EPA feels that the program in Egypt was worthwhile and cost effective. Good use was made of special environmental conditions in Egypt. Research contributed mainly to increase awareness of environmental hazards and improve the technical skills needed for control. The main weakness appeared to be the scarcity of technically qualified people in Egypt and poor research management. Major accomplishments were studies performed on the Aswan Dam, the river Nile and the establishment of a computer center for environmental data. EPA does not foresee any further involvement chiefly because EPA scientists may no longer be available for projects abroad.

AGENCY PROFILE

Fish & Wildlife Service (FWS)

1. HISTORY

The Endangered Species Act (1973) changed FWS to determine the status of endangered species world-wide and gave it the authorization to engage in international activities on their protection and conservation. The availability of excess foreign currency in Egypt enabled FWS to start a program there.

2. MAGNITUDE OF PROGRAM

Three projects - U.S. \$500,000

3. GENERAL GUIDELINES AND CRITERIA

Project had to conform to the legislation identified in (1) above. FWS drafted a proposal and submitted it to the Ministry of Agriculture for approval.

4. PROPOSAL REVIEW AND SELECTION

See (3) above; since FWS originated proposal no further review was necessary.

5. BINATIONAL REVIEW

See (3) above.

6. PROJECT MONITORING

FWS project officer received annual fiscal and technical report and visited the project periodically.

7. GENERAL COMMENTS

FWS was not engaged in a research program. Its main objective was to provide training and information on wildlife management and to assist the Egyptian authorities in strengthening their capabilities in this area. The

program was moderately successful given the lack of organization and trained personnel in Egypt. FWS would like to continue this collaboration but believes that it would require the presence of a full-time U.S. advisor in Egypt to be effective.

HEALTH PROFILE

Food and Drug Administration

1. HISTORY

The FDA PL-480 program in Egypt began after 1974. The content was essentially technical assistance and training.

2. MAGNITUDE OF PROGRAM

In all, FDA has had five or six projects, including those which presented some 20 training courses in Egypt; at present two projects are considered active by FDA.

3. GENERAL GUIDELINES AND CRITERIA

Although adhering to the domestic benefit justification, in fact the FDA projects are directed at improving Egyptian capacity to deal with drugs and pharmaceutical products in a modern manner. In the process export of U.S. drugs is facilitated. A considerable emphasis is placed on training and equipping facilities in Egypt.

4. PROPOSAL REVIEW AND SELECTION

Selection is intramural and responsibility for execution is intramural.

5. BINATIONAL REVIEW

Since 1975, binational review has been through the Joint Working Group mechanism. See HRSA profile.

6. PROJECT MONITORING

The principal responsibility for monitoring and review resides with the project officer.

7. GENERAL COMMENTS

Like HRSA, FDA has been activist in performance and management and has directed its pharmaceutical activity to institution and capacity building in Egypt. Its activities produce early and tangible results and have benefitted from AID supplemental funding for training and other expenses. FDA has also placed emphasis on broadly based symposia and found them to be of great value in stimulating interest in their projects and in promoting linkages within the Egyptian community.

AGENCY PROFILE

Health Resources and Services Administration (HRSA)

1. HISTORY

HRSA is the product of several reorganizations over the past decade but its predecessors were engaged in the PL-480 projects by the mid-1960s. As is evident by the small sample of projects in this study and the list of 15 projects still active on page , HRSA projects, reflecting its domestic mission, are concerned with the delivery of health services.

2. MAGNITUDE OF PROGRAM

A total magnitude is not available. At present there are 15 projects in active status.

3. GENERAL GUIDELINES AND CRITERIA

HRSA, unlike NIH is not a research oriented agency. Activist in character, it has tended to put its PL-480 resources into health delivery systems in Egypt. A considerable premium is placed on training. The justification of the Egyptian activities is not a matter of great philosophical concern and in terms of the domestic mission is somewhat thin.

4. PROPOSAL REVIEW AND SELECTION

Selection was intramural as was, with some exceptions, the assignment of responsibility.

5. BINATIONAL REVIEW

Since 1975, binational review has been through the Joint Working Group mechanism. (See statement on HHS in Agency Profile Introductory Remarks.)

6. PROJECT MONITORING

The principal responsibility for monitoring and review resides with the project officer.

7. GENERAL COMMENTS

The HRSA program emphasized institution and capacity building, through extensive training programs and support in the design and implementation of specific delivery services. AID funding was an important feature, providing ambulances in quantity, equipment and funds for updating emergency rooms, and mobile communication capability. It is our impression that HRSA management of projects tended to be activist and concerned. In our view, HRSA would have little trouble focussing its efforts to AID targets and strike us as an excellent resource for AID in its health programs in Egypt.

CURRENT HPSA PL-480 PROJECTS

1. **Oral Media in Rural Communities/Access**
 - Gather data on the prevalence - incidence of Oral Media in children in rural Egypt.
2. **A Study of a Hospital-Based Model for the Delivery of Hearing and Speech Services to Communities**
 - Develop a hospital model for the delivery of audiology and speech services to the community for infants, preschool and school children with hearing impairments.
3. **Assess and Improve Rural Health Care**
 - Assess the effectiveness of rural health care systems, identify relative strengths and weaknesses and formulate alternative solutions for improvement.
4. **Development, Implementation and Evaluation of Emergency Medical Services**
 - Develop, implement and evaluate an Emergency Medical Services (EMS) system in Egypt.
5. **Newborn Care Project**
 - Develop a national system for care of newborn infants at all levels.
6. **Evaluation of Health Technical Institutes**
 - Review content and delivery methods employed in training of medical laboratory technicians, sanitation technicians, and medical records/statistical technicians.
7. **Health Resources Information Unit**
 - Support of national health resources planning and health policy development efforts at different levels within the health sectors.
8. **Medical Resources Equipment Repair and Maintenance**
 - Design, establish and operate a pilot repair and maintenance program for one Government.
9. **A Visiting U. S.-Egypt Scientific Exchange Program**
 - Provides for a minimum of 20 health consultants to train in the U. S. annually over a 10 year period.
10. **Faculty/Student Exchange Between the University of North Carolina and University of Alexandria Egypt.**
 - Professional collaboration and student/faculty exchange in medical education.
11. **U. S./Egypt Faculty/Student Exchange Program Between University of Tennessee and University of Tanta**
 - Professional collaboration and student/faculty exchange in medical education.
12. **Medical Education and Health Services in Suez Canal Area, Boston University/Suez Canal University**
 - Carry out a project to facilitate development of a new medical facility at the Suez Canal University and development of a new curriculum for physicians and allied health manpower training.
13. **Teach Egyptian Elementary School Children Basic Health Maintenance Skills**
 - Aims at developing a supplement to health education curriculum for use in Egyptian elementary schools based on a foundation of education, living and self-reliance.
14. **Clinicomic Center**
 - Establish a viable engineering support infrastructure; conduct research and demonstration studies; provide education and training opportunities; disseminate information.
15. **Administrative Support for Egypt MOH Joint Working Group on Health Cooperation (JWCHE) Activities**
 - Provide funds for support of four local positions in the Office of the Undersecretary of State and JWCHE activities, MOH Egypt.

AGENCY PROFILE

National Bureau of Standards

1. HISTORY

NBS was a relative late starter because of bureaucratic problems with its parent Department. The stimulus to participate arose out of its participation in the sub-commission on Science and Technology established by the 1974 intergovernment agreement.

2. MAGNITUDE OF PROGRAM

NBS's program has been relatively small. Eight projects valued at \$653,263 were undertaken in the life of the program, only one of which is currently considered active.

3. GENERAL GUIDELINES AND CRITERIA

NBS is quite insistent that it will only undertake international activities that are in the interests of its mission, and they have such a justification for each of the Egyptian PL-480 projects. At the same time their projects more often succeed in institution and capacity building in Egypt than in the serious acquisition of additional information to meet the needs of NBS. Standards of performance at NBS are very high. These are reflected in its approach to the PL-480 projects.

4. PROPOSAL REVIEW AND SELECTION

Proposals were invited from the Egyptian side. They were reviewed and selections made intramurally by the several NBS divisions.

5. BINATIONAL REVIEW

No institutional mechanism is used. Each project is negotiated with the individual Egyptian Principal Investigator.

6. PROJECT MONITORING

Performance is monitored by the NBS designated project officer.

7. GENERAL COMMENT

NBS project officers pay close attention to their projects as does the NBS office of International Affairs. Interest is high in the program, among other reasons, because of the NBS interest in promoting world wide use of standards. Several NBS projects are included in the list of S&T projects submitted by NSF for interim funding by AID.

AGENCY PROFILE

National Institutes of Health

1. HISTORY

NIH was the first of the Public Health Service agencies to enter the PL-480 program which it did in 1961. The original concept was that the PL-480 activities should be a direct extension of the intramural research programs, and for the first several years, the program was entirely intramural. The need to avoid excessive staff time led in 1964 to extramural activity. The expansion of activity after 1974 was primarily extramural.

2. MAGNITUDE OF PROGRAM

Over the years, PL-480 funds have supported over 185 individual projects at a cost of approximately \$15,000,000.

3. GENERAL GUIDELINES AND CRITERIA

NIH has been the most insistent of the health agencies that their PL-480 projects are for the support of domestic mission and not to provide technical assistance or support of foreign policy and in all, it has sought to apply that policy. This approach has been slightly modified over the years, to accommodate to the enlarging role of Egyptian health authorities and the HHS-MOH decision to give priority to applied research.

4. PROPOSAL REVIEW AND SELECTION

In development of proposals, NIH dealt primarily with Egyptian University researchers. Intramural projects are subject to review in customary administrative channels with final approval resting in the office

of the Director, NIH. The standard peer review structure and procedures were used on extramural projects. In this system proposals are ranked and the funds available determines the cut-off. PL-480 projects were considered separately from those to be financed by dollars but the procedures were the same.

5. BINATIONAL REVIEW

With the establishment of the Joint Working Group in 1975, its proposals were subjected to the same binational review that applied to all projects in the health area. (See statement on HHS in Agency Profile Introductory Remarks.)

6. PROJECT MONITORING

NIH relied upon the project officer, be he intra or extramural to monitor and evaluate projects. Funds were released upon the recommendation of the project officer that progress reports were satisfactory. No formal evaluation was made of final reports.

7. GENERAL COMMENTS

The NIH program was large and active. Its content and character reflected the pre-eminent status of NIH in basic bio-medical research. More than in most other agencies, Egyptian activity was valued because Egypt was the site of diseases of interest not available in the United States and unusual opportunities for research existed there. At NIH

health research is recognized to be an international activity and the thesis that disease respects no boundaries is part of the very fabric of the institution. Because of its reputation NIH attracted the top echelon of Egyptian researchers. Consequently, the research performance, while not on the U.S. level, was generally high.

The Fogarty Center, now headed by the most recent past director of Namru 3, is emphatically positive about the value to NIH and to Egypt of the PL-480 work. Attention is called not only to the scientific contributions which have been produced, but to the moral and tangible support that has been provided to the Egyptian health research community. Furthermore, all of the activity has been identified by Egyptians as important to the welfare of Egypt.

AGENCY PROFILE

National Institute for Handicapped Research (NIHR)

U.S. Department of Education

1. HISTORY

NIHR and its predecessor agency were formerly part of the Department of Health, Education and Welfare (HEW). The first PL-480 projects in Egypt started in 1965 as part of a broader HEW program. Activities were justified in terms of needs to exchange information and personnel in Handicapped Research and included a significant contribution in developing facilities, personnel, and know-how in Egypt.

2. MAGNITUDE OF PROGRAM

About 30 projects - Estim. Total: U.S. \$5-7 million.

3. GENERAL GUIDELINES AND CRITERIA

NIHR emphasized activities in the following areas: Blindness, Deafness, Cardiovascular Disorders, Rehabilitation Engineering, Mental Disorders. Projects, although coordinated by NIHR, usually involved U.S. consultants from academic and private (non-profit) institutions.

4. PROPOSAL REVIEW AND SELECTION

An external peer review system was used in evaluating proposals. Frequently, on successful proposals the reviewers participated later on as project consultants.

5. BINATIONAL REVIEW

NIHR maintained a very close relationship with the Egyptian Ministry of Social Affairs. Priorities and project selection were determined by mutual agreement. Attempts to include handicapped research under the U.S./Egypt Health Agreement did not succeed.

6. PROJECT MONITORING

NIHR requires annual fiscal and technical reports which are evaluated both by staff and external consultants.

7. GENERAL COMMENTS

The NIHR program put strong emphasis on exchanges of personnel and on assistance in developing facilities to serve the handicapped in Egypt. Education, training and evaluation were the major activities which received strong endorsement from the Ministry of Social Affairs as well as from U.S. researchers and consultants. NIHR would like to continue these activities that have built-up a significant level of exchanges and cooperation but lacks the resources to do so.

AGENCY PROFILE

National Science Foundation (NSF)

1. HISTORY

NSF involvement in PL-480 programs in Egypt goes back to a program of scientific translations in the 1960's. NSF was given a central role to support this program and coordinate all translation activities of other U.S. government agencies. A program to support scientific research and related activities started only in 1972.

2. MAGNITUDE OF PROGRAM

About 100 projects -- \$16 million in LE supplemented by about \$2 million in NSF dollar funds.

3. GENERAL GUIDELINES AND CRITERIA

NSF considered unsolicited proposals in all areas eligible for support under its domestic research grant program. Project had to be of high scientific merit, provide benefits to both countries and involve active collaboration between U.S. and Egyptian scientists.

4. PROPOSAL REVIEW AND SELECTION

Proposals had to be submitted jointly by Egyptian and U.S. scientists. They were subjected to external peer review, although evaluation criteria varied slightly from those used for domestic research programs.

5. BINATIONAL REVIEW

NSF maintained a close relationship with the Egyptian Academy for Scientific Research and Technology (ASRT). In most instances ASRT concurrence was sought prior to the initiation of an NSF-sponsored project.

In 1983 this relationship was formalized by a Memorandum of Understanding. (Attached)

6. PROJECT MONITORING.

NSF required annual fiscal and technical reports which were evaluated by staff. Final reports did not receive an evaluation but NSF expects that projects will result in publications.

7. GENERAL COMMENTS

The NSF PL-480 programs differ from those of most other agencies by the fact that NSF is strictly a funding agency which does not maintain in-house scientific facilities. Therefore, most of the grants awarded by NSF are to academic institutions. This is reflected in NSF's international as well as domestic activities. Thus virtually all projects supported in Egypt under PL-480 programs involved U.S. academic scientists as collaborators who actively participated in the research project. In some instances NSF provided additional dollar funds to the PL-480 projects to cover the cost of activities performed in the U.S. The overall impression of the NSF program in Egypt is one of broad scope. It included projects which primarily supported research by U.S. scientists in Egypt (geology), projects which furnished major equipment and salary support to build up a research facility in Egypt (remote sensing center), and projects in basic science which involved close collaboration and exchange of information between leading scientists of both countries (biochemistry).

NSF is presently proposing a number of S&T projects to AID for continued funding. These projects have been selected on the basis of their contribution to Egyptian S&T development needs.

MEMORANDUM OF UNDERSTANDING

ON SCIENTIFIC AND TECHNOLOGICAL COOPERATION

BETWEEN

NATIONAL SCIENCE FOUNDATION

AND

THE ACADEMY OF SCIENTIFIC RESEARCH AND TECHNOLOGY

ARTICLE I

THE NATIONAL SCIENCE FOUNDATION OF THE UNITED STATES OF AMERICA (HEREINAFTER REFERRED TO AS NSF) AND THE ACADEMY OF SCIENTIFIC RESEARCH AND TECHNOLOGY OF THE ARAB REPUBLIC OF EGYPT (HEREINAFTER REFERRED TO AS ASRT), HEREBY REAFFIRM THEIR MUTUAL DESIRE TO COLLABORATE IN DEVELOPING A PROGRAM OF SCIENTIFIC AND TECHNICAL COOPERATION FOR THE EXCHANGE OF IDEAS, INFORMATION, SKILLS AND TECHNIQUES, ON PROBLEMS OF MUTUAL INTEREST, TO WORK TOGETHER, AND UTILIZE SPECIAL SCIENTIFIC FACILITIES AVAILABLE TO BOTH AGENCIES IN THEIR RESPECTIVE COUNTRIES, PURSUANT AND SUBJECT TO THE AGREEMENT RELATING TO COOPERATION IN THE AREAS OF SCIENCE AND TECHNOLOGY BETWEEN THEIR RESPECTIVE GOVERNMENT, SIGNED IN CAIRO, JANUARY 11, 1981.

TO THE EXTENT THAT THE TWO AGENCIES MAY AGREE, THIS COOPERATION WILL INCLUDE:

1. COOPERATIVE PROJECTS OF RESEARCH AND EDUCATION IN SCIENCE AND TECHNOLOGY.
2. FOREIGN VISITS AND ATTENDANCE AT INTERNATIONAL MEETINGS.
3. COOPERATION IN THE HOLDING OF SEMINARS AND WORKSHOPS ON SCIENTIFIC AND TECHNICAL SUBJECTS OF MUTUAL INTEREST.

4. ARRANGEMENT FOR THE COLLECTION, EXCHANGE AND DISSEMINATION OF SCIENTIFIC DATA AND INFORMATION (LATEST AND UNCLASSIFIED) AND TRANSLATION OF RECENT SCIENTIFIC PAPERS WRITTEN IN LANGUAGES OTHER THAN ENGLISH.

ARTICLE II

EACH AGENCY SHALL BEAR THE COST, IN ACCORDANCE WITH ITS OWN FINANCIAL AND BUDGETARY PROCESSES AND SUBJECT TO THE AVAILABILITY OF FUNDS, OF DISCHARGING ITS RESPONSIBILITIES UNDER THIS MEMORANDUM OF UNDERSTANDING.

ARTICLE III

EACH AGENCY SHALL FACILITATE, TO THE EXTENT FEASIBLE AND PERMITTED BY NATIONAL LAW, THROUGH COOPERATION WITH THE APPROPRIATE COMPETENT AUTHORITIES THE GRANTING OF VISAS AND OTHER FORMS OF OFFICIAL PERMISSION, FOR ENTRY TO AND EXIT FROM ITS TERRITORY OF PERSONNEL AND EQUIPMENT OF THE OTHER COUNTRY REQUIRED FOR PROJECTS UNDER THIS MEMORANDUM OF UNDERSTANDING.

ARTICLE IV

EXCEPT AS PROVIDED BELOW IN ARTICLE V, SCIENTIFIC AND TECHNICAL INFORMATION DERIVED FROM A COOPERATIVE ACTIVITY UNDER THIS MEMORANDUM OF UNDERSTANDING SHALL BE MADE AVAILABLE TO THE WORLD'S SCIENTIFIC COMMUNITY THROUGH CUSTOMARY CHANNELS AND IN ACCORDANCE WITH NORMAL SCIENTIFIC PROCEDURES.

ARTICLE V

IF ANY SCIENTIFIC OR TECHNICAL RESULTS DERIVED FROM A COOPERATIVE ACTIVITY UNDER THIS MEMORANDUM OF UNDERSTANDING ARE THE SUBJECT OF A PATENT OR PATENT APPLICATION, EACH PARTY SHALL HOLD ALL THE RIGHTS TO ALL INVENTIONS CLAIMED HEREUNDER IN ITS OWN TERRITORY. RIGHTS TO SUCH INVENTIONS IN THIRD COUNTRIES SHALL BE DETERMINED BY A SEPARATE AGREEMENT TO BE NEGOTIATED BY THE PARTIES.

ARTICLE VI

THE TWO AGENCIES SHALL, FROM TIME TO TIME, JOINTLY REVIEW THE PROGRESS OF COOPERATION UNDER THIS MEMORANDUM OF UNDERSTANDING.

ARTICLE VII

THIS MEMORANDUM OF UNDERSTANDING SHALL ENTER INTO FORCE UPON SIGNATURE AND SHALL REMAIN IN FORCE FOR FIVE YEARS, UNLESS TERMINATED EARLIER BY EITHER PARTY UPON SIX MONTHS WRITTEN NOTICE TO THE OTHER PARTY. IT MAY BE MODIFIED OR EXTENDED BY MUTUAL AGREEMENT OF THE PARTIES. IN THE EVENT OF TERMINATION OF THE MEMORANDUM, ARRANGEMENTS WILL BE MADE FOR COMPLETION OF ACTIVITIES ALREADY UNDERWAY PURSUANT THERETO.

ARTICLE VIII

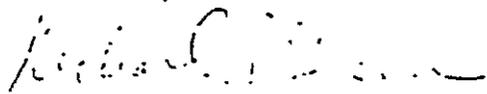
THIS MEMORANDUM OF UNDERSTANDING SHALL BE IMPLEMENTED IN A MANNER CONSISTENT WITH THE LAWS OF THE GOVERNMENT OF ARAB REPUBLIC OF EGYPT AND THE UNITED STATES OF AMERICA.

IN WITNESS WHEREOF, THE RESPECTIVE REPRESENTATIVES, DULY AUTHORIZED FOR THE PURPOSE, HAVE SIGNED THE PRESENT MEMORANDUM OF UNDERSTANDING ON SCIENTIFIC AND TECHNICAL COOPERATION.

DONE AT CAIRO, IN DUPLICATE THIS 15TH DAY OF MARCH, 1983.

FOR THE U.S. NATIONAL
SCIENCE FOUNDATION

FOR THE EGYPTIAN
ACADEMY OF SCIENTIFIC
RESEARCH AND TECHNOLOGY



RICHARD J. GREEN
ASSISTANT DIRECTOR
DIRECTORATE FOR SCIENTIFIC,
TECHNOLOGICAL, AND INTERNATIONAL
AFFAIR



IBRAHIM BADRAN
PRESIDENT

AGENCY PROFILE

Office of Naval Research (ONR)

1. HISTORY

The U.S. Navy's involvement in research in Egypt dates back to the establishment of a Naval Medical Research Unit, NAMRU-3 in 1946. Its purpose was to study infectious and parasitic diseases endemic to Egypt and the North African region to which U.S. troops operating in the region could be exposed. When Special Foreign Currency appropriations became available in the 1960s, ONR used these primarily to support medical research related to NAMRU-3 priorities at Egyptian universities and medical research labs. In addition a small number of projects were initiated which related to the Navy's interest in oceanography and marine pollution.

2. MAGNITUDE OF PROGRAM

About 40 projects - estimated amount: abt US \$15 million

3. GENERAL GUIDELINES AND CRITERIA

Research activities were closely coordinated with NAMRU-3 which helped to identify the problems to be investigated and the Egyptian scientist competent to perform the research. ONR staff then followed up in encouraging the submission of proposals.

4. PROPOSAL REVIEW AND SELECTION

ONR used existing panels for their domestic research programs to review the Egyptian proposals and make recommendations. ONR staff negotiated budgets. Grants were made directly to institutions and principal investigators.

5. BINATIONAL REVIEW

In the medical research area ONR was represented on the Joint Working Group for Health Sciences (JWGHS). Consequently approval of projects was coordinated not only with representatives of the Egyptian Ministry of Health but also with the U.S. Department of Health and Human Services.

6. PROJECT MONITORING

ONR required semiannual fiscal and technical reports. In addition, ONR project officer made annual visit to get a first hand review of all current projects.

7. GENERAL COMMENTS

The ONR program emphasized research on infectious diseases in the region, notably schistosomiasis. Many of their projects complemented or overlapped those sponsored by IIIH with whom results and reports were shared on a routine basis. The ONR projects officers did not actively participate in the research activities, but they often acted as catalyst to develop cooperation with Navy labs engaged in related research. Due to the continued presence of NAMRU-3 in Egypt it can be expected that cooperation with Egyptian medical researchers will continue in areas of priority interest to the U.S. Navy.

I. STATEMENT OF WORK

The Contractor will collect information by questionnaire and interview of U.S. sources, and review and analyze data on approximately 75-100 projects currently or previously funded under the Special Foreign Currency Research Program (PL-480).

Projects to be analyzed will be selected to provide a cross-sectional sample using the following attributes:

1. Status of project - continuing or completed
2. Sponsoring American agency - USDA, HHS, etc.
3. Area of research - Agriculture, Health, Environment, etc.
4. Extent of funding - budget size and long term vs. short term funding.

The Contractor will supply an original and one copy of a report which shall embody:

1. A summary sheet on individual projects providing the following data when available:
 - a) Project title
 - b) Proposing Egyptian and American institutions and departments
 - c) Egyptian and American Principal Investigators
 - d) Other Egyptian and American project personnel - number and degrees of individuals - graduate students trained and degrees received
 - e) Goals/objectives of project
 - f) Results of project - PI comments (Did project attain goals/objectives?)
 - g) Extent and types of collaboration of Egyptian and American Principal Investigators - before, during, after project funding
 - h) Relationship of research to Egyptian economic development, educational development, technical training, other (where known)
 - j) Results adapted to practical applications (where known)
 - k) Additional funding sources for project - before, during, after Special Foreign Currency Program funding
 - l) Availability of reports
 - m) Point of U.S. Contact - address, telephone number
2. Information from sponsoring agencies on overall effectiveness of PL-480 program in their area and need and value of continuing this type of support.
3. Summary evaluation and conclusions, supported by tabular data where appropriate, on the effectiveness of projects with respect to:
 - a) Accomplishment of research objectives
 - b) Value of overall project to educational and training development in Egypt
 - c) Enhancement of collaborative efforts between Egyptian and American scientists
 - d) Value of use of this type of funding mechanism to continue research support in the future.

II. DELIVERY

The Contractor shall submit the report and one copy to R. Mitchell,
HRDC/ST, USAID - Box 10 - FPO N.Y. 09527

In addition one copy shall be sent to C. Coleman, NE/TECH/HRST,
Agency for International Development, Washington, D.C. 20523.

III. ACCEPTANCE AND PAYMENT SCHEDULE

Upon acceptance of the report by HRDC/ST, the Contractor shall be
paid \$10,000.00

PL-480, Section 104 (b)(3)

(3) collect, collate, translate, abstract, and disseminate scientific and technological information and conduct research and support scientific activities overseas including programs and projects of scientific cooperation between the United States and other countries such as coordinated research against diseases common to all of mankind or unique to individual regions of the globe, and promote and support programs of medical and scientific research, cultural and educational development, family planning, health, nutrition, and sanitation;

AGREEMENT ON HEALTH COOPERATION
BETWEEN
THE DEPARTMENT OF HEALTH AND HUMAN SERVICES
OF THE
UNITED STATES OF AMERICA
AND THE
MINISTRY OF HEALTH
OF THE
ARAB REPUBLIC OF EGYPT

The Department of Health and Human Services of the United States of America and the Ministry of Health of the Arab Republic of Egypt,

Desiring to continue strengthening the friendly relations between the peoples of the United States of America and the Arab Republic of Egypt,

Wishing to continue the established cooperation in the field of health between the two countries, developed principally under the Agreement for Health Cooperation signed on October 23, 1973,

Have agreed as follows:

ARTICLE I

PURPOSE AND IMPLEMENTATION

1. The Department of Health and Human Services of the United States of America and the Ministry of Health of the Arab Republic of Egypt (hereinafter referred to as the Parties) shall continue the development and implementation of a cooperative health program. Cooperation under this Agreement shall be subject to the Parties' legal and administrative requirements and to the availability of funds.

2. The Parties shall utilize appropriate methods to accomplish the purposes of this Agreement, including cooperative research activities, exchange of information, sharing of technical experts and consultants, conferences, and training courses, in accordance with the provisions of this Agreement.

3. Joint activities, where possible, will be coordinated with, or be supportive of, the activities and goals of international health bodies, including the World Health Organization.

ARTICLE II

COORDINATION

1. The Joint Working Group on Health Cooperation, established pursuant to the Principles of Relations and Cooperation between the United States and the Arab Republic of Egypt signed on June 14, 1974, shall continue to be responsible for overseeing the development of cooperative health programs under the terms of this Agreement and for making recommendations, as appropriate, to the Parties.

2. The Joint Working Group shall be chaired by the Assistant Secretary for Health of the Department of Health and Human Services of the United States and the Minister of Health of the Arab Republic of Egypt. Members of the Working Group shall include the Coordinators from each side, designated in accordance with Article II, Paragraph 3, below; representatives designated by the American Ambassador to the Arab Republic of Egypt and the Egyptian Ambassador to the United States of America; a representative designated by the U.S. Agency for International Development; a representative designated by the U.S. Naval Medical Research and Development Command; and the U.S. and Egyptian Co-Chairmen of the several Joint Working Group Subcommittees.

3. The United States will designate a Deputy Assistant Secretary and the Arab Republic of Egypt will designate an Undersecretary of Health to serve as Coordinators for the purpose of this Agreement. The Coordinators will be responsible for follow-up, evaluation and further development of cooperation between meetings of the Joint Working Group, in accordance with other provisions of this Agreement.

4. A Steering Committee of the Joint Working Group will be established, consisting of approximately four or five representatives from each side as designated, respectively, by the Assistant Secretary for Health and the Minister of Health. The Assistant Secretary, the Minister and the Coordinator from each side will serve as permanent members of the Steering Committee. The other designated members of the Steering Committee will serve two year terms.

renewable at the pleasure of the Assistant Secretary or Minister. The representatives of the American and Egyptian Ambassadors and the Agency for International Development will serve as negotiating members of the Steering Committee.

With respect to funding which may be available for Health activities under U.S. Public Law 23-429, or which may become available from other non-AID sources, the Steering Committee of the Joint Working Group shall have the responsibility for:

- Establishing priorities for the funding of cooperative projects;
- Approving projects for funding, taking into account the recommendations of any appropriate subcommittees, and recognizing that priority consideration will be accorded to field or applied research that will help solve health problems of interest to both countries. Basic research will be considered to the extent that it supports this primary objective;
- Determining the timing of, and agendas for, meetings of the Joint Working Group.

It is recognized that any funding which becomes available and any activities which come into existence through the Joint Board on Science and Technology will be subject to the policies and procedures which govern the functioning of the Joint Board.

5. Subcommittees or other subgroups of the Joint Working Group on Health Cooperation may be established at the discretion

of the Steering Committee, with the approval of the Assistant Secretary and Minister.

6. The Parties may agree upon other means of financing cooperative health activities, subject to the Parties' legal and administrative requirements and to the availability of funds.

ARTICLE III

U.S. NAVAL MEDICAL RESEARCH UNIT

Both sides recognize the importance of continuing their support of the U.S. Naval Medical Research Unit in Cairo (NAVMU 131) and agree to coordinate the activities of the Joint Working Group to the extent feasible with the research projects of NAVMU 131.

ARTICLE IV

ENTRY INTO FORCE, DURATION, AND AMENDMENT

This Agreement shall enter into force upon signature and shall remain in force for five years from the date of signature unless terminated earlier by either party upon six months written notice to the other Party. It may be extended or amended by mutual agreement of the Parties in writing.

INSTITUTE
OF
MEDICINE

REPORT OF A STUDY

Health in Egypt:
Recommendations for
U.S. Assistance

January 1979

NATIONAL
ACADEMY of
SCIENCES
Washington, D.C.

CHAPTER 2

STRENGTHENING UNITED STATES PROGRAM ADMINISTRATION

There are four major sets of issues relating to United States administration of its health, population, and nutrition programs in Egypt that require attention: administration of technical assistance projects; planning for orderly transfer or phase-out of activities currently financed by Special Foreign Currency Program funds; administration of cooperative research projects; the future role and modus operandi of the United States-Egypt Joint Working Group on Medical Cooperation.

United States Administration of Technical Assistance Projects

The most important problems that face AID in Cairo in mounting an expanded program are lack of sufficient technical staff and the intolerably long period — usually two years or more — between the time a project is proposed and action takes place.

The Institute of Medicine committee was impressed that the small staff of the AID Office of Health and Population in Cairo has done an exemplary job to date in a very complex situation. It has had to break new ground in working with the Egyptian Ministry of Health to design projects properly and do this in a way that was sensitive to the prior relationships of the Ministry with both the Joint Working Group on Medical Cooperation and United States Naval Medical Research Unit #3 (NMRU-3). This successful experience means that less time and effort will be necessary in the future to develop projects with the Ministry, but a large amount of both technical and nontechnical administrative work will be required to handle an expanded program. The committee is aware of the constraints on increasing the size of the AID mission staff. However, the Egypt program is unique. It is one of the largest United States foreign assistance programs since the post-World War II Marshall Plan. The staff should be large enough to allow its members to make technical contributions to projects, as well as to perform necessary administrative tasks promptly and properly, so that quality, consistency, and continuity can be maintained in the program. The committee therefore recommends that the AID/Cairo Health and Population staff be enlarged by a sufficient number of experienced professionals to administer the programs recommended in Chapter 1.*

* The term "administer the programs" specifically refers to the administrative aspects of providing United States technical and fiscal support to Egyptian projects; management of technical assistance projects that AID supports, of course, is the responsibility of Egyptian personnel with whom AID personnel work in close cooperation.

Although use of consultants and contractors will be necessary and appropriate, the committee feels strongly that the programs require additional competent AID professionals if they are to be launched and managed properly.

As for the long lag time between project initiation and final approval, the committee enforces the following statement and recommendation recently made by another Institute of Medicine committee:

"AID is inhibited by its limited statutory authority. Every single project must be justified to Congress annually and AID has agreed not to make major modifications in approved projects without notifying the appropriate congressional committees. In addition, each project proposal has to provide documentation indicating compliance with numerous congressional requirements ranging from environmental issues to the role of women. This has forced AID into a cumbersome internal project development and approval process. The result is a minimum of 2 to 3 years start-up time for most projects.* These delays mean that AID, in comparison with other donors, is very slow and unresponsive to immediate needs. The committee therefore recommends that Congress should be asked to give up overseeing individual projects and instead to approve broad sectoral programs, thus providing longer term stability to AID projects and the flexibility necessary for streamlining the planning and implementation of field operations."**

The committee recognizes that Congress is unlikely to act quickly on this general recommendation. However, because of the size and importance of its program in Egypt, the committee recommends that AID make a special effort in Congress to obtain more flexible authority specifically for that program.

Special Foreign Currency Program

Prior to 1971, large amounts of United States agricultural commodities were sold for foreign currencies under Title I of Public Law 480. Under agreements negotiated with each government, much of the local currency was loaned back to the purchasing government, but a portion was made available to the United States government for its own use in the country. Interest on the loans also is made available for United States use in the countries. These funds have been used primarily to pay for local operating expenses of the United States missions in those countries. If the amount of local currency that accumulates is determined by the Treasury Department to be in excess of the amount required for the mission's operation, then the local currency is made available to United States government agencies for cooperative research activities within that country — that is, research projects having co-principal investigators from the United States and the collaborating country.

* "An Assessment of Development Assistance Strategies," (an interim report), The Brookings Institution, 1977, p. 20.

** Institute of Medicine, Review of the AID Health Strategy. National Academy of Sciences, September 1978, p. 26.

Under the Special Foreign Currency Program, the research must advance the health status of the people of the United States as well as the people in the collaborating country.

A substantial amount of United States-owned Egyptian currency was available for cooperative research projects when diplomatic relations were re-established in 1974. In the spring of 1978, over 200 projects -- more than 80 of which were health-related -- were being supported from this source and twelve federal agencies were involved in the health-related projects. Most of the activities recommended by the Joint Working Group on Medical Cooperation have been financed by Egyptian pounds from the Special Foreign Currency Program (SFCP). Over half the budget of NAMRU-3 in Fiscal Year 1977 -- \$700,000 of a total of \$1.2 million -- came from the SFCP.

The major issue is that the SFCP funds are limited and will no longer be available as a source of funding for cooperative research projects in the near future -- perhaps in the next year or two. The committee recommends that AID stimulate action immediately within the U.S. government to develop a plan for an orderly phase-out of the Special Foreign Currency Program. Participation by many agencies is required: those concerned primarily with the funds -- Office of Management and Budget, the Treasury and State Departments, and those concerned primarily with administering the projects -- AID, Department of Health, Education, and Welfare, Department of Defense, Department of Agriculture, National Science Foundation, the Environmental Protection Agency in the health, population, and nutrition areas, and other agencies in other fields. Consultation with the Egyptian government is essential and should be undertaken as soon as possible. The large number of projects initiated in Egypt since 1975 makes it imperative to develop a phase-out plan that will cause the least amount of disruption within the Egyptian research community.

As a corollary activity, the committee recommends that AID take the lead and cooperate with the six Department of Health, Education, and Welfare (DHEW) health agencies, the Office of Naval Research, NAMRU-3, the National Science Foundation, the Agricultural Research Service, and the Environmental Protection Agency in an in-depth review of all SFCP health, population, and nutrition projects to assess their relevance for possible future support in the cooperative research program recommended in Chapter 1. Collecting and analyzing the information will entail a substantial effort. A qualified ad hoc team probably will be required to do the job effectively and promptly.

Planning and Administration of Cooperative Research Projects

The committee believes that improvements are needed in the way the cooperative research program is planned, how projects are reviewed and monitored, the extent of involvement of American investigators, and coordination among the United States government agencies involved.

Cooperative research should have two objectives: to advance knowledge

that will facilitate progress toward solving important health, population, and nutrition problems in Egypt and to strengthen the capacity of the Egyptian scientific establishment to perform that research. Achieving the objective of supporting a balanced, high quality portfolio of research projects that addresses the most important problems requires that two functions be performed well: determining priorities and allocating funds among the array of problems that can be addressed, and screening and reviewing proposals for technical merit and for program relevance. Achieving the objective of strengthening Egyptian health research capabilities implies at a minimum active collaboration between senior American scientists and Egyptian scientists. In many cases it should imply much more — strengthening research training for young investigators, exchanges of scientists, and improvements of research facilities and equipment.

Special Foreign Currency Program cooperative health-related projects originate through the initiatives of Egyptian scientists, Americans in one of the federal agencies, or American scientists in universities. Each United States agency has its own procedures for processing project proposals and for monitoring the projects once they have been initiated. There is no mechanism for overall planning and programming. The Science Attache in the U.S. Embassy in Cairo does process all science research projects funded through the SFPC, but the authorizing legislation technically does not permit him to screen or monitor the projects. To date, all proposals for collaborative health-related research projects processed by the Science Attache have been funded.

In circumstances when availability of funds appears to be more than adequate in relationship to demand — as had been the case when cooperative research was resumed in 1975 with SFPC funds — evaluation of each project on its own merits may be reasonable. But when that situation no longer prevails — i.e., when project proposals exceed the availability of funds to support them — choices among meritorious projects are no longer avoidable. The issue is not whether to make such decisions; it is how to make them most rationally.

The committee recommends that responsibility for planning the AID-supported cooperative health, population, and nutrition research program be vested in a joint United States-Egyptian group. It would be logical to make this group a standing subcommittee of the Joint Advisory Group proposed in the next recommendation. The United States members should be appointed by the United States co-chairman of the Joint Advisory Group, with the approval of AID. The subcommittee would have the politically sensitive and technically complex task of specifying the problem categories on which research is to be supported and recommending how funds should be allocated among the problem categories. To do this effectively will require a carefully thought out set of criteria and procedures, access to the necessary information, and adequate review and monitoring of cooperative projects.

Effective research administration requires experienced professional staff with access to appropriate peer review mechanisms. In the United

States government, the Department of Health, Education, and Welfare (DHEW) health agencies have qualified staff, well-developed organizational arrangements for assessing the merit of research proposals and otherwise administering health-related research, and established linkages to the vast network of health research organizations and institutions in the United States and elsewhere in the world. The committee recommends that the AID mission arrange to have DHEW administer the mission's cooperative health-related research program in Egypt. Under the agreement, the DHEW should be responsible for establishing a unit in the AID mission in Cairo and for assigning experienced research administrators to work in it. The staff should be capable of administering projects in epidemiology and health statistics, in family planning, in nutrition research, in health services research and in biomedical research.

The staff would arrange for review of research proposals for program relevance and technical merit, monitor projects, provide assistance to Egyptian organizations in preparing sound proposals, assist American cooperating research institutions, and coordinate with other U.S. agencies — such as NAMRU-3 — that are conducting health-related research in Egypt. It could also serve as the core staff to the proposed Joint Advisory Group subcommittee on research. The DHEW unit should be responsible for preparing the annual cooperative research budget proposal for the AID mission. Once approved, the entire amount should be transferred to DHEW so that AID/Washington would not be required to participate in the project review and approval process. The DHEW unit in Cairo should be able to communicate directly with its DHEW backstopping agencies and with United States research institutions involved in cooperative research projects.

The committee notes that American co-principal investigators in most of the Special Foreign Currency Program cooperative projects have spent very little time in Egypt working with their Egyptian counterparts. The typical experience has been that the American co-principal investigator has visited Egypt once or twice a year for a period of a one or two weeks. From past experience, the most successful collaborative research has involved American scientists living in the overseas country and working collaboratively with the resident scientists. All cooperative research projects may not require the American scientist to live in Egypt for the life of the project, but most will require more than occasional short visits. The committee recommends that one of the criteria used to evaluate proposals for collaborative research be the amount of time the American co-principal investigator proposes to spend in active collaborative work with his Egyptian counterpart.

Finally, the committee believes that the NAMRU-3 program, which has been operating effectively for 30 years, should be coordinated more closely with other United States health programs. Three specific suggestions are offered: (1) NAMRU-3 should be represented on the proposed Joint Advisory Group research subcommittee; (2) the NAMRU-3 library should be made as accessible as possible to Egyptian health scientists and health professional students; and (3) NAMRU-3 should provide research training to Egyptian students and postdoctoral investigators.

Good coordination among investigators working on similar or related projects would be facilitated by having NAMRU-3 represented on the proposed Joint Advisory Group research subcommittee. This arrangement should be supplemented by as much informal interaction as is necessary to assure good, continuing communication among investigators.

NAMRU-3 is now building a new library. The old library was used by many Egyptian health scientists, medical students, and other health professions students. Current issues of American and European scientific journals, books, monographs, etc. are not readily available in Egypt. NAMRU-3 could increase its contribution to the health research and education enterprise in Egypt by making the new library more accessible to Egyptian faculty, researchers, and students than currently is planned. The committee is sensitive to the legitimate need for effective security measures at the NAMRU-3 installation. Its recommendation is simple but vital: NAMRU-3 should develop physical arrangements and procedures that facilitate to the greatest extent possible non-insulting, easy access of Egyptian nationals to the library. Imaginative design of physical arrangements could contribute significantly to this objective, without compromising essential security requirements.

Finally, research training for Egyptians once again should be incorporated in the NAMRU-3 program. Obviously, this would require additional funds. The committee recognizes that the feasibility of this suggestion will depend on NAMRU-3's success in persuading the Department of the Navy to increase its budget to cover the additional costs. The committee is convinced this would be a sound investment that would contribute to the success of NAMRU-3's primary mission and its continued acceptance within Egypt.

U.S.-Egypt Joint Working Group on Medical Cooperation

The Joint Working Group was established in 1975 before the AID Mission was reopened. Its purpose was to provide a mechanism for the United States to help Egypt "develop and strengthen its medical research, treatment, and training facilities." The Minister of Health of Egypt and the Assistant Secretary for Health of DHEW are co-chairmen. United States participation on the Joint Working Group has no specific statutory authority. The Joint Working Group must depend upon existing United States agencies and their legislative authorities and appropriations to carry out its program initiatives. Thus, there is an inherent lack of symmetry in the positions and authority of the two co-chairmen: The Minister of Health has the authority to commit the Egyptian government on a project; the Assistant Secretary of Health, although the functional equivalent of the minister in the United States government and the highest ranking health professional in the United States government, usually cannot commit the United States government. He can make recommendations, but action usually depends on the decisions of others over whom he has little or no direct authority. Most of the projects recommended by the Joint Working Group were funded primarily from the Special Foreign Currency Program, and the United States implementing agencies were in DHEW.

The Joint Working Group serves an important purpose: it is a high level

forum for conducting substantive discussions of health problems and programs and for reaching agreement on activities that should be emphasized in United States-supported programs. It also has served to involve the technical health agencies of the DHEW in Egyptian health programs to an important extent. A program review mechanism comparable to the Joint Working Group, and involving DHEW in such a central way, does not exist in any other developing country.

The Joint Working Group's future role should reflect the two major changes in circumstances that have occurred since 1975: the establishment of an AID mission with a rapidly growing AID program in health, nutrition, and family planning; and the projected end of Special Foreign Currency Program funds for financing Joint Working Group projects. In the near future, AID dollar funds will be the only major source of financing for projects recommended by the Joint Working Group.

The committee believes that with some important modifications in orientation, the Joint Working Group can continue to play an important and constructive role. Its essential function should be to provide a mechanism for bringing together United States health scientists and professionals with their counterparts in Egypt to advise on program and project priorities for health and health-related activities to be supported by the United States government in Egypt. Therefore, the committee recommends that the Joint Working Group on Medical Cooperation be reconstituted as the Joint Advisory Group on Health Cooperation. On the United States side, membership should include six to eight nongovernment health professionals with outstanding qualifications from academic institutions and foundations. They should be appointed for fixed terms. Their professional backgrounds should be varied so that they can provide authoritative advice in all the fields represented in United States-supported programs in Egypt, including population, nutrition, public health, primary care, hospital care, manpower development, and research. The United States government members should consist of the Assistant Secretary for Health, the Director of the Office of International Health in DHEW, and two senior health program officials from AID — one from the AID mission in Cairo and one from AID in Washington. The United States nongovernment members should be appointed by the United States co-chairman with the approval of AID.

The modus operandi of the Joint Advisory Group, the staff support required, and the number, composition, and functions of standing subcommittees, or the extent of reliance on ad hoc working groups, should be worked out by a joint United States-Egyptian task force after the general terms of reference of a reconstituted joint group have been determined. The committee believes that a Joint Advisory Group secretariat, or some other arrangement to provide strong and continuing staff support, is essential and should be provided for in the agreement. The absence of such a mechanism has handicapped the Joint Working Group.

THE PL480 PROGRAM IN EGYPT
FROM THE EGYPTIAN PERSPECTIVE

by
Max Hellmann
and
Herman Pollack,
Consultants

April 1984

This study was prepared for the United States Agency for International
Development, Cairo.

PL480 PROGRAM: EGYPTIAN VIEW

Preface

The study of the PL480 program in Egypt submitted to USAID/Cairo on March 31, 1984 was based exclusively on information obtained in the United States from the agencies who had participated in the PL480 program in Egypt and from about 80 U.S. collaborating scientists or project officers.

It became clear that an evaluation of the PL480 program in Egypt would not be complete without some input from Egyptian scientists and administrators who were the recipients of these grants. Consequently, it was agreed that one of the authors of the study, Max Hellmann, should do a brief follow-up study in Egypt through interviews with a selected number of Egyptian scientists. This report presents a summary of the interviews conducted in Egypt during April 1-13, 1984.

The author wishes to express his deep appreciation to Mrs. Jean Fales and Dr. Omar Al-Arini of the U.S. Embassy/Cairo Science Office for their assistance in scheduling interviews under difficult and trying circumstances. Without their help it would have been impossible to complete the study in the short time available.

Max Hellmann
Consultant

INTRODUCTION

All interviews were conducted orally but they followed the general outline of the sample questionnaire similar to the one used in the interviews of U.S. scientists (see Appendices I and II).

Altogether, 18 scientists were interviewed (see Appendix III) and their views represented approximately 22 projects, as several scientists interviewed had been principal investigators on more than one PL480-funded project. The majority of the projects discussed were either nearing completion or had recently been terminated. However, at least three of the projects in the field of health services and disease control were still in their early stages. By sector, the projects examined were distributed as follows:

Agriculture	6
Health	13
Energy	1
Environment	1
Industry	1

The U.S. sponsoring agencies were:

Dept. of Agriculture	6
National Inst. of Health	4
Health Resources and Services Administration	1
Food and Drug Administration	1
Center for Disease Control	4
Environmental Protection Agency	1
National Science Foundation	2
National Bureau of Standards	1

In preparation for the interviews with Egyptian investigators a good deal of thought and effort by the two investigators responsible for the study of the PL480 program from the U.S. perspective went into the selection of a representative sample from the 82 projects examined in their report. Eventually 35 projects were selected, or about 40% of the total sample, in full recognition of the fact that within the short time frame available only about one half of those could be scheduled for interviews. Selection criteria included a representative distribution by major field (e.g., agriculture, health, etc.), by U.S. funding agency, by indications of the level of accomplishment of the project, and by classification of the project as a research or technical assistance activity.

The projects actually examined in Egypt, which included 60% of the 35 identified for further review, did not entirely reflect the desired mix in two respects. Whereas in the report on the U.S. perspective of the program (see part 1, page 3) it is stated that about 75% of the projects examined could be classified as research and 25% as primarily technical assistance, in the sample herewith examined, projects with a strong technical assistance and institution building component account for about 40%. Furthermore, although a large portion of the 82 projects were at universities, the ones discussed in Egypt were weighted toward governmental institutions. However, it should be noted that in most cases university students and professors participated in the projects, and many Masters' and PhD theses have resulted from the research supported by these grants.

In the section that follows an attempt will be made to summarize the responses received from the Egyptian principal investigators on the following topics:

Contribution to Egyptian Development Objectives (including training, upgrading of facilities, institution building)

Collaboration with U.S. scientists

Grant management by U.S. agencies

Funding from other sources (present and future)

Overall impression of the PL 480 program in Egypt

Implications for the future

Contribution to Egyptian Development Objectives

There was virtual unanimity among all those questioned that their projects are related to Egyptian development problems. The question of whether the U.S. agencies emphasized topics of priority interest to the U.S.

was answered in the negative. Only one person interviewed, an official at the Ministry of Health, expressed the view that in the early years of the PL480 program, the U.S. health agencies supported many research projects of questionable merit and of low priority to Egypt. He added, however, that with the establishment of the Joint Working Group on Health Cooperation (JWGHC) this deficiency was corrected and since then, only projects of priority interest to Egypt have been selected. The answers became, however, less conclusive when asked what use had been made of their research results or their studies in the implementation of action programs. In a few cases in agriculture, large AID-funded projects such as the Major Cereal Improvement Project (MCIP) have made use of results and personnel previously supported by USDA. In other cases, especially in the health services area, requests are pending for interim support by AID. In most cases any follow-up will probably depend on local ministry support which may not be forthcoming.

In virtually all projects examined with the Egyptian principal investigators, there was a strong component of training and professional development for younger scientists. One would expect this for projects performed by academic institutions but even those done in government laboratories usually involved the participation of graduate students and faculty members from several universities. A large number of MA and PhD dissertations resulted from PL480 funded projects, in some cases as many as ten per project.

Acquisition of laboratory equipment, where appropriate, was a frequent contribution to the modernization of existing laboratory facilities and this was gratefully acknowledged. A few of the more enterprising scientists used PL 480 funds to establish research centers (e.g. the Epidemiology Center).

Egyptian-U.S. Scientist Collaboration

This factor, which was a prerequisite in all PL480 projects was examined in the report on the U.S. perspective of the program (see Part I, pp. 13-15), with indications that the intensity of the collaboration varied depending on the policy of the U.S. sponsoring agency. The Egyptian scientists queried on this subject in most cases expressed their appreciation for the input and assistance of the U.S. collaborators, but the overall impression gained was that Egyptians viewed these as their projects and felt that the role of the U.S. collaborator or project officer was primarily that of expeditor and liaison person rather than that of scientist/colleague. Of course, there were exceptions where the U.S. scientist played a very active part in the design of the project and made frequent visits to review the progress and suggest changes and modifications in the work plan.

A clear distinction appeared between projects funded by the US Dept. of Agriculture and those funded by other agencies. Due to the rather restrictive travel policy within USDA the U.S. collaborators acted mainly as project monitors and reviewers and generally were discouraged from visiting the Egyptian projects more than once. Consequently, personal contact between the U.S. and Egyptian scientists was rather limited and communication by mail was not a satisfactory substitute. Thus it came as no surprise when the Egyptian grantees in USDA-sponsored projects were less enthusiastic about the extent of collaboration in their projects. On the other hand, in most projects sponsored by the health agencies, EPA, NBS and NSF, a high level of interaction and participation by U.S. scientists in the planning and project implementation was noted, including training activities both in Egypt and the U.S. There is little doubt that active and frequent participation of U.S. scientists is welcome and strongly desired and contributes to the quality of the project.

Egyptian View of Grant Management by U.S. Agencies

All Egyptian scientists interviewed praised the grant management of the U.S. agencies and indicated that they had no serious difficulties except for occasional delays in the disbursement of funds. They singled out for commendation the flexibility of the U.S. agencies in allowing reallocation of funds among different budget categories and no-cost extensions. In fact, most of the projects still listed as "active" are operating on no-cost extensions. It seems that this gives "official" status to the project and allows the principal investigator to continue the work and keep his staff together.

A few of the investigators contrasted the U.S. agency approach to grant management with that of their own ministries which, in their view, were much more bureaucratic and restrictive. A few, who also had been involved in AID-funded projects, expressed a clear preference for the approach and practices of the U.S. PL480 agencies.

Funding from other sources (present and future):

Concurrent funding from other external sources are identified in two early cases. One of these, the Desert Ecosystem Project, received support from the Ford Foundation for consultants, and some equipment. The other project, Drug Reference Standards, received some equipment from the pharmaceutical industry (Pfizer). Three of the investigators interviewed are currently receiving some AID funding through the Major Cereal Improvement Project and a standardization project although this support is only peripherally related to their PL 480 sponsored research project. Several of the health services

projects have been recommended by the Joint Working Group for interim funding by AID but it appeared that no final decisions had been made.

As for future prospects for research support, most investigators had no clear answers. One enterprising scientist used a herd of cattle he had purchased with PL 480 funds for research on heat tolerance to produce income by selling the milk and by selling selected bulls to the Ministry of Agriculture for breeding purposes. The income generated is used to provide incentive pay and thus keep his research team together to continue his investigation. Another scientist received funds from his Ministry to produce vaccine against hoof and mouth disease. Some of these funds are directed to supporting the continuation of his research. A few scientists are seeking support from other countries or international organizations, but in general there seems to be a noticeable lack of initiative and grantsmanship to search for future support.

Overall Impression of the PL-480 Program

The PL-480 program received high marks from all those questioned. They felt that it had made a real contribution to Egyptian science, particularly with respect to training the future generation of Egyptian scientists. They also expressed a strong preference for the individual project grant system used by PL-480 as opposed to big assistance projects funded through Egyptian Government ministries. This came as no surprise, as scientists all over the world prefer the individual grant system which allows them more freedom in the conduct of their research. Probably the most significant factor resulting in the strong endorsement of the PL-480 program by Egyptian scientist was the rather liberal policy of most U.S. agencies which allowed the payment of supplementary salaries to senior and junior scientists and also to technicians. This enabled many of them to pursue their scientific careers in Egypt and reduced the temptation to seek more lucrative employment abroad.

Implications for the Future

In response to questions regarding the future of research project support, no satisfactory answers were obtained. Most expressed hope for continued U.S. support with a preference for the PL480-type small grant support. A few were looking for other foreign sources. Most of them were not optimistic about their own government filling the void and allowing continuation of their research effort. This latter perception was obtained not only from university scientists but even from scientists working in government laboratories.

Not surprisingly, the major concern frequently expressed related to the low salaries of scientists and technicians. Under PL480 projects the project

leaders were able to offer "incentive pay" to keep their teams together. In the absence of this, the exodus of scientists, engineers and technicians to the Arab Gulf states is likely to accelerate, leaving many research teams understaffed or staffed with less qualified personnel.

One question asked related to the type of support that would be most useful to the scientists in the pursuit of their research and studies. Although most indicated a preference for general project support with emphasis on salary supplements for their staff, about one quarter expressed a preference for obtaining the services of U.S. experts and training, preferably in Egypt.

Conclusions

There is no doubt that nearly 20 years of PL480 funding of scientific research in Egypt has had a significant impact on the scientific community and research institutions in Egypt. Without having comparable data available, it is difficult to assess the magnitude of this impact but it is probably a correct assumption that any other support for research in Egypt from local as well as foreign sources was only a small fraction of the U.S. support through PL480. Although this certainly had a positive effect on the development of the Egyptian S&T infrastructure, it also created an unhealthy dependency on U.S. funding. It appears that even though the phase-out of PL480 funding started nearly five years ago, delays in the development a coherent S&T plan and policy and in defining the U.S. role in S&T assistance have left these Egyptian scientists facing an uncertain future.

The broad scope of the PL-480 program and the varied interests of the sponsoring U.S. agencies make a thorough and detailed evaluation of the impact of this program on Egyptian development very difficult. The interviews conducted with recipients of PL-480 awards strongly confirmed the earlier indication that a significant portion of all projects were concerned primarily with scientific problems relevant to Egypt. The results of many of these investigations could and should have applications towards the solution of major national development problems. However, without a much more extensive evaluation it is not possible to trace the linkage between the research performed and the use that was made of the results. In a few cases (e.g. crop research, health services) clear evidence was obtained that the research results were or are in the process of being implemented. But no such evidence is available for the majority of projects with potential practical uses.

The use of PL-480 funds for scientific research in Egypt has generated a wealth of data and information that is probably not fully utilized due to lack of effective coordination and dissemination of information. The results of the studies conducted in Washington and in Egypt would indicate that there is a major resource of scientific information and competent scientific manpower available which should be utilized in the planning and implementation of future S & T activities in Egypt.

APPENDIX I

QUESTIONNAIRE FOR EGYPTIAN PROJECT INVESTIGATORS

1. How did the project get started?

Did you know the U.S. cooperating scientist before?

2. Scientific justification for the project:

3. Results and accomplishments:

a. Did the project contribute to Egyptian development objectives?

b. Do results have potential practical applications?

c. Did you train young scientists?
(where from, how many, any theses?)

d. Did the project contribute to upgrading your laboratory?
(any problems with the purchase of equipment?)

e. Any publications? in international journals?

f. Did you have any problems with the grant management by the
U.S. sponsoring agency?

g. Other comments

4. Collaboration with U.S. scientists:

a. How did it work?

b. Did it include others beyond the project officer or
collaborating scientist?

c. How many trips (visits) in both directions?
(when you went to the U.S. who covered your expenses there?)

d. Do you expect to maintain contacts with the U.S. scientists?
How?

5. Did the project receive financial support from other sources?

6. Now that PL480 funds are no longer available will you be able
to continue your research?

7. General comments on PL480 program: its value to Egypt, its
shortcomings

8. Future: If you had your choice, what form of assistance from the U.S. would be most useful to you (salaries, equipment, travel, books and journals, fellowships, etc.)

Would you prefer support directly from a U.S. agency or indirectly through the Egyptian government.

APPENDIX II

QUESTIONNAIRE FOR U.S. COOPERATING SCIENTISTS

Agency _____
Title _____

Project No. _____
Egyptian PI _____

1. How did this project get started and on whose initiative?
Did you know the Egyptian scientist before (professionally, personally?)
2. If information not available from agency files, ask for the respondent's understanding of the goals/objectives of the project
3.
 - a) In your view was this a successful project?
 - b) How would you assess the scientific quality of the project?
 - c) How would you describe its results?
 - d) Did it achieve its objective?
 - e) Do the results have practical applications?
 - f) Did the project contribute to Egyptian economic and other development objectives?
 - g) Did it contribute to the training and professional development of Egyptian scientists?
 - h) Do you know of publications and theses resulting from the project?
 - i) Did it contribute to the upgrading of Egyptian facilities?
 - j) Were any unusual problems encountered in the conduct of this project?
4. We believe it important to report as fully as we can on the extent and types of collaboration in the design and conduct of this project.
 - a) What was your personal primary role? Advisory / Project Monitor / Active Collaborator / Other?
 - b) How extensive was the communication between you and the Egyptian PI? What was the form of communication (mail, phone, visits)? What was the frequency of visits in both directions?
 - c) Please describe the collaboration between yourself and your associates and the Egyptian PI and his associates
 - d) As a result of this project did close ties develop between Egyptian and U.S. scientists? Yourself? Others?
 - e) Is it likely that these linkages will continue beyond the termination of the project?
 - f) If closer collaboration and ties had been considered desirable, what would have been necessary to bring that about?

5. Do you know of additional financial support from other sources (Egypt, other countries, other U.S. funds)?
6. If a final report was submitted did it receive any distribution? If a final report is yet to be submitted, what distribution do you anticipate making? Was any distribution made of interim progress reports? Is so, why?
7. PL 480 funds are no longer available. In light of your experience with this project and knowledge of the PL480 program in general, do you think a similar dollar supported grant program should take its place? Is so, what changes in operation of the program would you recommend?

APPENDIX III

LIST OF EGYPTIAN SCIENTISTS INTERVIEWED

<u>Name and Affiliation</u>	<u>Project Reference</u>
Dr. A.M. El Refai Dr. L.A. Sallam National Research Center, Cairo	USDA FG-EG 180 (ARS-60)
Dr. Phoebe Maguib Mina Microbiologist Natl Org. for Drug Con. & Research MOH, Cairo	FDA 03-657
Dr. T.H. Kamal Radiobiology Dept. Atomic Energy Establishment, Cairo	NSF INT-7522294
Dr. F.M. Ghoneim Nutrition Institute, MOH, Cairo	CDC-03-340Am-2
Dr. M.A. El-Alawy, Director Center for Field and Applied Research, MOH, Cairo	CDC 03-327, 03-340
Dr. Ali A.M. Moussa Virology Dept. Animal Health Dept., MOA, Cairo	USDA FG-EG.-167 (ARS-63)
Dr. Asa Gomaa, Director Field Crops Research Dept., MOA	USDA-FG-EG-161 (ARS-57)
Dr. S. Arafa American Univ. in Cairo	NSF-INT-81-09184
Dr. M.F. Abdel Rahim Plant Pathology Inst., MOA	USDA FG-EG-137 (ARS-17)
Dr. T. Abou Shoosha MOH, Cairo	HRSA-03-300
Dr. A. Khallaf Undersecretary (ret.), MOH	HRSA-03-506
Dr. Mohy E. Said Prof. of Ophthalmology Univ. of Alexandria	NIH 03-024 ERSA 03-101

Dr. Nemat Hashem
Ain Shams University
Dr. A. El Gamal
Undersecretary, MOH

NIH 03-007
NIH 03-057
USDA FG-EG-162 (ARS-44)
NIH 03-090
CDC 03-337

Dr. Fathi Amer
Professor of Ecology
Univ. of Alexandria

USDA EG-164 (ARS-40)

Dr. Mohammed Ayyad
Prof. of Ecology, Univ. Alexandria

EPA 3-541-2

Dr. Abdel Aziz
National Institute of Standards
NRC, Cairo

NBS-199

3. "SOCIOECONOMIC FACTORS IN SCIENCE AND TECHNOLOGY PROGRAMS,"

by Dr. Ibrahim A. Ragab

SOCIOECONOMIC FACTORS
IN SCIENCE AND TECHNOLOGY PROGRAMS

Prepared by
Ibrahim A. Ragab, Ph.D.

USAID/Cairo
Science and Technology Assessment
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SOCIOECONOMIC FACTORS
IN SCIENCE AND TECHNOLOGY PROGRAMS

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SOCIOECONOMIC FACTORS IN SCIENCE AND TECHNOLOGY PROGRAMS

I. INTRODUCTION

The ultimate justification for science and technology programs is their contribution to the achievement of development. Development, however, means much more than an isolated research finding, the invention of a new way to do something, or even the development of a model or a prototype. It also means the acceptance of change and the assimilation of the new idea or the new technology to be part of everyday behaviors sanctioned by local cultural patterns. Unfortunately, such social, cultural and economic factors receive little attention in the planning and implementation of science and technology programs. In most cases, they receive either some formal consideration only in passing, or are benignly neglected altogether.

When they are considered at all, the treatment of socioeconomic factors takes one of two forms. In some cases, a "social analysis" is added in one or two paragraphs to the project paper, stating that the intended project is thought to be useful to broad categories of the population. Normally such analysis is done by a foreigner or an expatriate with limited knowledge of current local conditions. Such experts usually have in mind a similar program which succeeded in the U.S.A. as a model around which they design projects for Egypt despite the vast cultural and social structural differences.

Sometimes socioeconomic factors are only considered when broader types of data are needed or when implementation requires such data upon which to base intervention. Even here, social research is often conducted as a peripheral activity. It is hardly done with serious input from social scientists or, for that matter, social interventionists (e.g., community development experts).

In both cases, social scientists are called upon on an ad hoc basis. Their involvement seems to result from second thoughts to help solve problems rather than to prevent them. They are seldom invited as full team members. Reasons for this are multiple. The exact role of the social scientist in the team is hardly understood by specialists in the natural sciences. Patterns of professional education and practice in Egypt hardly encourage interdisciplinary treatment of a subject or a problem. Even though there are beginnings for collaboration within the natural sciences, the inclusion of the social sciences is still lagging behind.

The social sciences are looked down upon because of their lack of exactness at levels approached by the natural sciences. Even when social scientists contribute important insights to problem-solving, the reaction of the natural scientist is one of "I could have contributed just as much myself!" There is a lack of appreciation of the types of understandings and awarenesses which the social scientist brings to bear upon a problem by virtue of a lifetime of sensitization to such socioeconomic factors. Only when the natural scientist faces real problems in human relations does he turn to the social scientist for advice. Often this comes too late and with strings

attached. The problem is defined and the task of the social scientist is decided upon in advance by the natural scientist!

Social scientists are also partially to blame for this state of affairs. They are rarely successful in interpreting their role to others in a way that helps others understand the specific contribution they make. This may, however, be traced back to the factors cited above. If they are seldom involved in the planning and implementation of science and technology programs, how can social scientists fully develop expertise in relating to other team members in an atmosphere of mutual understanding? Both parties have yet to understand that the developmental goals of science and technology programs cannot be achieved without collaboration of specialists in a truly interdisciplinary effort.

The purpose of this paper is to identify areas in which social scientific analysis is needed in science and technology program planning and implementation. Two such programs currently being implemented are examined to provide specific examples and suggestions for improvement. These projects are the University Linkages program and the More and Better Food component of the Applied Science and Technology program. This is done through a review of project documents, interviews with program administrators and beneficiaries, and field observations on site. However, because of the limited time available for the completion of the assignment, this should be seen as a preliminary type of report. Incomplete sampling renders generalization hazardous. Recommendations should be taken cautiously. It should also be kept in mind that this in no way represents any attempt at systematic evaluation of the sample projects.

II. THE FRAMEWORK

Social scientific analysis is warranted in looking into five areas of science and technology programs. These are: (a) value/interest analysis; (b) comparison of alternative program strategies and institutional arrangements; (c) specification of intended attitudinal and behavioral changes; (d) facilitating inter-sectoral communication; and (e) social impact analysis.

A. Value/Interest Analysis

This type of analysis is valuable to assess how competing values will affect determination of goals. Different value sets and different interest configurations are possible. When weighing these values and interests against the developmental goals, social scientists could play a vital role in sifting out differing positions and in the clarification of the values underpinning them. Taking these value positions for granted or ignoring the values implied lead to design problems, with costly results.

B. Comparison of Alternative Program Strategies and Institutional Arrangements

Once goals and values are selected, need arises to compare different program strategies and the selection among different institutional arrangements. This is attained through a systematic process of identification of possible consequences of each strategy or arrangement, comparison among them, and selection of the appropriate ones. This should help make the process of program design more rational by virtue of the social scientist's training which focuses on the interlocking cultural, social structural, organizational, and individual personality factors.

C. Specification of Necessary Attitudinal and Behavioral Changes

Some projects may be planned on the basis of sound value choices but often stumble because project activities are not based on a realistic appraisal of the attitudinal and behavioral changes needed for the achievement of project goals. This can be avoided when social scientists: (a) specify attitudes and behaviors necessary for sound implementation of the project; (b) identify the participants' present attitudinal and behavioral patterns; and (c) decide on the necessary changes that need to be made. Deliberate efforts directed at effecting these changes could be built into the project design. This avoids the tendency of some projects to wait until these behavioral gaps present themselves in terms of stubborn problems that plague the project before corrective measures are sought. This applies not only to attitudes and behaviors of beneficiaries and end users, but also to those of researchers and other participants.

D. Facilitating Inter-Sectoral, Inter-Party Communication

Most science and technology programs can achieve their developmental goals only if academicians, applied researchers, practitioners, and laymen have a modicum of communication and cooperation. Social scientists are trained to understand the different perceptions each party has of the other and to help facilitate communication and collaboration. They can help each party realize how others can contribute to the success of the joint venture. This should help prevent the natural tendency to blame others for not listening, not understanding, or not making the necessary adjustments in their established practices.

E. Social Impact Analysis

Measurement of the social impact of science and technology programs is another important area for which social science is needed. Other specialists are interested in tangible effects. The social scientist is especially interested in socioeconomic effects which make a difference in the quality of life experienced by the people. Such variables may, at times, be closer to the ultimate goals of such programs.

III. UNIVERSITY LINKAGES PROJECT

This is a rather straightforward and smoothly run project meant to engage Egyptian university faculty in solving developmental problems. Project funds provide badly needed opportunities for Egyptian faculty to conduct applied research. They also provide a chance for U.S. university faculty to join in that venture of research and development.

On the face of it, the interests of university faculty in both countries and the interests of the Egyptian people (in development) seem to be well served. However, one can hardly miss some lingering resentment on the part of some Egyptian faculty as to the role played by their American counterparts. They think that the research activities conducted under the project can be done without outside expertise (that happen to cost a sizeable portion of salary and travel funds). It is agreed that the acquisition of modern equipment represents a definite need, but an outside researcher does not necessarily have to come with it. Such attitudes could have been anticipated earlier. They could have been taken into consideration when the program was initially planned. The involvement of Egyptian social scientists as team members at that point could have saved the program lots of misunderstandings and misconceptions.

When it comes to program strategies and institutional arrangements, clarity of purpose becomes vital. If, for example, the overriding value of the project is one of research for development problem solving, then establishing institutional linkages with American universities becomes a secondary consideration. A better arrangement could have been the development of a pool of U.S. experts with some knowledge of Egyptian developmental problems who could serve as consultants to research projects. If, on the other hand, the overriding value was seen as one of exchange among Egyptian and U.S. university faculty for purposes that relate more to the realities of Congress' approval of foreign assistance, then the benefits should be weighed against the costs. This may or may not justify the present institutional arrangements.

On the other hand, it is well known that the program utilizes a grant-commission approach whereby faculty are invited to submit their proposals to the FRCU (Foreign Relations Coordination Unit). Once proposals are accepted, Egyptian principal investigators sign contracts and are expected to manage the grant on their own. In most cases, this is a completely new experience for them. If they had had previous experience in management in the Egyptian context, this became useless as the program introduces different concepts in grant management. This factor resulted in many difficulties and strained relations with FRCU staff. FRCU responded by issuing after-the-fact regulations to guarantee some uniformity. This in turn proved problematic to others. Had this been anticipated in the planning phase of the project, necessary training could have been built into the project to prepare grantees in this respect. Because this was not recognized beforehand; and because there is a clause in the project paper disallowing funds for training, the situation could not even be remedied systematically after the fact.

When we examine ongoing research projects,* we find that only 8 out of the 108 research projects deal with social factors in development. The end users of the rest of the projects are functional ministries. But research goals are formulated in developmental terms. This clearly means the inclusion, by necessity, of other parties, such as industries, educational institutions, and even ordinary citizens (such as farmers who are supposed to adopt new agricultural techniques). Although acceptance by these other parties of the newly developed technologies is a must for the achievement of the developmental goals, not enough attention is given by grantees to the issues involved in this area. Some principal investigators have indeed reported difficulties in dealing with such groups. The problem is exacerbated by the well-known credibility gap between academicians and practitioners. People in industry, for example, tended to think for a long time that university faculty are only good for basic, academic research that cannot be of direct use to industry. FRCU's approach to the problem is through insistence on the involvement of people from concerned ministries or industries to serve on different committees overseeing FRCU activity. This in some cases produced good results. Some companies have already requested FRCU to direct research to certain pressing industry needs. Seminars and other events are arranged so that such exchange occurs. However, this type of basically administrative involvement does not guarantee acceptance of research findings by the concerned ministry or industry. Many grantees interviewed felt that if their findings were not adopted, that was not their problem. They feel they have done industry a favor by conducting research for its own sake. Or at least they feel they have contributed something useful; that is, a good academic piece of research which should benefit the learning process for their students. This issue should have been systematically addressed through a social science capacity in FRCU.

Most of these research projects could have utilized a formula through which a real partnership between the university and the other concerned institutions (which are supposed to benefit from applied research findings) could be developed. The Executive Director of FRCU suggests that the ideal approach to the issue is to solicit research problems from such industries on which university faculties would work. This should avoid the tendency for some grantees to assume that the research project, in and of itself, is a good piece of research and therefore they do not have to go out of their way seeking adoption of such findings by relevant industries.

FRCU staff recognize the need for involvement of social scientists in many of the ongoing research projects. However, they argue that limits of funding for these mini-linkages would not allow such involvement. They point out that this could be achieved--and indeed is done--when it comes to the maxi-linkages. The only maxi-linkage currently being processed does have a social science component.

*Mostafa M. Kamel, et al., Ongoing Research Projects, FRCU Report, January 1983, and its Supplement.

IV. MORE AND BETTER FOOD

This activity represents only one component of a more inclusive project on "Applied Science and Technology." It is a research and development activity which focuses on field experimentation and field demonstration of new ways of cultivating crops, and even goes as far as attempting to effect lasting changes in farmers' practices and behaviors toward increasing food production. An attempt is made to replicate the project activities, in communities other than the initial two villages where the project originally started, to achieve some significant effect on food supplies in Egypt.

Participants, however, soon found that this was too ambitious a goal. In the words of one key project officer, ". . . Initially, we aimed at comprehensive, integrated development. However, when we studied our budget, personnel requirements and timing, we decided it was impossible to do that. That type of developmental effort was practically impossible under the project." So, it was decided that only a sectoral approach was possible; that is, to focus on agriculture rather than attempt socioeconomic development of the village as a whole. Instead of interdisciplinary team work, an individual-researcher approach was pursued.

Each scientist had to select an appropriate innovation in his specialization to work on with villagers. The selection of the level of technology to be utilized presented an initial difficulty. This was solved, according to another high ranking official, by "analyzing the technology to its component elements, and then synthesizing an appropriate technology adapted to fit local conditions." This has since been the thrust of the project: the selection of the safest possible innovation to be introduced to villagers to guarantee their acceptance of the innovation.

One of the earlier problems that researchers came to face was the difficulty the researchers found in dealing with farmers. Originally, I was told, the assumption was that if a scientist grew up in the countryside, he undoubtedly would find it easy not only to deal with farmers, but also to change them for the better. This proved to be grossly exaggerated. "I assure you that our scientists did not have any idea as to how to deal with village people," said the Chairman of the Steering Committee. "I consider it to be a big achievement of the project that now we have scientists who are seasoned in dealing with the villagers and in technology transfer. . . ." So, it seems that instead of realizing what social science could have done to help in this respect, scientists were left to learn through trial and error. It was difficult to assume that those scientists, used as they are to work only in their protected laboratories, would be able to indulge in the business of convincing a balking farmer to just try a new seed and the new ways of caring for it.

Another problem area was that of the baseline data survey. This was seen as important to provide some basis for intervention. An agricultural economist was invited to do the job. There seems to be some strong indication that there existed a gap in communication between the team of scientists and the economist who was invited to do the job. In consequence, a huge study was

conducted and the results were never used to guide project activities. There is still lingering frustration among participants with regard to this study. Participants in the project told me that the research data required costly computer processing and results were not forthcoming in time for intervention. So, the decision was made to start anyway. This echoes the point made earlier: a decision was made to ignore the more comprehensive approach in preference for one of individual subprojects in the field of agriculture. However, there was an awareness that any lasting change needs to be built on an understanding of the life patterns and cultivation methods of the villagers. The lesson learned the hard way, as I was told, was that "change depends on acceptance by the people and this depends on fitting with the pattern." Researchers had to do their own small-scale studies to assess the situation with regard to their specific areas of interest.

One more area for social science input is the generation of the model for replication. Through the project operations up to this point, it was noted that communities differ in their patterns of acceptance of innovation. It was found, for example, that farmers in new land villages (reclaimed areas) are more prone to accept change readily than those in older, more traditional communities. A model has to be developed so as to relate characteristics of communities to patterns of acceptance of innovation. This should constitute an important contribution to the processes of expansion and implementation.

When it comes to the end effect of the project, namely the degree to which farmers continue to practice the new methods they learned, we find that the results are mixed. In the village of Omar Makram (in the new land), there is some evidence that farmers exposed to the experiments continued using the new methods. Others in the village and in neighboring villages have requested the project services. Certain new chemical fertilizers and pesticides are now entered in the regular list of purchases in the local cooperative. However, in Kafr El-Khadra, the traditional village, the trend has been one of widespread regression to older seeds and older practices. One explanation given by project officers is that people in the new lands were selected from among those who volunteered to move to the new land thirty years ago. There is reason to believe they are risk-accepting types, whereas traditional village farmers are not. Another explanation is based on the degree of interest local government representatives show in the project. It is said that a representative of these local authorities from the new land area sits on the board of the project, whereas no representative is there at this point to represent the traditional governorate.

In any case, the issue of regression to old practices in the traditional village is deeply felt by participants in the project. Two key officers agreed that there was little planning ahead to ward off such a possibility. Everybody was excited about the idea that at long last scientists were leaving behind their laboratories and going in person to experiment with and demonstrate innovations to real people. They were not prepared for the task, as was mentioned before. Through trial and error they were able to convince some farmers to accept change. But nobody ever worried about what might come after that; i.e., whether change might become permanent or whether people would regress to old ways again after the free goods were no longer

available. The two officers agreed that agricultural extensionists and/or community development workers should have been involved before the hour of truth came.

In general, social science input in this project was minimal both in planning and implementation. Project officers may in discussions pay lip service to socioeconomic factors, but in practice the focus is exclusively technical. At one point, the Chairman of the Steering Committee of the project, talking about socioeconomic factors, said, "... agricultural extension is not preaching, but the provision of concrete services and technology transfer." The implication was clear: what agricultural extensionists do (or community development workers, for that matter), in fact, is not what they should do. They should quit talking and start doing things, which means an impatience with communication between people in favor of technical intervention.

Finally, it should be noted that project officers are proud that they had achieved as much with minimal funding. They feel they were self-dependent and patriotically motivated. They did not ask for foreign expertise because they felt only Egyptians could really understand their country's problems of underdevelopment. They feel they have been lifting themselves up with their own bootstraps. They have generated a team-work spirit which never existed before. They could make things happen in real life, thus staving off the stigma of a scientist busying himself for years studying a trivial problem that would not have any societal value.

V. SUMMARY AND CONCLUSION

It should be clear from the above that a gap really exists between the natural sciences and the social sciences in the planning and implementation of science and technology programs. This has led to problems and difficulties experienced by program officers and participants. However, this does not mean that natural scientists involved would readily see the connection. They would devise ad hoc solutions or try to learn through trial and error, thus wasting valuable human and financial resources.

It is recommended that socioeconomic factors receive more careful consideration in science and technology program planning and implementation. This consideration should be an ongoing activity that is built into these projects as a part and parcel of program design, execution, monitoring, and evaluation. This should replace the current practice of last-minute invitation which has proved to be self-defeating to both parties. Bringing in social scientists as full team members allows for effective participation toward more comprehensive attacks on problems which are not readily divisible according to specialization lines. This would also help toward better communication among the two disparate (hitherto broad) categories of scientists.

Social science can be effective in many areas. It could help through value/interest analysis to avoid grossly ignoring implied or latent types of values that continue to cause strain for years of the life of a project. It could help in selecting from differing institutional arrangements the ones that maximize the probability of achieving project goals. It could specify the behavioral and attitudinal changes that need to be effected so that the project could proceed to meet the expectations of significant parties to the project. It could further help achieve goals through facilitating inter-sectoral, inter-party communication and collaboration, thus avoiding the uncoordinated, disjointed ways of conducting some projects. Finally, social science could play a vital part in evaluation of projects so that socioeconomic factors are not lost to purely technical variables.

A final cautionary word. Although these lines are written by an applied social scientist, every effort has been made to avoid apparently self-serving or, for that matter, class-serving statements. However, it seems this is for others to judge. The schism dividing natural and social sciences is rather wide. It was not assumed throughout this paper that social scientists are not to blame. They have their share of responsibility. However, every effort has to be made toward more fruitful communication and collaboration for a difference in dealing with problems of underdevelopment.

4. SOURCES OF FUNDING FOR INITIATIVES IN THE S&T ASSESSMENT

Sources of Funding for Initiatives in the S&T Assessment

The team is not sufficiently expert in AID funding procedures in Egypt to identify accurately the appropriate funding approaches for implementation of our recommendations. Neither has it made a detailed attempt to do so. Nonetheless we feel that some consideration of the way things might be financed will clarify the linkages we believe should exist among Mission programs and among S&T activities.

First, we believe that a portion of funds in economic infrastructure, industry and private credit programs should be consciously used to build S&T capacity. These funds would normally be obligated as part of the major project. Table 1 suggests that, if 2% of these project funds were available for sector-related S&T, the amount would be in excess of \$50 million over the next five years.

Second, in social infrastructure and agriculture projects, strengthening S&T is a normal and accepted AID programming practice. In the renewal of the portfolio in these sectors, care will need to be directed (as always) to S&T and to the concepts put forward by this assessment. We do not, however, see the need for additional S&T funds over current budget levels.

We have made a number of suggestions for initiatives. Table II shows that most of these could be accommodated by some combination of:

- 1) thoughtful programming of CIP and participant training funds;
- 2) the Multi-Sector S&T Project; and
- 3) a quick request for funds from the special account.

Several additional possibilities are identified for Mission consideration for new project funds: If all of these were funded, they would require \$12 to 15 million per year, out of a total \$750 million annual AID program.

It is most important to realize the synergisms we propose the Mission seek. Thus university development would be accomplished by a combination of research funding, training, commodity imports, provision of scientific equipment and information, and participation in AID funded infrastructure projects—all coordinated to build selected institutions.

TABLE I

CDSS Planning Figures (Straight Line Projections)
\$ Millions

Year	<u>85</u>	<u>86</u>	<u>87</u>	<u>88</u>	<u>89</u>	<u>Total</u>	<u>2% of Infrastructure and Industry</u>
Economic Infrastructure							
Water and Sewerage	100.0	100.0	100.0	100.0	100.0	500.0	10.00
Energy	35.0	175.0	--	--	50.0	260.0	5.20
Telecomm.	50.0	50.0	25.0	100.0	25.0	250.0	5.00
Roads	50.0	80.0	80.0	80.0	50.0	340.0	6.80
Local Devel.	85.0	100.0	50.0	115.0	100.0	450.0	<u>9.00</u>
						Subtotal:	36.00
Social Infrastructure							
Population	--	10.0	10.0	10.0	10.0	40.0	
Health	--	2.5	10.0	10.0	10.0	32.5	
Education & Training	10.0	12.5	15.0	15.0	10.0	62.5	
Production							
Agriculture	40.0	40.0	56.5	30.0	20.0	186.5	
Industry	170.0	--	123.5	--	95.0	388.5	7.77
S&T	20.0	10.0	10.0	10.0	10.0	60.0	
Private Sector	80.0	70.0	60.0	80.0	60.0	350.0	<u>7.00</u>
						Subtotal:	14.77
						TOTAL:	50.77

TABLE II

Possible Sources of Funds for
Recommended Program Items in Assessment Report

	New Requests	Multi-Sector S&T	Participant Training	CIP
R&D				
Multi-sector		50		
Interim Health and Medical	3.5*			
ASRT Five Year Plan	3.0*			
CAPACITY BUILDING				
ASRT and University Policy	1.0	3		
S&T Information	30.0		X	5
University Development. (including Industrial institute and coopera- tive education program)	15-20	X	X	X
Scientific Equipment Maintenance		7	X	X
Management Science Training	5-7			
OTHER				
Information Technology	X		X	X
S&T Policy Development (including industrial survey, other studies)	2.5*			
Credit Guarantee	10.0	60	X	X
TOTAL	69-84	60	X	X

* Possible requests from special account or similar rapidly available mechanism.
X = Amount to be specified in program/project designs.

5. "BIBLIOMETRIC STUDIES AND WHAT THEY SAY ABOUT EGYPTIAN S&T"

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April 16, 1984

HRDC/ST/C: John Daly

Bibliometric Studies and What They Say About Egyptian S&T

HRDC/ST/C: Clint A. Stone

A few authors have studied the rate of publication by Egyptian scientists in "international" journals (i.e., those covered by major international abstracting services), and citations to and from Egyptian articles. While these analyses are not to be taken too seriously, they are somewhat more objective than most discussions of science and serve to provide a basis for comparison of Egyptian S&T with that of other countries. I have tried to summarize a few pertinent observations.

Garfield

In December, 1982, Eugene Garfield gave the annual "Magnus Pike" lecture at the London Science Policy Foundation, speaking on "Third World Research in International Scientific Journals." This was reported in two subsequent issues of Current Contents.^[1&2] His analysis was based on an analysis of 353,000 research articles, reviews, notes, letters, editorials and other scientific communications in 2,500 journals contained in the Science Citation Index database for 1973.

In that year, while U.S. authors wrote 48% of the papers in the database, all Third World authors together accounted for only 2%. Only three developing countries were among the top 25 publishing countries: India (8th with 7,888 articles), Israel (15th with 3,199 articles), and Argentina (25th with 1,526 articles). Among Third World countries (which Garfield did not construe to include Israel), Egypt ranked fourth with 713 articles. [Table 1]

Garfield also covered the "impact" of articles, defined as the average number of citations to each 1973 article in other articles in the SCI database from 1973 to 1978. Thirty countries averaged four or more citations per article while Egyptian authors were cited only an average of 1.8 times per article.

These data suggest that Egypt was in 1973 unusually active among developing countries in scientific publications (in quality journals, most of which require scientific peer review of articles to assure merit). In fact only these four other countries in the region--Israel, Iran, Turkey and Lebanon--were among the countries publishing 100 or more articles in 1973, and unfortunately two of these must surely have suffered severe scientific deterioration in recent years. Thus Egypt has unique scientific strength among Arab states. On the other hand, the relatively few citations per article give some pause about the fundamental impact of the scientific work being done at that time.

Garfield also develops clusters of articles, representing scientific subspecialties, and identifies some forty such clusters referenced by at least 15 Third World articles (excluding India and including, but not limited to, Egypt). These clusters were in the fields of: (1) immunology and infectious diseases; (2) hormones and fertility; (3) heart and circulatory diseases; (4) miscellaneous clinical/biomedical clusters (cancer, physiology, etc.); and (5) other. Looking at clusters in which Third World articles accounted for 15% of citing articles (of which there were 11), only the following were represented: (1) immunology and infectious diseases; (2) hormones and fertility; and (3) properties of grains and legumes.

No Egyptian journal shows up in Garfield's analysis of Third World journals.

Frame and Sprague

In 1978 Dave Sprague and Ailaen Sprague summarized bibliometric data on the Middle East for AID in a "quick-and-dirty" study.^[3] Figure 1, also based on the 1973 Science Citation Index, suggests that Egypt was the most active arab country in international scientific publishing and was publishing at a rate per unit GNP more comparable to developed than developing countries.

Frame and Sprague find that Egyptian publications are concentrated in biomedical sciences, chemistry and biology. [Table 2] They also counted Egyptian journals from the 1974 British Library Lending Division accession list (which includes some 43,000 international serials; 25,000 of which are directed to S&T topics). The results are shown in Table 3.

Frame and Sprague also took a sample of publications from specialty abstracts in a few fields from 1976-7 for Middle Eastern countries. (The specialty abstracts are more detailed in coverage of their fields than SCI.) The finding was, again, that Egypt outpublished Algeria, Iraq, Iran, Jordan, Kuwait, Lebanon, Libya, Morocco, Saudi Arabia, Syria and Tunisia, together by almost 3 to 2. The number of Egyptian publications in the 12 fields chosen is shown in Table 4. Table 5 shows the institutions from which authors were identified in this sample of 150 documents. Table 6 summarizes the institutional information, suggesting that in the fields chosen, universities represented 2/3 of Egypt's international publications in 1976-7, with Ain Shams, Alexandria and Cairo alone representing nearly half.

Frame and Sprague also suggest (on the basis of the 1974 data) that Egypt devoted a larger portion of its publications than average for the world to chemistry, biology (including agriculture), and engineering; about world average on clinical medicine; and less than average on biomedical basic sciences, earth and space sciences, physics, mathematics and psychology.

Zahlen

Anthony Zahlen has recently^[4] republished publications data from 1951-53, based upon the UNESCO Cairo Office's index of regional publications. [Table 7] In that source, 2/3 of Egyptian publications were in Egyptian

(rather than international) journals. The most frequent publication topics were medicine, agriculture, chemistry, and chemical technology. It seems likely that, although the studies used different methodologies, the increase in publications in the 1973 sample reflects an actual increase in publishing.

Judd, Boyce and Evenson

In what appears to be a trail blazing approach of considerable merit, [5] these authors have used frequency of abstracts in the Commonwealth Agricultural Bureau Abstracts [Table 8], with coefficients of cost per publication, to develop a measure of research expenditure by crop. They find that the "congruity" of Egyptian Agricultural research* rose from .905 to .939 from 1972-5 to 1976-9. This compares with an average performance over 26 countries in their sample of .967 in 1972-5 and .959 in 1976-9. Thus one might conclude that Egyptian agricultural research was reasonably relevant to its production needs, is becoming more so, but is still less tightly constrained to current commodity production than other countries. In fact, increasing research in the late 1970's on citrus, vegetables and cattle, and decrease on wheat, cotton, field beans and maize, may reflect future changes in agricultural needs quite accurately.

Moore

Moore [6] discusses briefly some bibliometric studies but does not give detailed information. Working from Engineering Index, Moore states that "articles written by Egyptians based in Egypt increased after 1973 from a yearly average of 50 to over 150." Further, "a sample of 148 Egyptian articles registered in Engineering Index between 1969 and 1973 were, until early 1978, cited only 50 times in Science Citation Index, and 84 percent of them were not cited a single time."

Moore also deals with the "Price Index"--the percentage of references five years old or less cited in scientific articles. Analyzing all articles in the Journal of the Egyptian Society of Engineers from 1962 to 1976, the average age of citations was 13.5 years, and only 4% were five years old or less. By comparison, Moore cites Garfield's estimates for international engineering literature that the average text book citation is five years old and the average article only two years old.

Moore sought a special group of frequently cited authors and found 15 Egyptians who were cited 359 times in Science Citation Index. Of these, 7 were with the National Research Center, 2 from the Atomic Energy Commission, 4 from Cairo University, and 1 each from Alexandria University and The American University in Cairo.

Finally, Moore provides Table 9, which shows the great age of references cited, but also relates this index to the age of the Ph.D. (earlier Ph.D.'s have older references) and the source of the Ph.D. (Soviet, U.S., British and Egyptian) in order of most recent average age of references.

*Defined as $1 - \sum (R_i - C_i)^2$ where R_i and C_i are the shares of estimated research and total value produced respectively for commodity i .

McCarn

McCarn,[7] apparently assuming that access to up-to-date scientific information might be estimated by the Price Index on some variant, studied citation patterns in the issues of journals published in 1970 by the Egyptian National Information and Documentation Center. These were compared with a matched set of good western journals. [Table 10] The lag in median age of references averaged 6.4 years over the 8 fields. McCarn states that the median reference age of the Journal of the Egyptian Medical Association (11.2 years) showed a similar lag with respect to western medical journals.

References

¹Garfield, Eugene. "Mapping Science in the Third World: Part I," Current Contents, August 15, 1983.

²Garfield, Eugene. "Mapping Science in the Third World: Part II," Current Contents, August 22, 1983.

³Frame, J. Davidson and Aileen N. Sprague. "Indicators of Scientific and Technological Efforts in the Middle East and North Africa," Computer Horizons, mimeographed document, 1978.

⁴Zahlen, A.B. Science and Science Policy in the Arab World, Saint Martins Press, New York, 1980.

⁵Judd, M. Ann, James K. Boyce and Robert E. Evenson. "Investing in Agricultural Supply," mimeographed document, 1983.

⁶Moore, Clement Henry. Images of Development, MIT Press, 1980.

⁷McCarn, Davis B. "Citation Patterns of Selected Egyptian Journals," Georgia Institute of Technology, mimeographed paper, Atlanta, 1980.

TABLE 1

Third World Countries whose Authors Produced
100 or More Articles

	<u>Articles</u>	<u>Citations</u>	<u>Citations per Art.</u>
India	7,888	15,515	2.0
Argentina	1,526	4,110	2.7
Brazil	812	2,355	2.9
Egypt	713	1,306	1.8
Venezuela	589	702	1.2
Chile	565	1,228	2.2
Mexico	535	1,652	3.1
Nigeria	354	866	2.4
Iran	196	444	2.3
Turkey	184	405	2.2
Malaysia	154	361	2.3
Lebanon	153	401	2.6
Singapore	139	305	2.2
Thailand	138	970	7.0
Uganda	132	587	4.4
Kenya	127	595	4.7
Pakistan	111	197	1.8

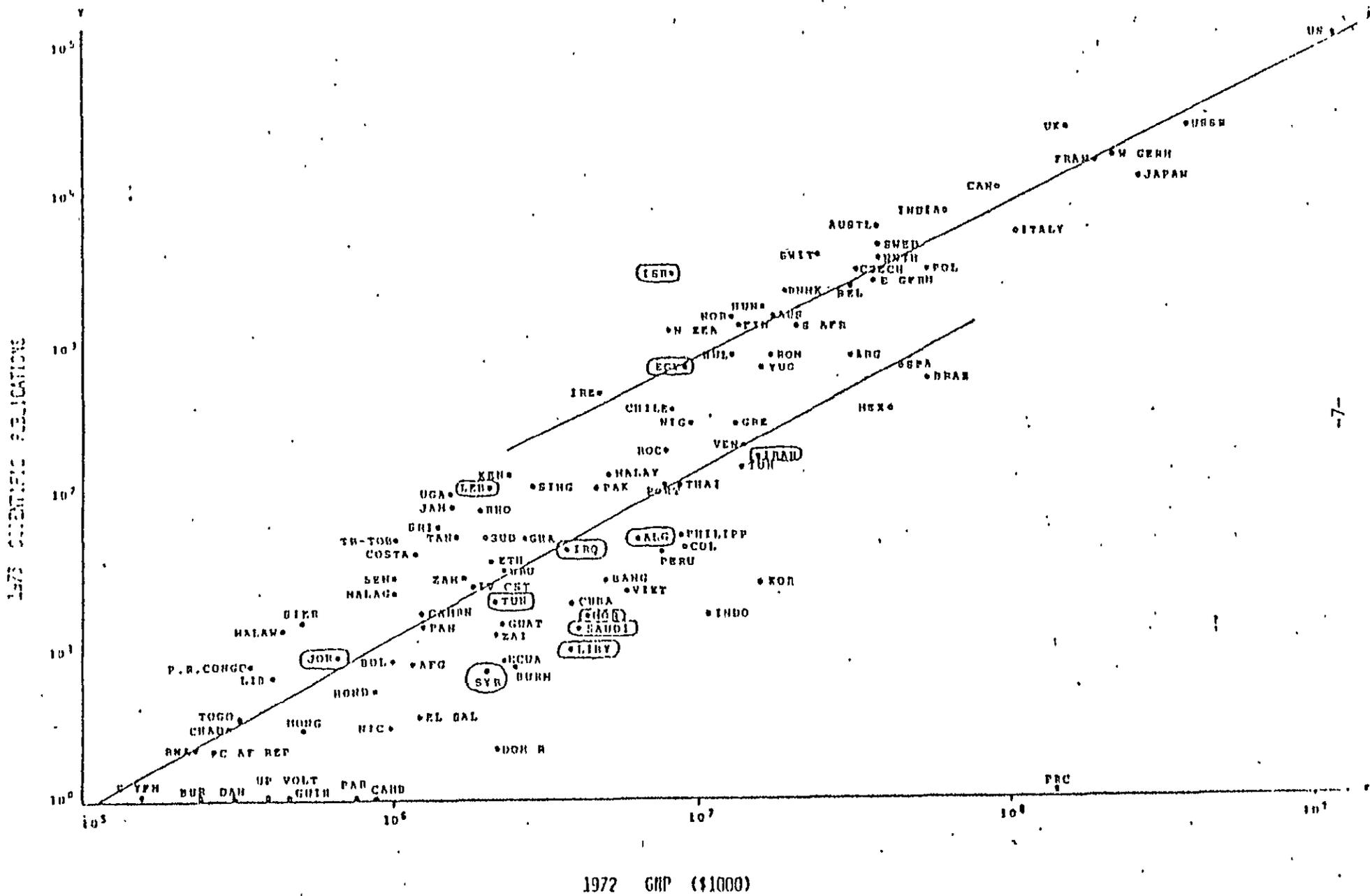


FIG. 1: PUBLICATION OUTPUT VS. GNP

TABLE 2

Fields of Egyptian 1973 Articles

Chemistry	219
Clinical Medicine	195
Biology (including Agriculture)	105
Engineering/Technology	79
Biomedical Research	69
Physics	38
Earth/Space	14
Math	3
Psychology	<u>0</u>
TOTAL:	722

TABLE 3

1974 Egyptian Journals
(from the British Library Lending Division Accession List)

Clinical Medicine	16	
Biomedical Research	2	
Biology (including Agriculture)	16	
Chemistry	2	
Physics	—	
Earth/Space Science	4	
Engineering and Technology	2	
Mathematics and Statistics	—	
Psychology	—	
General Scientific Literature	<u>2</u>	
	Subtotal:	44
Humanities	13	
Social Sciences	<u>1</u>	
	TOTAL:	58

TABLE 4

Number of Egyptian Publications in Twelve Selected Fields
from Specialty Abstracting Services

Agronomy	45
Fisheries	—
Food Technology	25
Forestry	—
Meteorology	1
Nutrition	48
Oceanography	10
Parasitology	7
Plant Genetics	4
Pollution	5
Remote Sensing	1
Water Resources	<u>2</u>
TOTAL:	150

TABLE 5

EGYPT

G. PUBLICATION INDICATORS

1. Principal research institutions in certain subfields (from Computer Horizons' Directories)

<u>Subfield</u>	<u>Institution</u>	<u># of Publications</u>	<u># of Scientists</u>
Nutrition	A.E.E. Radioisotope Department	1	5
	Ain Shams University	4	6
	Al Azhar Univ.	1	3
	Alexandria Univ.	8	24
	Assiut Univ.	1	4
	Cairo Univ.	7	23
	Mansoura Univ.	2	10
	Natl. Research Center	19	47
	US Med. Research Unit	4	12
Zagazig Univ.	2	3	
Pollution	Natl. Res. Center	4	3
	Cairo Univ.	1	3
	Alexandria Univ.	1	1
Oceanography	Ain Shams Univ.	1	3
	Alexandria Univ.	3	2
	Dev. Consult. Assoc.	1	7
	Mansoura Univ.	4	3
	Sci. Dept. Alahram	1	1
Meteorology	Ain Shams Univ.	1	1
Plant Genetics	Alexandria Univ.	3	3
	Cairo Univ.	1	3
Remote Sensing	Acad. of Sci. Res. and Tech.	1	2
Parasitology	16 El-Nil St.	1	2
	Ain Shams Univ.	4	7
	Alexandria Med. Sch.	1	3
	Mansoura Univ.	1	3
Food Technology	Ain Shams Univ.	3	8
	Al-Azhar Univ.	2	5
	Alexandria Univ.	3	3
	Assiut Univ.	1	2
	Atomic Energy Establ.	1	2
	Cairo Univ.	3	3

TABLE 5
(cont.)

EGYPT

<u>Subfield</u>	<u>Institution</u>	<u># of Publications</u>	<u># of Scientists</u>
	Middle East Region	1	3
	Radioisotope Ctr.		
	Agric. Res. Ctr.	8	15
	Natl. Res. Ctr.	5	8
Agronomy	Ain Shams Univ.	8	22
	Al-Azhar Univ.	1	2
	Alexandria Univ.	4	7
	Atomic Energy Estab.	1	1
	Cairo Univ.	10	24
	Higher Inst. Agri.	2	6
	Agri. Res. Ctr.	3	7
	Soil & Water Res. Inst.	8	31
	Natl. Res. Ctr.	5	11
	Tanta Univ.	3	6
Water Resources	Ain Shams Univ	1	4
	Alahran Scien. Dept.	1	2
	Alexandria Univ.	7	7
	Assiut Univ.	1	2
	FAO	2	1
	Mansoura Univ.	1	4
	Soil & Water Res. Inst.	4	13
	Natl. Res. Ctr.	1	1
	UNESCO Off. of Sci. & Tech for Arab States	1	1

TABLE 6

Number of Publications in Twelve Field Samples
(1976-7) from Principal Institutions

Universities

Ain Shams	22
Al Azhar	4
Alexandria	30
Assiut	3
Cairo	22
Mansoura	8
Tanta	3
Zagazig	<u>2</u>

Subtotal: 94

Research Centers

ASRT - National Research Center	35
Agriculture Research Center	10
Soil and Water Research Institute	<u>12</u>

Subtotal: 57

Other

16

TABLE 7

Field of Publications by Egyptian Scientific Workers

Field	Journal					
	International			Egyptian		
	1951	1952	1953	1951	1952	1953
Mathematics	--	2	--	--	5	4
Astronomy and geodesy	1	3	1	--	6	2
Physics and mechanics	13	7	3	12	9	6
Chemistry	25	22	18	2	2	4
Geology*	2	7	4	10	8	2
Palaeontology	5	3	2	1	5	1
Biology	6	5	--	7	4	6
Botany	5	7	3	5	19	3
Zoology	6	3	4	19	19	27
Medicine	35	18	21	131	144	196
Engineering	1	3	6	4	--	3
Agriculture	17	20	13	29	21	12
Chemical technology	7	9	12	2	2	2
Geography and archaeology	1	1	--	8	27	--
TOTAL	124	110	87	230	271	268

*In 1953 only, the entries cover "geology and meteorology."

Source: Saber, Guide to Scientific and Technical Workers in Egypt.

TABLE 8

Egyptian Agricultural Publications by Crop
(from Commonwealth Agricultural Bureau Abstract)

	<u>1972-1975</u>	<u>1976-1979</u>
Wheat	196	157
Rice	76	37
Maize	203	181
Cotton	231	188
Sugar	62	40
Soybeans	23	44
Cassava	0	0
Field Beans	119	87
Citrus	65	135
Cocoa	0	0
Potatoes	36	46
Sweet Potatoes	15	10
Vegetables	163	201
Bananas	3	18
Coffee	1	—
Groundnut	15	29
Coconut	1	0
Cattle	83	154
Swine	15	19
Poultry	78	100
Other Livestock	<u>90</u>	<u>189</u>
TOTAL:	3,270	3,759

TABLE 9

Mean Date of Ph.D. and Age of References
by Place of Graduate Study

Place of Graduate Study	Date of Ph.D.	(N)	Age of References, in Years	(N)
Egypt	1952	(18)	15.1	(13)
Britain	1955	(42)	13.3	(30)
United States	1957	(19)	12.0	(14)
Soviet Union or Eastern Europe	1963	(6)	10.2	(9)
Miscellaneous	1956-1957	(32)	14.5	(28)

TABLE 10

Median Ages of References in Egyptian and
Matched Developed Country Journals

<u>Subject</u>	<u>Egyptian</u>	<u>Developed Country</u>
Bilharziasis	13.1	8.2
Botany	10.0	7.6
Chemistry	17.3	8.8
Food Science	16.1	6.7
Horticulture	13.7	5.2
Pharmaceutical Science	13.0	5.8
Phytopathology	14.6	8.9
Soil Science	13.5	8.7

6. PROPOSALS SUBMITTED BY EGYPTIAN UNIVERSITIES TO THE FRCU

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1404	Increasing Maize Productivity in Behera Governorate (The Gathering of Farm Animals in Feed Lots)	Agriculture	Minya University
1003	The Shedding of Buds, Flowers, and Fruits of Broadbeans "VICIA FABIA"	Agriculture	Ain Shams University
1006	Synthesis of Controlled Release Pesticide polymers and Their Dual Applications in Agriculture	Agriculture	Tanta University
1007	Improvement of Field Crop Seed Production, Quality, and Stand Establishment	Agriculture	Ain Shams University
1011	Production of Certified Fruit Seedlings	Agriculture	Mansoura University
1012	Clinical and Laboratory Investigations of Water Buffalo Infertility Under Village Conditions	Agriculture	Alexandria University
1019	Studies of new Organosulfur-Nitrogen Compounds as Potential Agricultural Chemicals and Their Influence on the Environment	Agriculture	Cairo University
1028	Production of Improved Fig	Agriculture	Assiut University
1031	Integrated Control of Soy Beans	Agriculture	Minya University
1041	Improvement of Strawberry Production in Egypt	Agriculture	Ain Shams University
1042	Control of Potato Virus Diseases and Production of Virus-Free Seeds	Agriculture	Ain Shams University
1044	Development of Shedding Tolerant Strain Broad Beans (Vicia Faba)	Agriculture	Ain Shams University
1047	Introduction and Evaluation of Improved Cultivars of Peas, Snap and Dry Beans, Sweet Pepper and Cauliflower	Agriculture	Cairo University
1049	Rotting Cotton Stalks for Obtaining the Best Fibres and Controlling Pink Boll Worms	Agriculture	Zagazig University
1052	Integrated Utilization of Shelterbelt Trees And Afforestation Products In Egypt.	Agriculture	Alexandria University
1053	The Integrated Control of Gum Stem Disease of Cucurbits	Agriculture	Alexandria University
1054	Survey of Common Smut disease on Maize in Menofeya and Minia Governates	Agriculture	Menofeya University
1055	Genetical and Microbiological Studies on the Existence of Rhizobium Japonica in the Egyptian Soils	Agriculture	Ain Shams University
1056	Expiry Date of Store Foods	Agriculture	Ain Shams University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1057	Some Aspects Towards Overcoming Vegetable Oil Insufficiency in Egypt: Production of Sunflower in Suez Canal Region	Agriculture	Suez Canal University
1058	Pilot Project Hydroponic Production with Reclaimed Recycled Sewage Water	Agriculture	Alexandria University
1062	Evaluation of Hybrids Nuclear Seedlings and New Rootstocks for Improving Citrus Varieties in Egypt	Agriculture	Cairo University
1064	Studies on the Influence of Pesticides on Microbial Activities in Soil Plant Growth and Yield Quantity and Quality	Agriculture	Menofeya University
1065	Production of Sweet Pepper Transplants Under Protection for Early Yield	Agriculture	Cairo University
1066	Evaluation of Some Snap and Dry Bean Cultivars for Planting Dates, Density and Fertilizers	Agriculture	Cairo University
1067	Technicals in Upgrading of Egyptian Slaughter Houses and Utilization of the By and Waste Products	Agriculture	Alexandria University
1068	Evaluation of Some Cauliflower Cultivars for Planting Dates, Density and Fertilizers	Agriculture	Zagazig University
1072	Yield Improvement for Some Medicinal Plants in Suez Canal and Sinai	Agriculture	Suez Canal University
1075	Evaluation of Rabbit Breeds and Crosses for Meat and Income On The Farm	Agriculture	Zagazig University
1091	Production of Feed for Poultry and Ruminants from Rumen Contents	Agriculture	Ain Shams University
1093	Distribution and Degradation of Synthetic Pyrethroids in Egyptian Soil, Sediments and Water	Agriculture	Alexandria University
1096	Production of Improved Fig	Agriculture	Assiut University
1370	Yield Improvement for Some Medical Plants in Suez and Sinia Area	Agriculture	Suez Canal University
1371	Field Improvement for Some Medicinal Plants in Suez Canal	Agriculture	Suez Canal University
1388	Toxicity of Insecticides Commonly used in Egypt to Milk and Dairy Products	Agriculture	Mansoura University
1389	Increasing The Productivity of Maize and Introducing High Yield Varieties	Agriculture	Minya University
1390	Improvement of The Productivity of Maize in The Minya Province	Agriculture	Minya University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	Universit
1391	Integrated Control of Soy-beans Pests	Agriculture	Minya University
1392	Production of Virus-Free Citrus Nursery Trees	Agriculture	Minya University
1393	Biochemical Studies on Alges Protein	Agriculture	Minya University
1394	Nodulation of Soybeans and of Other Leguminous Plants on Egypt	Agriculture	Minya University
1395	Dairy Type Foods Incorporation Locally Available Non Dairy Ingredients to Serve The Food Security System	Agriculture	Alexandria University
1396	Studies on Plant Parasitic Nematodes Citrus and Their Control in Northern Egypt	Agriculture	Alexandria University
1397	Establish a Modern Apiary at The Faculty of Agriculture University of Alexandria	Agriculture	Alexandria University
1398	Improving Mutton and Wool Production in Egypt	Agriculture	Alexandria University
1399	A Training Program for Pesticide Management and for Health Personnel	Agriculture	Alexandria University
1400	The Development of Food Industries Laborities	Agriculture	Alexandria University
1401	Application of Non-Symbiotic Nitrogen-Fixers in The Nutrition of Barley	Agriculture	Alexandria University
1403	Increasing Maize Productivity in Behera Governorate and Extension of Research Package	Agriculture	Minya University
1405	Dairy Industry Development	Agriculture	Minya University
1406	Epidemiology and Forecasting of Major Plant Diseases on Important Crop Plants in The Temperate Regions to Control These Disease in Nature	Agriculture	Minya University
1407	Feeding Trials With Growing Animals for Ultimate Evaluation of Feedstuffs and Feed Formulations to Increase Beef Production	Agriculture	Minya University
1408	Utilization of Phenomanes for The Central of Pink Bollworm in the Coton Fields in Egypt	Agriculture	Mansoura University
1409	Problems of Citrus Nematode, Tylenchulus Semipenetrans, on Certain Fruit Crops in Menoufia governorate, Egypt	Agriculture	Menoufia University
1410	Modification of Cropping System in the Areas of Cotton and Maize Cultivation	Agriculture	Menoufia University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1411	Soya Milk as a Substitute for Natural Milk	Agriculture	Menoufia University
1413	Survey of the Present Practices in Pre-Services, Introduction, In-Service, and Graduate Training of the Egyptian Extension Personnel	Agriculture	Alexandria University
1414	Studies on Sugar Beet Diseases in Egypt and their Control	Agriculture	Assuit University
1415	Identification of Sugar Cane Mosaic Virus Strains and their Distribution in Upper Egypt	Agriculture	Assuit University
1417	Vertebrate Pest Control	Agriculture	Assuit University
1418	Development of Modern and Active Programs of Horticultural Extension Services for Small Farmers	Agriculture	Zagazig University
1419	Establishment of The Agricultural Extension Services in Assuit Governorate	Agriculture	Assuit University
1420	Optimization of Cultivating Variables to Attain Maximum Quality of Some Flowering Bubles	Agriculture	Assuit University
1421	Horticultural Services in Upper Egypt	Agriculture	Assuit University
1422	Cultivars Tolerance to Nutrient Defeciencies and Drought in the Desert of Egypt	Agriculture	Assuit University
1423	Production of Improved Sweet Potatoes	Agriculture	Assuit University
1424	Suitability of Some New Barley Varieties for Malting and Bread Making	Agriculture	Cairo University
1425	Microbiology of Fish	Agriculture	Cairo University
1426	Role of Micro-Organisms in Fermentation and Ripening of Mish Cheese	Agriculture	Cairo University
1427	Bioconversion of Cellulosic Waste Materials to Alcohol and Proteinaceous Feed	Agriculture	Cairo University
1428	Utilization of Cheese Whey in Production of Alcohol and SCP	Agriculture	Cairo University
1429	Cultivation and Preservation of Mushrooms Grown in Submerged Culture and in Manure	Agriculture	Cairo University
1430	Integrated Control of Onion and Garlic Diseases in Newly Reclaimed Areas in Manure	Agriculture	Ain Shams University
1431	Fungicide Resistance Problems in Egyptian Agriculture	Agriculture	Cairo University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1432	Biological Control of Bacterial Diseases in Potatoe	Agriculture	Tant University
1433	Studies on Maize Smut	Agriculture	Menoufia University
1434	Survey of Mites Associated with Birds and Rodents in Egypt	Agriculture	Cairo University
1435	Tick infestation and its Effects on the Production of Different Farm Animals	Agriculture	Cairo University
1436	Control of Marketing Diseases Especially of Citrus Fruits	Agriculture	Cairo University
1437	Increasing the Income of Small Rural Families through Poultry Production in Egypt	Agriculture	Tanta University
1438	A Flexibility Study to Examine How Faculties of Agriculture Can Increase their Outreach Capacity to Strengthen the Regional Services	Agriculture	Ain Shams University
1439	Egyptian Milk Sanitation and Production, Manufacturing, Marketing, and Storage of Dairy Products	Agriculture	Cairo University
1440	Improving Different Quality Aspects, Safety and Shelf-Life of Milk and Soft Cheese under Egyptian Conditions	Agriculture	Cairo University
1441	Evaluation of Storage Quality in Garlic, <i>Allium Sativum</i> and the Antagonistic Effect of Garlic Extract	Agriculture	Cairo University
1442	Storage Quality of Potato Cultivars	Agriculture	Cairo University
1443	Chemical and Toxicological Studies on Pesticides Used in Egypt	Agriculture	Cairo University
1444	Statistical Survey on Pesticides Residues in Milk, Milk Products and Human Milk in Egypt	Agriculture	Cairo University
1445	The Construction of Glass Houses	Agriculture	Mansoura University
1446	Quantitative Approval and Assessment of Food and Water Contamination with Pesticide Residues	Agriculture	Cairo University
1447	Controlling the Growth of Undesirable Organization in Nonfermented Refrigerated Food Residues	Agriculture	Cairo University
1448	Mites Associated with Stored Products and the Role of Predaceous Species in Biological Control	Agriculture	Cairo University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1449	Improvement of Productivity and Quality of Berseem Clover and its Forage Mixtures	Agriculture	Cairo University
1450	Plants As Source of Safe Insect Control Chemicals and other Biologically Active Substances	Agriculture	Tanta University
1451	Studies on Pests of Fruit Trees in Fayoum as a Main Factor in the Deterioration of Fruit Production	Agriculture	Cairo University
1452	Studies on Pests of Fruit Trees in Fayoum as a Main Factor in the Deterioration of Fruit Production	Agriculture	Cairo University
1453	Microbiology Criteria and Quality Evaluation During Processing of Canned Foods in A.R.E.	Agriculture	Cairo University
1454	Exploiting Winged Bean Cultivation in Egypt	Agriculture	Cairo University
1455	Occurence, Distribution and Control of Plant Parasitic Nematodes on Rice in Egypt	Agriculture	Tanta University
1456	The Occurence of Nematode Pathogenic Biotypes and their implacation in Control Schemes	Agriculture	Cairo University
1457	Mites Associated With Fruit Trees and Their Utilization in Biological Control Schemes	Agriculture	Cairo University
1458	Economic Ornamental and Woody Trees Propagation Project	Agriculture	Minya University
1459	Use of X-ray Radiography for Studying Seed Quality in Egypt	Agriculture	Ain Shams University
1460	The Efficacy of N-serve and DCD as Nitrification Inhibitors Under different Climatic Conditions - Prevalent In Egypt	Agriculture	Tanta University
1461	Indirect Control of Soil Fungi by Plant Growth Regulators in Cotton Plantations climatic Conditions Prevalent In Egypt	Agriculture	Tanta University
1462	Pesticides in Relation to Development and Increase if Vegetable and Fruit Production in Egypt	Agriculture	Cairo University
1463	Changing The Classical Methods of Rice Planting by Newly Developed ones Enable Mechanization of Rice Fields in Egypt	Agriculture	Tanta University
1464	Horticultural Service in Upper Egypt	Agriculture	Assiut University
1465	Preparation of Activated Sewage Sludge as a Protein Concentrate for Poultry and Fish	Agriculture	Ain Shams University

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Number	Title	Priority Area	University
1466	Increasing Lamb Productivity From Local Breeds of Sheep in Egypt	Agriculture	Ain Shams University
1467	Increasing Productivity and Improving Quality Value of Some Leguminous Crops, Broad Beans and Chick-peas, in Upper Egypt	Agriculture	Assiut University
1468	Release of New Varieties Resistant to Egyptian Cotton Insects	Agriculture	Tanta University
1469	The Marketing System for Fresh Fruits and Vegetables in Egypt	Agriculture	Tanta University
1470	Improvement of Rice Resistance Against Blast Disease (<i>Pyricularia Oryzae</i>) by Selection and Induction of Partial Resistance	Agriculture	Tanta University
1471	Improving Sugar beet Production in North Delta	Agriculture	Tanta University
1472	Intercropping Soybean With Corn	Agriculture	Tanta University
1473	Improving Forage Crops in North Delta	Agriculture	Tanta University
1474	Estimation of Losses in Yield of Cotton Caused by (a) annual weeds (b) Perennial Weeds (c) Bollworms	Agriculture	Tanta University
1475	Control of The Stored Product Insects	Agriculture	Tanta University
1476	Quantitative Appraisal and Assessment of Food and Water Contamination With Pesticide Residues	Agriculture	Cairo University
1477	Improvement of Yield and Quality of Grain Sorghum in Upper Egypt	Agriculture	Assiut University
1478	Improvement of Yield and Quality of Sesame Crop	Agriculture	Assiut University
1479	Maximization of Rice Production in The Salt Affected Soils of Middle and North of Nile Delta	Agriculture	Tanta University
1480	Breeding and Management of Crops and Cropping Systems for Stress Situation of Nile Delta	Agriculture	Assiut University
1481	Increasing Productivity and Improving The Quality of Some Forage Crops In Upper Egypt	Agriculture	Assiut University
1482	Using Artificial Insemination for Improving Honey Bee Production in Egypt	Agriculture	Cairo University
1483	Increasing of Productivity and Quality of Berseem Clover and its Forage Mixtures	Agriculture	Cairo University
1484	Studies on The Carcinogenic and Mutagenic Effects of Food Additives and Methods of Cooking used in Egypt	Agriculture	Alexandria University

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Number	Title	Priority Area	University
1485	Genetic Control of Phosphorus and Utilization in Wheat	Agriculture	Alexandria University
1486	A Highly Maneuverable Tractive Power Unit For Egyptian Agriculture	Agriculture	Alexandria University
1487	Improvement of The Quality of Egyptian Jasmine Products	Agriculture	Al Azhar University
1488	Introducing Ultrafiltration Technology to Egyptian Dairy Industry	Agriculture	Ain Shams University
1489	Biological Control of Certain Phytophagous Mites	Agriculture	Menofeiya University
1490	Problems of The Citrus Pests in Delta Region, Egypt, with Reference to their Integrated Control	Agriculture	Menofeiya University
1491	Pest Management for Cotton in Menofeiya Province (Egypt)	Agriculture	Menofeiya University
1492	Improvement of Rust Resistance and Grain Production of Wheat in Egypt	Agriculture	Menofeiya University
1493	Improvement of Onion Yield in Upper Egypt by Better Cultural Practices	Agriculture	Assiut University
1494	Improvement of Cowpea Production	Agriculture	Assiut University
1495	Detection of Micotoxin in Food Products	Agriculture	Assiut University
1495	Improvement of Sweet potato Production by Better Cultural Techniques	Agriculture	Assiut University.
1497	Studies the Diseases of Maize in Egypt by Better Cultural Techniques	Agriculture	Menofeiya University
1498	Ovarian Inactivity and Repeat Breeder Syndromes	Agriculture	Menofeiya University
1499	Improvement of Onion Seed Yield in Upper Egypt by Overcoming DiseasesProblems	Agriculture	Menofeiya University
1500	The Potentialities of Used and New Suppressive Measures on The Bollworm Complex in Upper Egypt	Agriculture	Menofeiya University
1501	Improving Production of Grapes in Upper Egypt	Agriculture	Menofeiya University
1502	Improvement of Medicinal Plants Production in A.R.E.	Agriculture	Zagazig University
1503	Harvest and Postharvest Pathology of Seeds and Grains in Egypt, with Reference to Cnemicsals Control Measures	Agriculture	Alexandria University
1504	Improving Production and Quality of Grapes (Vitis Vinifera, L) in Egypt	Agriculture	Assiut University
1505	Increasing Sugar Beet Productivity, Quality and Seed Production in Egypt	Agriculture	Ain Shams University

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Number	Title	Priority Area	University
1506	Late Season Foliar Fertilization for Increasing Yield of Grain Sorghum and Corn	Agriculture	Assiut University
1507	Importing New Suitable Cultivars of Banana Such as Williams to Replace Deteriorated local Varieties	Agriculture	Assiut University
1508	Increasing Yield and Improving Quality of Olives in Upper Egypt	Agriculture	Assiut University
1509	Increasing Yield and Improving Quality of The Common Guava, Psidium Guajava L	Agriculture	Assiut University
1510	Improvement of Summer Squash Production by Overcoming Powdery Mildew Disease Problem on Upper Egypt	Agriculture	Assiut University
1511	The Selection of High Yielding Medical and Aromatic Germ Plasm Suitable for Desert and Drought Areas	Agriculture	Assiut University
1512	Compatability Between Soybean Genotypes and Rhizozium Japonicum Strains in Egypt	Agriculture	Assiut University
1513	The Selection of Resistant Wheat and Sorghum Plants to Aphids and The Survey of Their Distribution	Agriculture	Assiut University
1514	Improving The Production and Quality of Lentils (Lens esculanto, M)	Agriculture	Assiut University
1515	Improvement of Onion and Garlic Production in Upper Egypt Through Overcoming White -rot Problem	Agriculture	Assiut University
1516	The Shedding of Buds, Flowers and Fruits of Broadbeans 'Vicia Faba'	Agriculture	Ain Shams University
1517	Double Cropping Possibilities During Summer in maize Fields in Egypt	Agriculture	Ain Shams University
1518	Intensive Production of Rabbits For Meats	Agriculture	Ain Shams University
1519	Improving Milk and Meat Production of Egyptian Goats	Agriculture	Ain Shams University
1520	Control of Potato Virus Diseases and Production of Virus-Free Seeds	Agriculture	Ain Shams University
1521	Improvement of Strawberry Production in Egypt Through Meristematic Propagation	Agriculture	Ain Shams University
1522	Development of Shedding Tolerant Strains of Broad Beans (Vicia Faba)	Agriculture	Ain Shams University
1523	Development of Banana Production in Egypt	Agriculture	Ain Shams University
1524	Nutritional Potential for Recycling of Animal and Poultry Wastes	Agriculture	Ain Shams University

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Number	Title	Priority Area	University
1525	Studies on The Utilization of The Waste Agroindustrial by-products for Fish Production in Ponds	Agriculture	Alexandria University
1526	Pilot Project Hydroponic Production with Reclaimed (Recycled) Sewage Water	Agriculture	Alexandria University
1527	Clinical and Laboratory Investigation of Water Buffalo Infertility Under Village Conditions	Agriculture	Alexandria University
1528	The Integrated Control of Gum Stem Disease of Cucurbits	Agriculture	Alexandria University
1529	Studies on Mites Associated with Certain Arthropods (mites and insects) in Egypt	Agriculture	Mansoura University
1530	Environmental Pollution by Pesticides in Dakahlia Governorate	Agriculture	Mansoura University
1531	Inspot Determination and Controlling Mixed viral and Bacterial Plant Diseases	Agriculture	Mansoura University
1532	Biological Control of Water Hyacinth and Other Aquatic Weeds With Plant Pathogens	Agriculture	Mansoura University
1533	Production of Standard Seedlings of Fruit Trees	Agriculture	Mansoura University
1534	Production of Almond and Pecan Transplants	Agriculture	Mansoura University
1535	Microbial Analysis of Lignocellulosic Agricultural Wastes to Increase its Value as Animal Feeds	Agriculture	Mansoura University
1536	Studies on The Influence of Pesticides on Microbial Activities in Soil, Plant Growth, Yield, and Crop Quality	Agriculture	Menofeya University
1537	Synthesis of Controlled Release Pesticide-polymers and Their Dual Soil, Plant Growth, Yield, and Crop Quality.	Agriculture	Tanta University
1538	Yield Improvement For Some Medicinal Plants in Using Suez Canal and Sinia Area	Agriculture	Suez Canal University
1539	Yield Improvement For Some Medicinal Plants in Using Suez Canal and Sinia Area	Agriculture	Suez Canal University
1540	Evaluation of Hybrids, Nucellar Seedlings and New Improving Citrus Varieties in Egypt	Agriculture	Cairo University
1541	Evaluation of Some Cauliflower Cultivars for Planting Dates, Density and Fertilizer	Agriculture	Zagazig University

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Number	Title	Priority Area	University
1542	Improvement of Field-Crop Seed Production and Stand Establishment	Agriculture	Ain Shams University
1543	N-Fixers in The Nutrition of Barley and Wheat on the Northern Western Coast Egypt	Agriculture	Alexandria University
1544	Improving Peanut Production by Controlling Diseases	Agriculture	Alexandria University
1545	Improving Fig Production in Southern Coastal Areas	Agriculture	Alexandria University
1546	A Study on Increasing The Production of Green Fodder	Agriculture	Alexandria University
1547	Biological Control of Corn Borers	Agriculture	Cairo University
1548	Utilization of Cheese Whey for Animal Feeding	Agriculture	Cairo University
1549	Improving Fig Production in Upper Egypt	Agriculture	Assiut University
1550	Survey and Studies of Arthropod Pests Infesting Medicinal and Aromatic Plants in Southern Egypt	Agriculture	Assiut University
1551	Improvement of Productivity and Nutritive Value of Forage Crops	Agriculture	Menofeya University
1552	Survey of Common Smut Disease on Maize in Menofeya and Minia Governorates	Agriculture	Menofeya University
1553	Evaluation of Winged-beans on Maize in Menofeya and Minia Governorates	Agriculture	Cairo University
1554	Investigation of Inorganic Pollutants in The Egyptian Aquatic Environment	Agriculture	Cairo University
1555	Control of Tick Borne Blood Diseases of Food Producing Animals in Egypt	Agriculture	Cairo University
1556	Nitrogen Fixation of Soybean Cultivars grown Under Solid and Inter-Planting Conditions in Highly Intensive Cropping Systems of Egypt	Agriculture	Cairo University
1557	Nitrogen Fixation In General, with Soybean in Particular	Agriculture	Cairo University
1558	Improvement of Oil Crops in Egypt : Crops, Cotton, Peanuts, Sunflower - , Soybean, Sesame, Saflower and Grape	Agriculture	Cairo University
1559	Introduction and Evaluation of Jojoba Seeds (Simmonsia Chinensis)	Agriculture	Cairo University
1560	Storage Quality of Sweet Potato	Agriculture	Cairo University
1561	Improving Nitrogen Fixation Potential of Forage Legumes (i.e. Barseemand Alfa lfa) under Egyptian Conditions	Agriculture	Cairo University

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Number	Title	Priority Area	University
1562	Evaluation of Pesticide Exposure and its Effect on Different Body Systems of Exposed Industrial and Agriculture Workers	Agriculture	Cairo University
1563	Production of Sweet Pepper Transplants under Protection for Early Yield	Agriculture	Cairo University
1564	Evaluation of Some Snap and Dry Bean Cultivars for Planting Dates, Density and Fertilizers	Agriculture	Cairo University
1565	Introduction and Evaluation of Improved Cultivars of peas, Snap and Dry Beans, Sweet Pepper and Cauliflower	Agriculture	Cairo University
1566	Effect of Heat Treatments on The Chemical and Microbial Properties of White Soft Cheese	Agriculture	Cairo University
1568	Evaluation of Some Main Foods Consumed in Egypt as Potential Agricultural Chemicals and Their Influence on The Environment	Agriculture	Cairo University
1569	Control of Tick-Borne Blood Parasite <i>Theileria annulata</i> by Vaccination of Food Production Animals	Agriculture	Cairo University
1570	Survey of Various Soybean Genotypes for Response to Modulation With <i>R. Japonicum</i>	Agriculture	Cairo University
1571	A Study of Suitable Agriculture Practices in Areas West of Alexandria	Agriculture	Alexandria University
1572	Improvement of Rough and White Rice Production and Quality and Milling Characteristics in Egypt	Agriculture	Alexandria University
1573	More Food and Feed For Egypt	Agriculture	Alexandria University
1574	Increasing Maize Productivity in Behera Governorate (Maize Breeding and Production)	Agriculture	Alexandria University
1575	Training Center for Modern Agriculture in Egypt	Agriculture	Alexandria University
1576	Optimum Cropping Pattern for Egypt	Agriculture	Alexandria University
1577	Studies on The Epidemiology and Control of Certain Economically Important Poultry Diseases in Egypt	Agriculture	Alexandria University
1578	The Integrated Control of Gum-Stem Disease of Cucurbits	Agriculture	Alexandria University
1579	Distribution and Degradation of Synthetic Pyrethroids in Egyptian Soil, Sediments and Water	Agriculture	Alexandria University

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Number	Title	Priority Area	University
1580	Pilot Project Hydroponic Production With Reclaimed (Recycled) SewageWater	Agriculture	Alexandria University
1581	Integrated Utilization of Shelterbelt Trees and Afforestation Productin Egypt	Agriculture	Alexandria University
1582	Technical Upgrading of Egyptian Slaughter Houses and Utilization of Their By and Waste Products	Agriculture	Alexandria University
1583	Studies on The Microbial Pnysiology Enzymes. for The ACCeleration of Cheese Ripening	Agriculture	Alexandria University
1584	The Evaluation of Alternative LAnd-Use Systems in The Western Coastal REgion of Egypt	Agriculture	Alexandria University
1585	Improving The Honey Bees Productivity	Agriculture	Ain Shams University
1586	IMprovement of Better Production and Uses of Zed Maize in Egypt	Agriculture	Ain Shams University
1587	Screening of Soybean Germplasm line and Cultivars For Virus Seed Transmission and Production of Virus Free Seeds	Agriculture	Ain Shams University
1588	Improvement of Soy-Bean Production and Utilization in Egypt	Agriculture	Ain Shams University
1589	MICrobiology Degradation of Cellulosic Materials for Production of Sugars	Agriculture	Ain Shams University
1590	Utilization of Agricultural Waste Products	Agriculture	Ain Shams University
1591	Utilization of Endomycorrhizas and Nitrogen Fixing Bacteria in Egyptian Agriculture	Agriculture	Ain Shams University
1592	Survey of The Intensity of Smut Disease of Corn (Zed MaizeL.) in The Kaliubia Province	Agriculture	Ain Shams University
1593	Production of Feed for Poultry and Ruminants from Rumen Contents	Agriculture	Ain Shams University
1594	Genetical and Microbiological Studes on The Existance of Rhizobium Japonicum	Agriculture	Ain Shams University
1595	Expiry Date of Stored Foods	Agriculture	Ain Shams University
1596	Modernization of Egyptian Incubating Ovens.	Agriculture	Zagazig University
1597	Action and Extension for Agriculture Development of Sharkia Governerate	Agriculture	Zagazig University
1598	Evaluation of Rabbit Breed Crosses For Meat and Income on The Farm	Agriculture	Zagazig University
1599	Rotting Cotton Stalks for obtaining The BEst Fibres and Controlling Pink Bollworms	Agriculture	Zagazig University

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Number	Title	Priority Area	University
1600	Harm Caused by The Infestation With Some Fly Species Which Infest Goats and Sheep in Sharkia Governorate	Agriculture	Zagazig University
1601	Effect of Agronomic Practices on Yield and Quality of Sunflower	Agriculture	Zagazig University
1602	Improving The Nutritive Value of Poor Quality Roughage and Agricultural Wastes Through Chemical and Physical Treatment	Agriculture	Zagazig University
1603	Fortification and Improvement of Balady Bread	Agriculture	Zagazig University
1604	Induction of Hypersensitivity in French Bean and Soybean Plants	Agriculture	Zagazig University
1604	Utilization and Development of Medicinal and Desert Plants in Sinai	Agriculture	Suez Canal University
1605	Production of Fish Feeds	Agriculture	Suez Canal University
1606	Increasing Productivity of Some Medicinal Plants in Suez Canal and Sinai Regions	Agriculture	Suez Canal University
1607	Increasing Productivity of Some Medicinal Plants in Suez Canal and Sinai Regions	Agriculture	Suez Canal University
1608	Production of Rose Flowers and Some Ornamental Plants in Egypt during Winter Months For Export	Agriculture	Suez Canal University
1609	Production of Ornamental Plants and Medical Plants Capable of Nitrogen Fixation Using Culture and Genetic Engineering Techniques	Agriculture	Suez Canal University
1610	Extraction of Active Materials from Medicinal Plants Using Tissue Culture	Agriculture	Suez Canal University
1611	Crossing Sheep in Suez Canal Region With Morino Sheep to Improve Meat and Wool Production	Agriculture	Suez Canal University
1612	Some Aspects Towards Overcoming Vegetable Oils Insufficiency in Egypt	Agriculture	Suez Canal University
1613	Solar Pasteurization of Soil by Polyethylene Mulching for Control Soil Borne Plant Pathogens	Agriculture	Mansoura University
1614	Increasing The Productivity and Improving The Quality of Flax in Dakahlia Province	Agriculture	Mansoura University
1615	A Local Agricultural Marketing System In Assiut Governorate	Agriculture	Mansoura University
1616	Successful Modulation and Yield Increase of Soybean in Mid. Egypt	Agriculture	Minya University

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Number	Title	Priority Area	University
1617	Effect of Requirements on The Productivity of Some Vegetable Crops	Agriculture	Menofeya University
1618	Analysis of Resistance of The Egyptian Wheat Varieties to Leaf Rust	Agriculture	Menofeya University
1619	Effect of Some Cultural Practices on The Production of seed Yield and Seed Quality Characters of Sunflower (Helianthus)	Agriculture	Menofeya University
1620	Studies on The Influence of Pesticides on Microbial Activities on Soil, Plant Growth and Yield quantity and Quality	Agriculture	Menofeya University
1621	Improving The Utilization of Poor Quality Roughages	Agriculture	Menofeya University
1622	Inter-Cropping Systems of Corn or Grain Sorghum and Soybean	Agriculture	Assiut University
1623	Evaluation and Characterization of Several Germplasm under The Stress Conditions in The New Valley	Agriculture	Assiut University
1624	Survey of Fish Diseases Problems in Lake Nasser and The River Nile	Agriculture	Assiut University
1625	Minimum Tillage for Water Conservation and Maximum Production of Wheat and Maize in Upper Egypt	Agriculture	Assiut University
1626	Improving The Production of Onion (Allium Cepa L.) in Upper Egypt with Special REference to Mokawwar Onion	Agriculture	Assiut University
1627	Improvement of Kidney Bean Production in Upper Egypt	Agriculture	Assiut University
1079	Arabic Character Recognition	Applied Science	Menofeya University
1253	Amorphouse Semiconductous Material for Use in Electronic Industry	Applied Science	Menofeya University
1254	Studies of New Organosulfur-Nitrogen Compounds as Potential Agricultural Chemicals and Their Influence on the Environment	Applied Science	Cairo University
1255	Economic Potentialities of the Upper Eocene Oligocene Lower Miocene Sediments in Northern Egypt	Applied Science	Cairo University
1256	Solid State and Interfacial Phenomena in Pure, Doped and Mixed Oxides	Applied Science	Zagazig University
1257	The Possibility of Using an Amorphous Semi-Conductor Material Made of Ge, Te, As in Electronic Industry and Solar-Energy Storage	Applied Science	Menofeya University

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Number	Title	Priority Area	University
1258	Improvement of the Efficiency of Photovoltaic Solar Cells	Applied Science	Alexandria University
1259	Mossbour Effect for Characterization and Desulferization of Egyptian Coal	Applied Science	Al Azhar University
1261	Establishment of a Regional Type Culture Collection Centre in Egypt	Applied Science	Alexandria University
1262	Tnyristor Circuits for Industrial Application	Applied Science	Cairo University
1260	Potential of Geothermal Energy Resources in West Sinai	Applied Sciences	Suez Canal University
1360	Isolation Structure Identification and Synthesis of The Compound in Hibiscus Subjariffa flowers	Applied Sciences	Cairo University
1567	Studies of New Organo-sulfur Nitrogen Compounds as Potential Agricultural Chemicals and Their Influence on The Environment	Applied Sciences	Cairo University
1005	Applications of Renewable Energy Technologies for Desert Development	Energy	Alexandria University
1013	Rationalizing Energy Utilization of some Egyptian Process Industries	Energy	Cairo University
1015	Solar Heating of Soil Below Freezing Rooms	Energy	Alexandria University
1021	The Possibility Of Silicon Solar Cell Fabrication In Egypt	Energy	Ain Shams University
1024	Small Capacity In The Northwestern Coast In Egypt	Energy	Alexandria University
1025	Improvement Of The Efficiency of Photovoltaic Solar Cells	Energy	Alexandria University
1032	Simulation and Design of a Complete Solar and Auxiliary Energy System For Heating Chicken Breeders	Energy	Minya University
1035	A Study of Energy Conservation Due to Various Machine Parameters for Both Ring and Open Spinning	Energy	Alexandria University
1039	A Study of A Combined Wind and Photovoltaic Power Plant of Small Capacity in the Northwestern Coast in Egypt	Energy	Alexandria University
1073	Development and Implementation of Opportunistic Policies to Modular Design Aero Engines	Energy	Cairo University
1080	Exposure to Non-Ionizing Radiation in Egypt	Energy	Menofeiya University
1081	On Line Control of the Egyptian Unified Power System Via the National Centre of Electrical Energy	Energy	Ain Shams University
1082	Residential Use of Electricity	Energy	Cairo University

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Number	Title	Priority Area	University
1099	Development of Small Total Energy Systems for Application in Deserts and Coastal Areas	Energy	Cairo University
1100	Optimal Design of Photovoltaic Array Systems for Pumping Irrigation	Energy	Cairo University
1101	Electrification of Means of Irrigation and Its Effect on the National Economy	Energy	Cairo University
1102	Residential Use of Electricity	Energy	Cairo University
1103	Improving Egyptian Oil Recovery by Surfactant Floods	Energy	Cairo University
1104	Use of Thermal Methods to Increase Recovery from Egyptian Viscous Oils	Energy	Cairo University
1105	Power Generation from Geothermal Energy at El Ain El Sokhna and Pharons Path	Energy	Cairo University
1106	Improving Egyptian Oil Recovery by Cheap Chemical Solutions	Energy	Cairo University
1107	A Feasibility Study on the Adaptation of Non-Conventional Energy Resources in Egypt	Energy	Cairo University
1108	Research and Development of Low Cost Solar Cells	Energy	Cairo University
1109	Optimal Design of Non-Conventional Energy Systems	Energy	Cairo University
1110	The Resolution of Problems Encountered in Pipe Line Transportation of High Pour Point Egyptian Fuel Oils	Energy	Cairo University
1111	Technological Properties of Egyptian Coals and Their Uses in the Manufacture of Formed and Metallurgical Coke	Energy	Cairo University
1112	Study of Solar Map and Energy Utilization	Energy	Cairo University
1113	Thermohydrodynamic Analysis of Tilted Trust Bearings Under Dynamic Conditons	Energy	Cairo University
1114	Energy Generated from Biomass	Energy	Cairo University
		Energy	Helwan University
1116	Dynamic Stability Improvements for the Egyptian Power System	Energy	Helwan University
1117	Development of Simulation and Analysis Techniques for the High Voltage Power Transmission System of Egypt	Energy	Helwan University

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Number	Title	Priority Area	University
1118	Development of Renewable Energy Sources for Egypt	Energy	Helwan University
1119	Development of an Electrical Power Generation/Transmission Plan for Egypt	Energy	Helwan University
1120	Improving the Efficiency and Reliability of Electrical Motors and Their Application in Egypt	Energy	Helwan University
1121	Development of Measurement Standard for Gas Flow	Energy	Alexandria University
1122	Development of High Efficiency Cascade Solar Cells	Energy	Alexandria University
1123	Design of an Air Type Flat Plate Solar Collection and Rock Bed Storage System for Space Heating	Energy	Alexandria University
1124	Radiation Detection Program for Training and Background Monitoring at Alexandria Province	Energy	Alexandria University
1125	Optimal Design of Hybrid Energy Systems for Small Power Generation	Energy	Alexandria University
1126	The Production of Liquid Fuels from Coal by Natural Catalysts	Energy	Minya University
1127	Photovoltaic converters	Energy	Assiut University
1128	Solar Energy Conversion by Photovoltaic cells	Energy	Assiut University
1129	Photo cell production from Amorphous semi-conductors	Energy	Assiut University
1130	The Use of Semi-conducting Material in Fields of Electronic Devices and Solar Cells	Energy	Menofeya University
1131	Continuous Desulfurization of Some Egyptian Crudes and Products	Energy	Cairo University
1132	Oil and Gas Potentialities in the Western Desert of A.R.E.	Energy	Cairo University
1133	Microclimates in Underground Mines with Particular reference to the New Valley Phosphate Mines	Energy	Cairo University
1134	Application of Farm Wastes and Solar Energy as Renewable Energy Sources in Rural Areas	Energy	Cairo University
1135	Solar Photo Voltaic Cells	Energy	Suez Canal University
1136	Development of a Small Hot Water Air Conditioning System for Application in Egypt	Energy	Cairo University
1137	Potentials of Geothermal Energy Resources in West Sinai	Energy	Suez Canal University
1138	Production of Charcoal, Pyrolytic Oil, and Heating Gas from Agricultural Waste	Energy	Menofeya University

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Number	Title	Priority Area	University
1139	Flow and Combustion Measurements Within Divided Chamber Stratified Charge Engine	Energy	Mansoura University
1140	Agriculture Operation Required Energy Project	Energy	Cairo University
1141	Evaporation from High Dam and Qattara Lakes	Energy	Cairo University
1142	Explosion Hazards in Transporting Fuels through Inland Waterways	Energy	Zagazig University
1143	Heat Transfer to Immersed Surfaces in Fluidized Bed Coal Combustion	Energy	Mansoura University
1144	Bisconversion of Human, Animal, Agricultural Wastes for Pollution Control and Energy Conversion	Energy	Mansoura University
1145	A Feasibility Study of the Adaptation of Non-Conventional Energy Sources to Egypt	Energy	Mansoura University
1146	Atmospheric Remote Sensing by Infrared Radiation	Energy	Ain Shams University
1147	Research and Development of Air Pollution Monitoring Employing Tunable Infrared Lasers	Energy	Ain Shams University
1148	Photovoltaic Pumping in Egypt	Energy	Ain Shams University
1149	Research & Development on a Small Photovoltaic Power System	Energy	Ain Shams University
1150	Development of Multi-purpose Small Scale Solar Agricultural Dryer	Energy	Cairo University
1151	Rationalization of Energy Utilization of Some Egyptian Process Industries	Energy	Cairo University
1152	Water Desalination by Waste Fuel from Gas Turbines in Egypt	Energy	Zagazig University
1153	Improvement of the Efficiency of Photovoltaic Solar Cells	Energy	Alexandria University
1154	A Combined Wind and Photovoltaic Power Plant of Small Capacity in the Northwestern Coast of Egypt	Energy	Alexandria University
1155	Improvement of Current Capacity of the Underground Cable Network	Energy	Cairo University
1156	Development and Implementation of Opportunistic Maintenance Policies to Modular Design Aero Engine	Energy	Cairo University
1157	Control and Stability Studies of the Egyptian Electric Network	Energy	Menofeiya University
1158	Computer System for the Development of Universities in Egypt	Energy	Al Azhar University
1205	Theoretical and Experimental Investigation of Pulverized Coal	Energy	Cairo University
1206	Rationalizing the Utilization of Energy Resources in Egypt	Energy	Cairo University

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Number	Title	Priority Area	University
1207	Steam Generation Through Garbage Incineration	Energy	Cairo University
1208	Energy from Biomass (Agricultural Waste) Conservation By Pyrolysis	Energy	Cairo University
1209	Selection, Testing and Manufacture of Wind Turbines in Egypt	Energy	Cairo University
1210	Heat Transfer and Combustion in Boiler Furnaces	Energy	Cairo University
1263	Biology of the River Nile	Environment	Assiut University
1264	A Restoration Plan for Old Cairo	Environment	Helwan University
1265	Cemetery Inhabitants in Cairo: A Socio-Anthropological Study	Environment	Cairo University
1266	Archaeological Investigations in Minya	Environment	Minya University
1267	Archaeological Survey and Investigation in Upper Egypt Provinces	Environment	Assiut University
1268	Environmental Effects of Major Coastal Developments on Egyptian Coastal Areas	Environment	Cairo University
1269	Monitoring of Hazardous Pollutants to Man in Alexandria Region and Its Toxicological Impact	Environment	Alexandria University
1270	Pollution Flashover of High Voltage Insulators	Environment	Cairo University
1271	Conservation of Nile Valley from Desertification	Environment	Assiut University
1272	Impact of Developing New Communities in Western Desert on Environmental Pollution	Environment	Alexandria University
1273	Monitoring of Hazardous Pollutants in Egyptian Environment and Their Toxicological Effects	Environment	Alexandria University
1274	Ecological Bases for Land Reclamation Policies in the Western Mediterranean Coastal Land	Environment	Alexandria University
1275	River Nile Degradation	Environment	Cairo University
1276	Development of an Alarm System to Prevent Sudden Pollution Flashover On Power Networks	Environment	Cairo University
1277	Archaeological Investigation in Central and Western Desert	Environment	Tanta University
1278	Determination of the Extent of Biological Pollution Caused by Agro and Industrial Chemicals Using Different Genetic Systems	Environment	Tanta University
1279	Study of Pollution by Chemicals Used to Improve Grapevine Productivity	Environment	Minya University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1280	Coordination in Environmental Health Engineering	Environment	Alexandria University
1281	Acute and Subacute Poisoning by Chemicals: Evaluation and Upgrading of Facilities for Diagnosis	Environment	Cairo University
1282	Bio-Asay of Pollution	Environment	Alexandria University
1283	Environmental Chemistry: Water Pollution	Environment	Suez Canal University
1284	Radiation Monitoring Program in Alexandria	Environment	Alexandria University
1285	Training Specialists to Combat Industrial Pollution	Environment	Alexandria University
1286	Risks of Soil Pollution with Pesticides	Environment	Zagazig University
1287	Artificial Rain Making	Environment	Assiut University
1288	Sociological Effects of Technology Transfer	Environment	Zagazig University
1289	Pollution of Agricultural Soils with Pesticide Residues and Their SideEffects	Environment	Zagazig University
1290	Critical and Toxicological Studies in Pollution in Assiut	Environment	
1291	Biology of Fish, Anthropods and Molluscs of the Upper Egypt Nile	Environment	Assiut University
1292	Study of Relationship between Local Rainfall and Some Meteorological Elements in the North West Coast of Egypt	Environment	Cairo University
1293	Pollution of Agricultural Soils and Its Protection	Environment	Zagazig University
1294	Applied and Extension Research and Training for Desert Development	Environment	Alexandria University
1295	Utilization of Industrial Wastes for Soil Improvement	Environment	Menofeya University
1296	Research Program to Detect Mutagenic Carcinogenic Agents in Industrial and Agricultural Populations	Environment	Ain Shams University
1297	Laboratory Studies in Environmental Protection	Environment	Tanta University
1298	Interaction Between Parasite and Occupational Intoxications in Qaliubiya Governorate	Environment	
1299	Evaluation of Pesticide Exposure and Its Effects on Different Body Systems of Exposed Industrial and Agricultural Workers	Environment	Cairo University
1027	Egypt-United States University Link: Project in Environmental Health	Environmental Studies	Alexandria University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1048	Investigation of Inorganic Pollutants in the Egyptian Aquatic Environment	Environmental Studies	Cairo University
1358	Distribution, Biology, Immunology and Pathogenesis of Sarcocystis species Impacting Animals and Man in Egypt	Health	Cairo University
1359	Assessment of The Problem of Congenital and Aquired Heart Disease in Infants	Health	Cairo University
1009	Investigation of Certain Plants Growing in Upper Egypt as Potential Sources of New Drugs	Health	Assiut University
1010	The Flouride Ion and Other Trace Elements in Different Water Supplies and its Effect on the Pattern of Dental Caries in Egypt	Health	Alexandria University
1017	Investigation of an Antifertility Agent Isolated from Jatropha Curcas	Health	Cairo University
1018	Isolation Structure Identification and Synthesis of the Compound in Hibiscus Sundariffa Flowers Responsible for Antihypertensive Effect	Health	Cairo University
1083	Epidemiological Study on Genetic Diseases in Alexandria	Health	Alexandria University
1084	Development of a National Drug and Poison Center for the Arab Republic of Egypt	Health	Alexandria University
1085	Agro-Medicine Proposal	Health	Alexandria University
1086	Biological Signal Analysis	Health	Cairo University
1087	Cardiac Changes in Rural and Urban Hypertensive Egyptians	Health	Cairo University
1301	The Role of Genetics in Mental Retardation in Alexandria, Egypt	Health	Alexandria University
1302	Causes, Treatment and follow-up of Cerebral Strokes and its relation to the enviroment	Health	Mansoura University
1303	A Collective Approach to the problem of handicapped children	Health	Tanta University
1304	Value of Sclerotherapy in Management of bleeding Esophageal Varices	Health	Ain Shams University
1305	Effectiveness of various approaches of individualized educational methods on acceptability of family planning means	Health	Suez Canal University
1306	Establishing Rheumatic Heart Disease registry in the city of Ismalia	Health	Suez Canal University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1307	Study for the Microbiol Actiology of Phenmonia	Health	Alexandria University
1308	Role of Lipids in the blood Plasma and Non Specific Reactions after blood transfusions	Health	Alexandria University
1309	The Floride Ion and other Trace Elements in different water supplies and its effects on the dental caries in Egypt	Health	Alexandria University
1310	Rehabilitaion of Cleft Plate Patients	Health	Alexandria University
1311	Relation between Dental Education and current Health Status	Health	Alexandria University
1312	Interaction of Contraceptive Steriods with Essential Dietary Nutrients	Health	Alexandria University
1313	National Screening Program for Bladder Cancer in the Nile Delta	Health	Alexandria University
1314	A Study of Some of the Factors affecting Biological Availability of Drugs	Health	Alexandria University
1315	Establishing a Clinical Pharmacokinetic Laboratory at the faculty of Pharmacy at Alexandria University	Health	Alexandria University
1316	A Rodenticide from a Common Egyptian Plant	Health	Alexandria University
1317	Bladder Cancer in Relation to Bilharziasis and Nutritional Diseases	Health	Alexandria University
1318	Chemical Microbiological Screening of the Underground Water used by the Citizens of the North Western Coast	Health	Alexandria University
1319	Studies of Carcinogenic and Mutagenic Effects of Natural Toxins and Methods of Cooking in Egypt	Health	Alexandria University
1320	Maternal Health Profile in Alexandria City	Health	Alexandria University
1321	Occupational Diseases and some Chronic, Non-occupational diseases among Employees in small Establishments	Health	Alexandria University
1322	Phytochemical Investigation of Egyptian Flora for Constituents of Therapeutic Merit	Health	Alexandria University
1323	Investigation of Natural occuring Substances as Antitumor Agents	Health	Cairo University
1324	Assessment of Medicinal Plants in Sinai	Health	Suez Canal University
1325	Cost Reduction of Partial Denture	Health	Cairo University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1326	Biological Signal Analysis	Health	Cairo University
1327	Biomedical Models for The Study of Lowback Pain	Health	Cairo University
1328	Studies on The Present Status of Abdominal and Gastro Intestinal Tuberculosis	Health	Assiut University
1329	The Effect of Water Fluoridation on The Oval Mucous Membrane and on Teeth Chronology and Morphology on Groups of Egyptians People	Health	Cairo University
1330	Early Detection and Treatment of Genital Tract Malignancy in Egyptian Females	Health	Zagazig University
1331	Study of Economical Preparation of Vim Cristine From Catharomthus roseus growing in Egypt	Health	Cairo University
1332	Study of Neonatal Infection in Egypt	Health	Cairo University
1333	Establishment of Norms of Growth and Pubertal development of Egyptian Children and Adolescence	Health	Cairo University
1334	Development of Health Information System Revelant to Egyptian Environment	Health	Cairo University
1335	Evaluation of Sclerotherapy in Treatment of Bleeding Esophageal Varices in Schistosomal Hepatosplenic Cases	Health	Cairo University
1336	The Role of Camels in Human Hydatidosis in Egypt	Health	Cairo University
1337	Chemotherapeutic management of breast Cancer and Leukemias	Health	Cairo University
1338	Studies on Hemaglobinopathis in Egyptian Children	Health	Cairo University
1339	Hypertension With Pregnancy in Egyptian Females	Health	Zagazig University
1340	The Snail Genus Bulinus :Factors Concerned with its Transmission of Schistosmiasis in Egypt	Health	Ain Shams University
1341	Effect of Anti Schistosomal Treatment on Pure and Fixed Hepatic Schistosmiasis	Health	Alexandria University
1342	Immunologic Research in Schistosomiasis Among Egyptian Children	Health	Mansoura University
1343	The Impact of Endemic Schistosomiasis on The Health and Economics of Sharkia Inchebitants	Health	Zagazig University
1344	Malabsorption in Bilharzial (Schistosomal) Disease in Sharkia, Egypt (A Multicentre Study)	Health	Zagazig University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1345	Screening of Infants and Children for Early Diagnosis of Bilharzia	Health	Tanta University
1346	Searching for the Anti-Cancer Drugs	Health	Cairo University
1347	Contraceptives of Plant Origin	Health	Cairo University
1348	Antitumor Compounds from Egyptian Plant Spices	Health	Cairo University
1349	Tissue Cultures of Medicinal Plants as a Potential Source for Medical Drugs	Health	Tanta University
1350	Screening of Infants and Children for Early Diagnosis of Bilharziasis in Rural Areas of Mid Delta	Health	Tanta University
1351	Utilization of Plant Waste Products for Pharmaceutical Drug and Food Industry and Marine Algae for Economic and Medical Purposes	Health	Tanta University
1352	Intrafamilial Spread of Rheumatic Fever and Rheumatic Heart Diseases	Health	Tanta University
1353	Investigation of Cooking Oil Role in Human and Rat Cancer	Health	Cairo University
1354	Investigation of an Antifertility Agent Isolated from Jatropha Curcas	Health	Cairo University
1355	The Use of Radiosensitizers and Radioprotectors Radiation treatment of Common forms of Cancer in Egypt	Health	Cairo University
1356	The Effects of Schistosomiasis on Drug Metabolism	Health	Cairo University
1357	Study of Wild Egyptian plants of Potential Medical Activity	Health	Cairo University
1361	Induction of Deep, Local Hyperthermic by Ultrasound from Cancer and Bilharzial treatment	Health	Cairo University
1362	Cardiac Changes in Rural Urban Hypertensive Egyptians	Health	Cairo University
1363	Drugs Pharmacokinetics in Schistosomiasis	Health	Assiut University
1364	Clinicopathological and Immunological Studies on Thyroid Cland Swelling in Upper Egypt	Health	Assiut University
1365	Clinicopathological and Immunological Studies on Bilharzial Hepatic Fibrosis and Partial Hypertension in Upper Egypt	Health	Assiut University
1366	Investigation of Certain Plants Growing in Upper Egypt as Potential Sources of new Drugs	Health	Assiut University
1367	The Effect of Industrial Waste Products in Upper Egypt on Conditional Health of Farm Animals	Health	Assiut University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1368	Clinical and Epidemiological Study of Acute Gastro Enteritis in Infants in Benha with Administration of Oral Rehydration on Home Basis	Health	Zagazig University
1369	Ethnobotany and Drug Research The Scientific Investigation of Herbal Drug	Health	Zagazig University
1372	Synthesis and Biological Screening of New Nonantimonials as Oral Antibilharzial Drugs	Health	Mansoura University
1373	Bilharzias and Coagulation Defects	Health	Ain Shams University
1374	Trials to Solve The Problems of Bleeding and Coagulation defects in liver Cirrhosis	Health	Ain Shams University
1375	An Epidemiological Study of Trichosis in Egypt	Health	Ain Shams University
1376	Study for Hepatitis Virus Antigenaemia in Egypt	Health	Alexandria University
1377	Genetic Diseases	Health	Alexandria University
1378	Therapeutic Optimization of Pharmaceutical Dosage Forms	Health	Alexandria University
1379	Study of Interaction of Some Pesticides Contaminating Our Food	Health	Alexandria University
1381	Agromedicine Research and Control of Environmental Hazards of pesticides	Health	Alexandria University
1382	Cross Sectional Study of Coronary heart Diseases Risk Factors in Young Egyptians	Health	Alexandria University
1383	Perinatal Risk Factors	Health	Alexandria University
1384	Dental Health : Needs Assessment Survey in Dentistry	Health	Alexandria University
1385	Chemical Screening of The Underground Water used by Citizens in The Northwesterns Coast Areas	Health	Alexandria University
1380	Hypertension : Detection and Study in Young Egyptian	Health	Alexandria University
1033	Rural Development in Samalut District: An Analytical Study	Human Resources	Minya University
1034	Development of Pre-Service Middle School as Inquiry Teacher in Science	Human Resources	Minya University
1190	Engineering Education in Egypt: A Case Study	Human Resources	Cairo University
1191	Research and Development for In Service English Language Teacher Education	Human Resources	Ain Shams University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1192	Comprehensive Basic Education Project	Human Resources	Helwan University
1193	Role of Rural Women in Rural Development	Human Resources	Alexandria University
1194	Educational Resources Information Centre	Human Resources	
1195	Centralization of Sugar Material Industry in Minia Governorate	Human Resources	Minya University
1196	Activities to Implement Stage II of Building R&D Centre for Vocational Training at Alexandria University	Human Resources	Alexandria University
1197	Egypt-U.S. University Linkages in Environmental Health Engineering	Human Resources	
1198	Establishment of a Central Chemical Engineering Laboratory	Human Resources	Alexandria University
1200	The Tanta Center for Educational Technology	Human Resources	Tanta University
1201		Human Resources	Cairo University
1202	The Establishment of a Model Educational Media Laboratory at the Women's College	Human Resources	Ain Shams University
1300	Project of a Centre of Museology	Human Resources	Cairo University
1178	Proposal for National Standard for Plastic Piping	Industry	Cairo University
1001	Towards Better Utilization of Raw Materials and Energy in the Metallurgical Industry in Egypt.	Industry	Assiut University
1002	Development and Design Optimization of Welding Transformers Produced by El-MACO Company	Industry	Menofeiya University
1004	Water Desalination by Waste Heat from Gas Turbines in Egypt	Industry	Zagazig University
1037	Computer Aided Maintenance Programs (CAMP) Using Vibration and Noise Measurement	Industry	Alexandria University
1038	Economical Study of Spare Parts Consumption in Textile Industry in Egypt	Industry	Alexandria University
1046	Diagnoses of Causes of Leaks in Pipes and Sewers and Means of Treatment	Industry	Cairo University
1046	Diagnoses of Causes of Leaks in Pipes and Sewers and Means of Treatment	Industry	Cairo University
1046	Diagnoses of Causes of Leaks in Pipes and Sewers and Means of Treatment	Industry	Cairo University
1077	Design and Fabrication of Micro-Strips for Micro-Wave Circuits	Industry	Menofeiya University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1088	Estimation of Machine Latent	Industry	Alexandria University
1089	Investigation and Development of One Bath Dying and or Finishing of Blend Fibres	Industry	Al Azhar University
1159	Development and Design Optimization of New Forms of Air Conditioning Motors for Egyptian Industry	Industry	Menofeiya University
1160	Transmission Towers	Industry	Ain Shams University
1161	Super Plastic Forming in Industry	Industry	Cairo University
1162	Conditions Related to Complete Mechanization of Egyptian Balady Bread Manufacture	Industry	Cairo University
1163	Economical Study of Spare Parts Consumption in Textile Industry in Egypt	Industry	Alexandria University
1164	Evaluation and Classification of Egyptian Sand and Clay Minerals for Industrial Uses	Industry	Ain Shams University
1165	Computer Control for Cement Manufacturing Plant	Industry	Cairo University
1166	Feasibility of Establishing Manufacturing Plants for Mechanical Components in Egypt based on Group Technology	Industry	Cairo University
1167	The Study of Wear and Its Economical Importance	Industry	Cairo University
1168	Use of Computers to Improve Automation at Military Factories to Raise Productivity	Industry	Cairo University
1169	Application of Micro Computer Systems for Management and Operation of Egyptian Industry	Industry	
1170	Development of a New Kerosene Cooker for Domestic Use	Industry	Cairo University
1171	Process Computer Control of Egyptian Factories to Raise Productivity	Industry	Cairo University
1172	Study of Expected Wear of Outdoor Machinery Proposed for Development Goals in Egypt	Industry	Cairo University
1173	Scale Up and Design of Some Process Equipment on the Basis of Developing New Generalized Correlation	Industry	Cairo University
1174	Production of Dibutyl Phthalate Plasticizer from Local Raw Materials	Industry	Cairo University
1175	Real Time Micro Computer Based System to Measure Process and Monitor Production Data	Industry	Cairo University

Proposals Submitted by Egyptian Universities to the ERCU

Number	Title	Priority Area	University
1175	Alloy Development Via Duplex Alpha Martensitic Structures	Industry	Cairo University
1177	Promoting Superplastic Forming in Small Scale Egyptian Industries	Industry	Cairo University
1179	Process Management Systems for Egyptian Production Operations	Industry	Cairo University
1180	Improvement of Aluminum Cables Performance	Industry	Cairo University
1181	Building the Capacity for the Use of Finite Element Techniques in Solving Egyptian Industrial Problems	Industry	Cairo University
1182	Preliminary Plan to Develop Maintenance Systems in Food Security and Housing Companies	Industry	Cairo University
1183	Melting, Casting, Coiling, Cold Drawing and Heat Treating of Some Special Steels in Delta Steel Mills	Industry	Cairo University
1184	The Feasibility of Silicon Solar Cell Fabrication in Egypt	Industry	Ain Shams University
1185	Synthesis of New Organic Dyes for Dying Cotton and Polyester Fibres	Industry	Alexandria University
1186	Mechanization of Some Cotton Production Processes	Industry	Mansoura University
1187	Mixed Fibres Dying Technology	Industry	Mansoura University
1189	Solid State Control Application for Egyptian Industry	Industry	Helwan University
1020	Evaluation Of Continuous Liquid Extraction To Sample Organic Pollutants In The Nile River	Infrastructure	Cairo University
1078	Ground Conductivity Map of the South Western Part of the Nile Delta	Infrastructure	Menofeya University
1211	Estimating the Role of the Inland Navigation System in the National Ports Policy	Infrastructure	Cairo University
1212	New Aspects of Application of Egyptian Clays in Building	Infrastructure	Cairo University
1213	Suburban Area Development in Giza Province	Infrastructure	Cairo University
1214	Building Materials from Natural Resources for Economic Housing	Infrastructure	
1215	Optimization of New Towns in Egypt	Infrastructure	Helwan University
1216	Improving the Effectiveness of the Passenger and Cargo Terminal at Cairo International Airport	Infrastructure	Cairo University
1217	Development of Improved Telecommunication Systems for Egypt	Infrastructure	Helwan University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1218	Design and Establishment of Information System to Serve Urban Planning in Egypt	Infrastructure	
1219	Rationalization of Use of Building Materials	Infrastructure	Cairo University
1220	Direct Filtration of Nile River Water Using Deep Bed Granular Media Filters in Series	Infrastructure	Assiut University
1221	Engineering and Economic Evaluation of Recycling of Old Pavement Materials in Egypt	Infrastructure	Cairo University
1222	Transfer of VLSI Technology and Its Adaptation to Digital Exchanges and Similar Systems in Egypt	Infrastructure	Cairo University
1223	Strengthening and Repair of Concrete Structures	Infrastructure	
1224	Effect of Nile Water and its Surrounding Humidity on Construction Materials	Infrastructure	
1226	Quality Control on Service Industries in Egypt	Infrastructure	Ain Shams University
1227	Low-Cost Computer Based Systems for the Development of Business and Economics in Egypt	Infrastructure	Al Azhar University
1228	Development of Building Materials from Natural Resources for Economic Housing	Infrastructure	Cairo University
1008	Up-grading of Some Egyptian Clays to be Used as Bleaching Agents	Land Development	Ain Shams University
1026	Effect of Blending Drainage Water and Fresh Water on Field Crops and Their Fertilization in Northern Dakahlia	Land Development	Mansoura University
1092	Studies on the Estimation of Fertilizer Requirements for Fruit and Vegetables in Menofeiya Governorate	Land Development	Menofeiya University
1094	Sand Accumulation and Soil Stabilization Along the Nile Bank of El- Minia District. Part I: The Area North of El-Minia	Land Development	Minya University
1229	Utilization of Sewage Waste Waters and Sludges for Agricultural Production in Sandy Calcareous Soils	Land Development	Assiut University
1230	Crop Responses to Water at Different Stages of Growth with Particular Reference to Grain, Legume, and Sugar Cane Crops	Land Development	Assiut University
1231	Better Management for Sugar Cane Soils in Upper Egypt	Land Development	Assiut University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1232	Developing Technology and Natural Organic Materials for Improving Sandy Calcareous Soil Characteristics and the Fertilization	Land Development	Ain Shams University
1233	Economic Supply of Fertilizers to Crops	Land Development	Ain Shams University
1234	Studies on Soils and Water in the Integrated Zone Between Egypt and Sudan	Land Development	Ain Shams University
1235	Project of Collecting, Classifying and Programming Soil and Water Research Data in Egypt	Land Development	Ain Shams University
1236	Use of Saline Water for Agricultural Development in the Mediterranean Northern Coastal Desert	Land Development	Alexandria University
1237	Increasing Productivity of Legumes through Mycorrhiza Association	Land Development	Alexandria University
1238	Development of Symbiotic Nitrogen Fixation for Maximization of Legume Production under Egyptian Field Conditions	Land Development	Alexandria University
1239	Use of Saline Water in Irrigation of Northwestern Coastal Calcareous Soils with Special Reference to Areas West of Nubaria Canal	Land Development	Alexandria University
1240	The Evaluation of Alternative Land-use Systems in the Western Coastal Region of Egypt	Land Development	Alexandria University
1241	Soil, Water and Salt Balance in Relation to Different Coastal Regions in Egypt	Land Development	Alexandria University
1242	Use of Saline Water in Irrigation in Calcareous and Alluvial Soils in Egypt	Land Development	Alexandria University
1243	Maximization Crop Yield in Newly Reclaimed Soils	Land Development	Cairo University
1244	Land Capability Parameters of the Sandy Soils Expected for Agricultural Expansion	Land Development	Cairo University
1245	Tillage Requirements for Maximum Crop Yield	Land Development	Cairo University
1246	Agrometeorological and Soil Productivity Studies in Two Major Field Crops: Cotton and Rice	Land Development	Cairo University
1247	Amelioration of Sandy Soils Using Modern Techniques for Application of Soil Amendments	Land Development	Al Azhar University
1248	Improvement of Water and fertilizer Use Efficiencies in the Newly Reclaimed Sandy Calcareous Soils in Minya Governorate	Land Development	Minya University

Proposals Submitted by Egyptian Universities to the FRCU

Number	Title	Priority Area	University
1249	Field and Laboratory Studies of Sand Dunes in Sinai, Their Distribution, Movement and Microbiology Using Remote Sensing	Land Development	Suez Canal University
1250	The Possibility of Agricultural Expansion in Some Areas Located at The Coast of the Red Sea	Land Development	Suez Canal University
1251	Optimization of Productivity of Problem Soils Through the Use of Varieties Tolerant to Nutrient Deficiencies, Salinity or Water Stress	Land Development	Assiut University
1252	Modification of the Cotton Rotation and the Long Term Effects of Zero Tillage and Fertilizer Treatments	Land Development	Tanta University
1093	Utilization of Sewage Waste Waters and Sludges for Agriculture Production in Sandy Calcareous soils	Land development	
1412	Studies on Some Breeding Diseases of Poultry in the Nile Delta and Suggestions for their Control	Medicine	Zagazik University
1415	A Complete Screening on the Recent Bacterial and Viral Diseases of Poultry in Upper Egypt	Medicine	Assiut University
1022	Research And Educational Capacity Building In The ^{Chem} Materials for Science	Science	Alexandria University
1029	Increase of Sucrose Recovery from Sugar Cane Juice	Science	Minya University
1030	Ultra Sound Endoscopy	Science	Minya University
1036	Economic Potentialities of the Upper-Eocene-Oligocene-Lower Miocene Sediments in Northern Egypt	Science	Alexandria University
1090	Evaporation From Qattara and High Dam Lakes	Science	Cairo University
1095	Trials to Solve the Problem of Bleeding and Coagulation Defects in Liver Cirrhosis	Science	Ain Shams University

7. LETTER TO DR. M. FAROUK EL-HITAMI

March 19, 1984

Dr. M. Farouk El-Hitami
Director
Center for Middle East
Management Studies
The American University in Cairo
Bab El-Louk
Cairo, Egypt

Dear Dr. El-Hitami:

This letter will supplement and expand upon my correspondence of February 27, 1984 with Professor Amr Mortagy concerning the objectives and the proposed agenda for two seminars which AUC is being asked to conduct on behalf of the Science and Technology Assessment. As was discussed in the March 17 meeting with Carl Schieren and you, the Assessment is addressing Egyptian science and technology broadly. However, the proposed seminars aim at rather specific objectives.

One seminar is intended to explore and assess the technological factors which have been contributory to the progress of selected economically successful, technologically based Egyptian enterprises. The experience of individual companies may differ but the agenda should include:

1. The methods for recruitment, training and retention of skilled production workers and of technical/engineering staff. The discussion should clarify the extent to which this has been or continues to be a constraint and the nature of any steps or incentives utilized to improve staff capabilities and productivity.
2. The role of equipment, process design, manufacturing systems, etc., in company success. We would hope as well to clarify the sources of such technologies; local or foreign purchase, licensing, local adaptation or innovation, etc.
3. The markets which the companies serve, domestic and export, and the role of quality standards and manufacturing control in satisfying these markets.
4. The sources of raw materials and/or intermediate inputs to the company with discussion of the quality, supply reliability, costs and other supply factors.
5. The management, marketing, inventory, cost control and other "soft" technologies relevant to company success with discussion of local and international sources for such technologies and the relative effectiveness of specific approaches.

The seminar should be designed to explore the views of young faculty members concerning ways in which teaching and research might be improved in Egyptian universities. The invitees should be drawn from five or six different universities, should include representation both of persons receiving their doctoral degrees from Egyptian universities and those having done their graduate training abroad. The fields of specialization of the attendees should include the physical sciences, engineering, medical science, agriculture and management/economics. It is expected that a variety of perceived constraints may emerge from the discussion, but the agenda should cover the following topics:

1. Information needs, including access to Egyptian research results, international publications, grant and fellowship opportunities, national plans, etc.
2. Possible improvements in the quality and quantity of lecture aids, research supplies, equipment maintenance and other services.
3. Opportunities for better utilization of scientific equipment, research facilities and faculty time.
4. The proper role of collaborative or joint research with other Egyptian institutions and/or foreign institutions.
5. The status of peer review and grant award mechanisms in Egypt.

We agreed that AUC would provide a chairman for each seminar who will be charged with the responsibility for maintaining schedules and ensuring that discussions are directed to the seminar objectives. USAID will designate one individual for each seminar who will be available to consult with the chairman on the interpretation of the assessment objectives and on any revisions to the above agendas.

The AID pre-contract documents, including the budget, have been modified to reflect our discussion and the reduction from three to two seminars. I hope that this provides the basis for a mutually satisfactory and rewarding activity.

Sincerely,

Clint A. Stone
Consultant
HRDC/ST, USAID/Cairo

cc: Carl V. Schieren, Jr.
Director of Projects and
Grant Development
American University in Cairo

cc: Dr. Robert E. Mitchell
USAID/Cairo

Drafted by: HRDC/ST/C;C.Stone:rf:03/19/84:0100A

8. PARTICIPANTS IN INDUSTRY CONFERENCE

9. PARTICIPANTS IN UNIVERSITY FACULTY CONFERENCE

PARTICIPANTS IN INDUSTRY CONFERENCE

April 17 & 19, 1984

* From Industry

- Eng. Mohamed Ahmed Abdel Karim, C.O.B.	El Nasr Co. for Glass & Crystal
- Eng. Attia Mohamed Khafaga	El Nasr Co. for Glass & Crystal
- Eng. Mohamed Fouad El Guindi, G.M. Chemical	El Nasr Co. for Coke & Basic
- Mr. Mohamed Sokkr Chemical	El Nasr co. for Coke & Basic
- Eng. Moustafa Sobhi, C.O.B.	Misr Co. for Milk & Food
- Eng. Ramsis Rizkallah	Misr Co. for Milk & Food
- Eng. Hosni Ismail, C.O.B. Porcelain	The General Co. for Ceramic &
- Eng. Aziz Mankarious Porcelain	The General Co. for Ceramic &
- Eng. Gamal El Manadeli, C.O.B. Kintwork	El Kahira Co. for Clothes &
- Eng. Wadia Younan Kintwork	El Kahira Co. for Clothes &
- Eng. Sabry Aglan, C.O.B. Co.	Abu Zaabal Fertilizer & Chemicals
- Mr. Mohamed Moursi Co.	Abu Zaabal Fertilizer & Chemicals

* From AUC

- Dr. M. Farouk El Hitami
- Dr. Amr Mortagy
- Dr. Heba Handousa
- Dr. Samir Youssef
- Mr. Saad Mansour

* From USAID

- Mr. Clint Stone
- Mr. Ross Hammond
- Dr. John Daly

* Invited Guests

- Dr. Miko Nishimzu	The World Bank
- Mr. Youssefd El Sharnoubi	OSEDs
- Mr. Ahmed Khorshed	OSEDs