I'm assuming that these two are really 263ØØ13

(2)

PD-AAK-244-B1

Country: EGYPT

GRANT ACTIVITY DATA

TABLE III

TITLE	FUNDS	PROPOSED OBLIGATION ($000)	
Technical and Feasibility Studies II	Security Supporting Assistance	FY 76 3,000	
263ØØ13	PRIOR REFERENCE	INITIAL OBLIGATION	SCHEDULED FINAL OBLIGATION
NUMBER		FY: 1976	FY: 1976

Project Target and Course of Action: This project will finance the cost of the services of U.S. firms, agencies, or individuals to perform technical, analytical, pre-feasibility and feasibility studies for prospective development projects and programs in Egypt.

Progress to Date: One of the most serious constraints on Egyptian economic development at this point is the shortage of thoroughly planned financeable projects and programs to absorb widespread offers of assistance and interested investment capital. While many prospective donors have made offers of financial assistance for projects in Egypt, much of this assistance has not yet been committed due to a paucity of projects that have been professionally researched, analyzed and found to be economically feasible.

Egypt lacks the internal resources to conduct the studies needed to effectively utilize the economic development assistance potentially available from donors and investors, and has requested our assistance in conducting such studies. American expertise utilized in this way will improve the speed and effectiveness of Egypt's economic development program, identify specific projects and programs towards which current offers of assistance can be applied, and as sound activities are developed, help attract and put to use additional third country assistance in a way which will produce balanced expansion of infrastructure and income producing projects. The U.S. expertise employed for these studies will be drawn largely from the U.S. private sector. However, U.S. Government agencies will also be utilized in those cases where the best source of expertise lies within the Government.

FY 1976 Program: Three million dollars is requested to finance a wide range of studies which will include, but not be limited to, the following: (1) development of plans for the Egyptian transportation network; (2) studies for improvement in Suez Canal facilities; (3) study of grain storage and distribution systems; (4) studies for enlargement of the Ismailia irrigation canal; (5) design of domestic and industrial water systems; (6) design of sewage disposal systems; (7) study and design of telecommunication facilities; (8) studies in irrigation and drainage systems; (9) preparation of a general plan for rural electrification; (10) comparative study of local building materials and construction methods.

U.S. DOLLAR COST (In Thousands)

	Obligations	Expenditures	Unliquidated
Through 6/30/74	–	–	–
Actual FY 75	–	–	
Actual through 6/30/75	–	–	–
Proposed FY 76	3,000	Future Year Obligations	Estimated Total Cost
Proposed 5th Quarter	–	–	3,000

Cost Components	OBLIGATIONS: Actual FY 1975 Direct AID	Actual FY 1975 Contract/Other Agency	Actual FY 1975 Total	Proposed FY 76 Direct AID	Proposed FY 76 Contract/Other Agency	Proposed FY 76 Total	Proposed 5th Q. Direct AID	Proposed 5th Q. Contract/Other Agency	Proposed 5th Q. Total
U.S. Technicians	–	–	–	–	3,000	3,000	–	–	–
Participants	–	–	–	–	–	–	–	–	–
Commodities	–	–	–	–	–	–	–	–	–
Other Costs	–	–	–	–	–	–	–	–	–
Total Obligations	–	–	–	–	3,000	3,000	–	–	–

PRINCIPAL CONTRACTORS/AGENCIES

Various private sector contractors.

Country: EGYPT

SECURITY SUPPORTING ASSISTANCE GRANT ACTIVITY DATA

TABLE VI

TITLE	FUNDS	PROPOSED OBLIGATION ($000)	
Technical and Feasibility Studies II	Security Supporting Assistance	FY 77 2,000	
NUMBER 263-11-995	PRIOR REFERENCE FY 1976 Middle East Peace & Security Supporting Assistance, p. 24	INITIAL OBLIGATION FY: 1977	SCHEDULED FINAL OBLIGATION FY: 1977

Goal: To enhance the capacity of the Egyptian Government to attract and utilize foreign financing for development projects.

Purpose: To improve the quality and expand the number of sector assessments, analytical studies and feasibility studies now being undertaken in Egypt by making available to the Government of Egypt on a grant basis the services of U.S. firms and institutions to assist in the preparation of development programs and projects and in the conduct of feasibility studies.

Background: One of the most serious constraints to Egyptian economic development at this point continues to be the shortage of thoroughly planned financeable projects and programs to absorb offers of assistance and interested investment capital. While many prospective donors have made offers of financial assistance for projects in Egypt, much of this assistance has not yet been committed due to a paucity of programs and projects that have been professionally researched, analyzed and found to be economically feasible.

Egypt lacks the internal resources to conduct the studies needed to effectively utilize the economic development assistance potentially available from donors and investors, and has requested our assistance in conducting such studies. A similar grant was made in FY 1975 and at the request of the Government of Egypt, we plan additional assistance of this type in FY 1976.

Major Outputs: An enlarged shelf of projects that are ready for financing by private investors, other donors, or in some cases, by A.I.D.

Host Country and Other Donors: In 1975 offers of project financing from other donor countries amounted to over $1 billion. Many of these project offers have not moved forward because of the inability of the Egyptian Government to complete technical and feasibility studies in a timely fashion. This grant is intended to serve a catalytic purpose bringing these projects to fruition.

FY 1977 Program: Two million dollars is requested for use in engaging U.S. private sector expertise to assist the Government of Egypt in a wide variety of development project studies.

U.S. DOLLAR COST (In Thousands)

	Obligations	Expenditures	Unliquidated
Through 6/30/75	–	–	–
Estimated FY 76	–	–	
Estimated through 6/30/76	–	–	–
Estimated Transition Quarter	–	Future Year Obligations	Estimated Total Cost
Proposed FY 77	2,000	–	2,000

Cost Components	OBLIGATIONS									PRINCIPAL CONTRACTORS/ AGENCIES
	Estimated FY 76			Estimated Transition Quarter			Proposed FY 77			
	Direct AID	Contract/ Other Agency	Total	Direct AID	Contract/ Other Agency	Total	Direct AID	Contract/ Other Agency	Total	
U.S. Technicians	–	–	–	–	–	–	–	2,000	2,000	Various U.S. private sector contractors.
Participants	–	–	–	–	–	–	–	–	–	
Commodities	–	–	–	–	–	–	–	–	–	
Other Costs	–	–	–	–	–	–	–	–	–	
Total Obligations	–	–	–	–	–	–	–	2,000	2,000	

Proj. 2630013
DN-

EG
600.3092
M414a
v.1
Sept. 77

2630013

M.I.T./CAIRO UNIVERSITY
TECHNOLOGICAL PLANNING PROGRAM

PD-AAK-244-c1

3

EVALUATION REPORT

Volume I of Two Volumes

61p.

A.I.D.
Reference Center
Room 1056 NS

Submitted By
M.I.T. TECHNOLOGY ADAPTATION PROGRAM

as a third quarterly progress report in accordance with the requirements of AID Contract NE-C-1291.

Project Number 263-0013

September 15, 1977

TPP EVALUATION REPORT

September 15, 1977

TABLE OF CONTENTS

1. Summary

2. Introduction to the Program

   2.1 Background

   2.2 Statement of Program Objectives: Phase I

3. Program Review & Evaluation

   3.1 Summary of Major Program Activities: December 15, 1976 - September 15, 1977

   3.2 Evaluation Criteria

   3.3 Meeting the Evaluation Criteria

      3.3.1 Appropriate Project Topics

      3.3.2 Composition & Commitment of Project Teams

      3.3.3 Utility of Anticipated Project Results

      3.3.4 Commitment of Senior Ministry Supervisors to the Projects

      3.3.5 Active Participation by Ministry Personnel on Projects

      3.3.6 Contribution to the Planning Capability of the Ministries Involved

      3.3.7 Project Development Capability

      3.3.8 Administrative Organization

      3.3.9 Financial Planning & Control Procedures

   3.4 Overview of Program Activities for September 15 to December 15, 1977

4. Summary of Technical Projects: Progress to Date and Planned Activities

   4.1 Stochastic Model of Nile Inflows to Lake Nasser

   4.2 Nile Delta Groundwater Model

   4.3 The Housing and Construction Industry

   4.4 Urban Transportation Policy for Cairo

   4.5 Highway Transportation Planning

Reference Center
Room 1656 NS

4.6 Government Incentives for Small-Scale Industry

4.7 Improved Macroeconomic and Sectoral Planning Methods

4.8 Egyptian Labor Migration

4.9 Health Care Delivery Systems

4.10 Engineering Applications for the Egyptian Plastics Industry

4.11 Long-term Investment Planning for the Egyptian Electric Power System

5. Program Administration

5.1 M.I.T. Administrative Activities: June 15 - September 15, 1977

5.2 Activities of the Liaison Office: June 15 - September 15, 1977

6. Financial Plans

LIST OF TABLES

Table 1 - Chronology of Major Events in the Technological Planning Program: December 1976 to September 15, 1977

Table 2 - M.I.T./Cairo University Technology Planning Program Evaluation Criteria

Table 3 - M.I.T./Cairo University Technological Planning Program Research Programs - 1977

Table 4 - M.I.T./Cairo University Technological Planning Program Expenditures to Date: Egyptian - 9/15/77

Table 5 - M.I.T./Cairo University Technological Planning Program - Summary Report of Past and Forecasted Expenditures: U.S. Dollars - 9/15/77

APPENDICES

I. Formal Agreements:
a) The Overall Agreement between Cairo University and M.I.T.
b) The Administrative Agreement between Cairo University and M.I.T.
c) The tax status of the Cairo University/M.I.T. Program as interpreted by the Minister of Finance of the Arab Republic of Egypt

II. M.I.T., Cairo University and Ministry Participants on the Technological Planning Program.

III. Program Travel During the Third Quarter: June 15 to September 15, 1977

IV. Program Administration and Personnel

V. Project Progress Reports 6/1/77 - 9/1/77 (Volume II: Separate Attachment)

1. Summary

The Evaluation Report summarizes the activities of the M.I.T./Cairo University Technological Planning Program (TPP) under U.S. A.I.D. Contract NE-C-1291 for the first nine months of Phase I: December 15, 1976 to September 15, 1977. The Evaluation Report, thus, summarizes the activities of the third quarter as well as those activities described in the first two quarterly progress reports.

In order to evaluate the first phase of this program, it is useful to summarize the motives for organizing a program of academically-based technical assistance to Egyptian ministries. The impact of the "Open Door" policy on government-based planning, the increased availability of funds for technical assistance and economic and social development projects, and the existence of technical engineering and planning methodologies not currently available in Egypt all have encouraged increasing efforts to expand the expertise in technical planning and project analysis within the government ministries.

To respond to this need, the U.S. A.I.D. Mission in Cairo, the Massachusetts Institute of Technology and Cairo University have developed a program of applied research to upgrade the capability of Egyptian ministries in technical analysis and planning. The program mobilizes academic support for applied research related to problems and planning methodologies at the sectoral level as well as specific development projects and social and economic issues. The first phase of this program is conceived as a mechanism for testing the receptiveness to this program and the practicality of organizing this tripartite university-ministry activity.

A set of evaluation criteria have been developed to assist the program sponsor and participants in evaluating the progress of this first phase of the program. The specific topic areas, the quality and commitment of the university and ministry personnel, the utility of the project results, and the capability of identifying and developing new project areas and of administering the program are the principal features of the program by which its reception and practicality can be demonstrated and evaluated.

The first three months effort was devoted to identifying specific projects within the scope of the program, organizing the Liaison Office at Cairo University and establishing the program administration and financial

control procedures. By March 15, 1977 nine projects had been identified in the areas of water resources, transportation, housing and construction, industrial development, economic planning, demographics and health care delivery.

Technical activities during the second three months focused on the initial tasks of the specific projects. Data collection and formulation of analytic models represented the major effort. Projects with pre-existing analytic frameworks began analyzing case studies.

Technical activities during the third quarter focused on the completion of data collection, survey and analytic models, and the performance of preliminary analyses for specific case studies. Several projects installed computer-based models in facilities at Cairo University and the government ministries, and ministry personnel were trained in their use. Two additional projects, Engineering Applications for the Egyptian Plastics Industry, and Investment Planning for the Egyptian Electric Power System were approved by the program Executive Committees and preliminary data collection and analyses have been completed.

The administration of the program is under the supervision of the Vice Rector for Research & Graduate Studies at Cairo University and the Director of the Technology Adaptation Program at M.I.T. Program Steering and Executive Committees have been established to oversee the specific project activities and the operation of the Liaison Office.

Financial disbursement and accounting procedures have been established in accordance with the policies of the M.I.T. Office of Sponsored Programs and the Office of the Comptroller, The program expenditures to date are $ 501,444 and ŁE 249,386. Planned expenditures for the next three months are $ 374,800 and ŁE 200,700

2. Introduction to the Program

2.1 Background

During the last five years, substantial political and social transformations have placed an increasing burden on the Government of Egypt to plan and execute programs contributing to the national development. The re-establishment of diplomatic relations with the United States, and the resulting commitment to substantial, long-term economic assistance has been a major pressure on the government ministry agencies responsible for these programs. Early contacts between United States and Egyptian cabinet members identified the limited ability in project design, analysis and implementation as a major obstacle to ministry sponsored development efforts.

The "Open Door" Policy has resulted in considerable growth of the private sector since 1973. New tax laws, incentives for joint ventures with foreign partners, and readily available foreign exchange have contributed to this growth. In some cases, this process has placed an additional burden on the ministries, now responsible for directly organizing a development effort in the public sector as well as identifying policies and incentives for support of the private sector.

U.S. A.I.D. and other donor agencies have been forced to resort to sponsoring overall, sectoral, and project level technical and economic studies to assist in identifying viable investment opportunities. The lack of adequace Egyptian infrastructures to perform these pre-investment activities has resulted in a substantial backlog of available funds for investment. It is estimated that $2.5 billion in foreign currency financing is currently available to the Egyptian government from foreign sources, awaiting satisfactory projects to be identified and developed.

While other obstacles confront the Egyptians' aspiration to develop and modernize their economy, the current "surplus" of investable resources, and the numerous, visible opportunities for expanded productive capacity or improved services suggest that the limited capability of government ministries to plan and implement development projects may be the most pressing area for development assistance in Egypt.

This assistance may take a variety of forms, and inevitably lending agencies will have to become more directly involved in the project development process, both directly and through hired consultant teams. Both of these approaches will also have inevitable limitations. Lending agencies like

A.I.D. are already burdened with the administrative responsibility for a broad range of projects and the technical expertise in the broad range of disciplines required for a balanced development effort is impossible to maintain "in-house." When they do get directly involved in project development, competing responsibilities invariably delay the process. The U.N.D.P., for example, currently requires three years to develop a representative project in Egypt. Consultant teams may overcome the technical and time constraints, but have encountered numerous other obstacles preventing effective cooperation with Egyptian government agencies. The relationship between the consultants and the ministries is rarely well-developed, and difficulties encountered with data collection are often insurmountable in the time frames allotted. Communication barriers are always substantial, and the use of local consultant counterparts often not effective. Even in well-executed consulting efforts, the ministry must still develop an understanding of the methodology and interpret the results. All too frequently, appreciation within the ministries for the sophisticated analytic models created elsewhere is not well-developed. As a result, the capabilities within the ministries of assessments of external consultants' findings are rather limited. Finally, even in successful consultant efforts, the ministries are left only with a well-documented study and a set of recommendations. The ministries' capability to better manage future development efforts in the same field has not been significantly improved. A new approach to planning assistance to the Egyptian ministries is, therefore, needed.

The capabilities for organized, rational analysis of technical development programs have been the outgrowth of research efforts at the Massachusetts Institute of Technology, and other United States and foreign universities, and many national and international organizations. The state of art now reflects an interdisciplinary approach in which technical alternatives are viewed in a broad social and politcal context. From a technical perspective, there is the requirement of identifying the "appropriateness" of the available technological alternatives. The economic evaluation of the choices depends on the structure of social cost/benefit analysis. Economic and other social science analyses focus on the impact of these technological choices on development processes, and on the impact of development strategies on social and cultural characteristics of the society. In addition to the broad range of technical expertise available

in the academic community, the capability for training in methodologies relevant to development planning is well-developed. M.I.T., for example, has in the past supported a broad range of educational programs with and in developing countries specifically directed at improving the skills of present and future decision-makers. Many of these have been organized through existing academic institutions in the cooperating country, or through new institutions developed expressly for this purpose. Cairo University, as the pre-eminent academic institution, not only in Egypt but in the entire Arab world, with extensive formal and informal relations with government planning agencies, is in an excellent position to support a program of research and training aimed at strengthening the planning capability of these agencies. Utilization of the combined resources of M.I.T. and Cairo University appears to provide the most effective means of providing technical expertise and institutional support necessary for rapid and sustained expansion in ministry planning capability in Egypt.

In summary, there exists a clear and identifiable need in Egypt for the expansion of expertise with the general methodologies of technical, economic, and social planning. Expanding this planning capability through a program of academically based technical assistance offers a susbstantial return in terms of hastening the project development process, converting presently available funds into investments, and in avoiding the pitfalls characteristic of many of the past development efforts. To explore the feasibility of providing academically based technical assistance to Egyptian ministries and other government agencies, A.I.D. has funded Phase I of a program in which M.I.T. and Cairo University have organized a set of technical assistance teams, investigating, in collaboration with ministry personnel, problems of current concern to the ministry. In the following chapters, the objectives and progress to date of the program are discussed in preparation for the evaluation of Phase I.

2.2 Statement of Program Objectives: Phase I

1) The overall objective of the program is to upgrade the capacity in several ministries to plan, supervise and conduct projects focused on Egypt's national development.

2) The program will mobilize academic support for government planning activities through an Institute for Technological Planning to be established at Cairo University.

3) The specific purpose of the first phase of this program is to test the receptiveness and practicality of a system for conducting project preparation studies and analyses through a triangular combination of manpower resources involving:

1. key ministry personnel responsible within the GOE;
2. senior faculty and other manpower resources available through M.I.T.;
3. expertise from the faculty of Cairo University.

To accomplish the objective of the first phase of the program, a set of project teams have been organized with ministry, Cairo University and M.I.T. participants. These teams have focused on specific development problems and projects of current interest to the ministries.

3. Program Review and Evaluation

The review and evaluation of the Phase I activities of the Technological Planning Program (TPP) will provide A.I.D., M.I.T. and Cairo University with the opportunity to assess how well their individual objectives are being met by the collaborative effort, and based on the experience of Phase I, suggest mechanisms to achieve the overall objectives of the program. A.I.D., as the program sponsor, must determine whether the M.I.T./Cairo University effort is consonant with their objectives of strengthening the planning capability of the ministries, and identifying investment opportunities on development projects. The universities must insure that the research opportunities in the program are currently and potentially rewarding enough to justify the commitment of the substantial resources necessary to sustain the program. The principal mechanism through which this general assessment will be made are discussions to take place between and within A.I.D., M.I.T. and Cairo University in the next three months to determine whether a consensus exists on the assessment of the current state of the program and on the future program goals and mechanisms to achieve them.

Assuming this general consensus will be achieved, a detailed analysis of the current activities must then be performed to determine how specific objectives have been met, where reorientation of the effort may better accomplish these goals, and into what areas the effort may be expanded in the future. To support this detailed assessment are the numerous specific program and project-related tasks accomplished during Phase I discussed in this and the next chapters. As an overview, the major program activities in the first nine months have been outlined to illustrate how the institutional linkages, project development effort, and administrative offices have been organized. Evaluation criteria have been developed as a set of indicators of the progress toward specific program goals. The criteria and a complete description of the progress toward meeting them are also presented to support the detailed analysis of the program activities.

3.1 Summary of Major Program Activities: December 15, 1976 - September 15, 1977

A chronology of the major events during the first nine months will provide a schematic of the progress of the program to date. A summary of these events, limited to the overall program activities, is presented in Table 1.

Table 2: CHRONOLOGY OF MAJOR EVENTS IN THE TECHNOLOGICAL PLANNING PROGRAM: DECEMBER 16, 1976 TO SEPTEMBER 15, 1977

Date	Event
12/16/76	Contract for one-year feasibility study signed by U.S. A.I.D. and M.I.T.
1/16/77	Formal agreement between Cairo University and M.I.T. establishing the Technological Planning Program was signed by Soufi Abo Taleb, President of Cairo University, and by Walter A. Rosenblith, Provost of M.I.T.
12/22/76-2/ 1/77	Twenty (20) M.I.T. faculty and staff visited Egypt to identify possible areas for collaboration through discussion with Cairo University faculty, U.S. A.I.D. personnel, and ministry officials.
1/30/77	Cairo University Executive Committee was appointed: Facilities for the Liaison Office were provided in the Faculty of Engineering and renovations began.
3/ 1/77	Fifteen (15) proposals submitted to M.I.T. and Cairo University Executive Committees for review and funding.
3/15/77	Inception Report submitted to U.S. A.I.D./Cairo.
4/ 1/77	Nine (9) projects accepted and initial tasks begun.
5/ 1/77	Liaison Office renovations completed and became fully operational with the selection of senior staff.
6/ 1/77	First project progress reports submitted to Program Executive Committees.
6/ 3/77	Tax Exempt Status of Program established by the Ministry of Finance.
6/6- 6/10/77	Program Budget Review with U.S. A.I.D./Cairo.
6/15/77	Program Progress Report for Second Quarter submitted to U.S. A.I.D./Cairo. Two additional proposals, Engineering Applications for the Plastics Industry and Investment Planning in the Electric Power System were approved and initial activities commenced.
6/30/77	A.I.D./Cairo approval of request for additional funding and Phase I extended to June 30, 1978.
8/8- 8/12/77	M.I.T. Executive Committee reviewed progress of program with U.S. A.I.D./Cairo in preparation for the Evaluation Report.

Table 2 (continued)

8/10/77	Formal Administrative Agreement signed by Mr. Stuart H. Cowen, Vice President for Financial Operations of M.I.T. and Professor Hassan Hamdy Ibrahim, Vice Rector for Research and Graduate Studies, Cairo University.
8/10/77	Formal Agreement reached with Cairo University to establish autonomous Institute for Technological Planning during next phase of effort. M.I.T. assistance in Cairo University's discussions with A.I.D. on separate efforts requested.
9/1/77	Second project progress reports submitted to Program Executive Committees.
9/15/77	Evaluation Report submitted to U.S. A.I.D./Cairo.

3.2 Program Evaluation Criteria

Demonstration of the "receptiveness and practicality" of the program depends on a number of program and project-related factors. The objectives, personnel, and progress to date of the specific projects are of central concern. Their focus on planning problems of current interest, the commitment of and direct involvement by ministry personnel, and the successful completion of the intial project tasks must be demonstrated. As well, the program offices and staff must demonstrate an effective base for the longer term effort in the next phase and for the proposed institutionalization of this capability at Cairo University. Effective project management, program administration, and financial control are the three elements of this base.

In the Inception Report, submitted on March 15, 1977, a preliminary set of evaluation criteria were presented against which the program's performance in this feasibility phase are to be measured. During the second quarter, discussions between A.I.D., M.I.T. and Cairo University led to a finalized set of criteria presented in the second progress report, June 15, 1977. The evaluation criteria and the program objectives they most closely respond to are presented in Table 2.

Table 2: M.I.T./CAIRO UNIVERSITY TECHNOLOGY PLANNING PROGRAM EVALUATION CRITERIA

Objective I: Demonstrate Academic Commitment to Egypt's Development Planning (to be evaluated in terms of):

1. Appropriate Project Topics
2. Composition and Commitment of Project Teams
3. Utility of the anticipated project results, specific tasks completed and interim findings. Progress toward specific investment projects and program and policy recommendations in major problem areas.

Objective II: Impact and Strengthen Ministry Planning Capabilities (to be evaluated in terms of):

4. Commitment of Senior Ministry Supervisors to the Projects
5. Demonstrated Active Participation by Ministry Personnel
6. Contribution of the project activities and results to the planning activities of the various ministries, and particularly the strengthening of data bases and analytic frameworks for planning.

Objective III: A Program Organization as a Base for the Proposed Institute (to be evaluated in terms of):

7. Project Development Capability
8. Administrative Organization
9. Financial Control Mechanisms

3.3 Meeting the Evaluation Criteria

Substantial progress has been made in the first nine months of the program in meeting these evaluation criteria. Beyond simply demonstrating the feasibility of the academic-ministry collaboration, the performance of the individual projects and agreements reached on future institutional frameworks for the program have contributed substantially to realizing the overall objectives of the program. For each of the evaluation criteria, satisfactory performance of the program to date can be demonstrated.

3.3.1 Appropriate Project Topics

Concern was initially expressed regarding the quality and relevance of the topics to be developed. Previous academic-based assistance programs have often developed projects relevant to their research interests but not necessarily of immediate utility to the sponsor. Care was taken, therefore, in assuring approved projects would bear directly on problems of current concern to ministry planners.

Fifteen proposals were submitted to the program Executive Committees during the first three months. Nine of these projects were funded as of April 1, 1977. Three projects, the Nile River Basin System Simulation, Railroad Operations and Economics, and the Analysis of Petrochemical Projects was delayed, but may be integrated into future efforts in water resources, transportation and economic analyses. Two proposals, the Modifications to Port Said Entrance to the Suez Canal and Resource Allocation in the Capital Equipment Industries proved not to be feasible for the first year's effort. During the second quarter, the Investment Planning Model of the Egyptian Electric Power System and an additional industrial project, Engineering Applications for the Egyptian Plastics Industry, were developed and are both currently funded. A short-term project to assist the ministry of Petroleum in assessing the net benefits of a planned petrochemical facility was organized and completed during the third quarter.

The eleven current projects fall within the seven topic areas outlined in the proposal as feasible for the first phase activity. The major constraints on their selection, that they focus on issues of current concern to the ministries and that specific results and recommendations be

produced within a one-year activity, have insured that the topics selected provide a clear illustration of academic commitment to Egypt's development planning. The current projects and the principal investigators are summarized in Table 3.

3.3.2 Composition and Commitment of Project Teams

The commitment of senior faculty from both M.I.T. and Cairo University is considered crucial in demonstrating the feasibility of the program and meeting the evaluation criteria.

Twelve full professors from M.I.T. including one present and one former department head, two associate and two assistant professors, and ten senior members of the research staff are active participants on the projects Fifteen M.I.T. graduate research assistants are also involved. From Cairo University, sixteen full professors are involved including a former President of the University, a former minister, the present and two ex deans of the Faculty of Engineering and three department heads. Twenty-one associate professors and lecturers, and eighteen graduate students are also participating Faculty and staff from M.I.T. and Cairo University and the ministry personnel involved are presented in Appendix II.

During the first three months of the project, M.I.T. faculty and staff spent a total of forty-five (45) man-weeks in Egypt developing specific project activities. In the second three months, they spent an additional forty-two (42) man-weeks and student participants contributed an additional six (6) man-weeks in Egypt. In the third three months, they spent forty-four (44) man-weeks in Egypt. Several Cairo University faculty members have come to M.I.T. under the Visiting Fellows Program. During the first three months of the program four participants came to M.I.T. for the project development effort. In the third quarter six people came for a total of fourteen (14) man-weeks. The program travel, dates and objectives of trips to date and planned for the next quarter are summarized in Appendix III.

3.3.3 Utility of the Anticipated Project Results

Demonstration of the utility of the project activities and results provides a direct illustration of the feasibility and value of the program.

Table 3: M.I.T./CAIRO UNIVERSITY TECHNOLOGICAL PLANNING PROGRAM
RESEARCH PROGRAMS - 1977

Title	Principal Investigators: M.I.T.	Principal Investigators: Cairo University	Ministry Supervisors
Stochastic Model of Nile Inflows to Lake Nasser	R. Bras/ P. Eagleson	H. Ismail/ I. Mobarek	H. Ibrahim
Nile Delta Groundwater Study	J. Wilson	A. Amer	K. Hefny
The Housing and Construction Industry	N.J. Habraken	A. El Erian	El Masry
Urban Transportation: Relating Short-Term Options to Long-Range Consequences in the Cairo Metropolitan Area	R. Gakenheimer	M. El Hawary	A. Daghestany
Highway Transportation Planning Program	F. Moavenzadeh	M. El Hawary	A. Daghestany
Engineering Applications for the Egyptian Plastics Industry	F. McGarry	S. Bayoumi	H. Amer
Government Incentives for Small Scale Industry	S. Berger	M. El Said	M. El Rafei
The Development of Improved Macroeconomic and Sectoral Planning Methods	R. Eckaus/ L. Taylor	A. Mohie-eldin	E. Montasser
Investment Planning Model for the Egyptian Electric Power System	M. Weitzman	M. Abou-Hussein	M. Abaza
Egyptian Labor Migration	N. Choucri	A. Mohie-eldin	Aziz Bindary/ Nawal Sakr
Health Care Delivery Systems	R. Eckaus/ L. Taylor J. Field	S. Shahbender	I. Badran

Though the projects have been operating for no more than six months, a number of the completed project tasks demonstrate utility of the research to the ministries' planning efforts.

- The initial survey and analysis activities of the Urban Tranportation Project have produced a set of recommendations which were implemented by the Cairo Governorate and the Ministry of Transportation. Substantial reductions in traffic congestion and delays on the major river crossings in Cairo have resulted.

- Statistical models of the streamflow characteristics of the Nile River System have been applied to the operation of the Aswan Dam system with implications for the design of the Toshka depression spillway.

- The project to collect information on and develop government incentives for small industries has attracted the interest of an I.B.R.D. team interested in establishing a loan program to support these industries.

- The M.I.T. Highway Cost Model has analyzed one link of the Alexandria-Delta Road for three rebuilding options. Scheduled and responsive maintenance policies were considered for each, and the most cost effective construction/maintenance policy has been recommended for implementation.

- A testing program for plastic bags and pipes organized with public sector plastics manufacturing companies will lead to appropriate product standards and quality control procedures for the industry.

- A social cost/benefit analysis of a planned petrochemicals facility has been completed and submitted to the Ministry of Petroleum.

- A supply and demand model of the Egyptian Housing system has been completed with which alternate government housing policies can be tested.

- Inconsistencies between the national income accounts and input-output tables have been identified and resolved.

The project teams have completed a number of papers relevant to broader development issues as well:

- "Investment Criteria for Lumpy Capacity Expansion" by M. Weitzman;

- "A New View of the Egyptian Economy" by N. Choucri and R. S. Eckaus;

- "Interactions of Political and Economic Change: The Case of Egypt" by N. Choucri and R. S. Eckaus;

- "International Migration: Some Lessons for an Egyptian Migration Policy" by Ijaz Gilani;

- "Migration Processes Among Developing Countries: The Middle East" by N. Choucri;

- "Price and Wage Policy in Egypt" by A. Mohie-eldin

In addition to tasks already completed, the following are respresentative project results scheduled for completion in Phase I:

-- A modern, stochastically-based, operating policy for the High Dam.

-- A detailed analysis of the impact of groundwater withdrawals and storage on seawater intrusion in the Delta.

-- A survey of two governorates to provide systematic data on health status and malnutrition.

-- An assessment of nine basic construction materials identifying causes and degree of shortages, and options for expanded production and use of alternate materials.

-- A complete 32 link, 21 node rural road network, in the delta, will be analyzed for proposed and alternative maintenance and construction programs.

-- An assessment of the social costs and benefits arising from migration of construction labor.

-- An economic ranking of capacity expansion alternatives and assessment of the optimal mixture of different types of stations for variable demand in the electric power system.

- Collection and tests of consistency of data necessary for multisectoral economic planning models.

3.3.4 Commitment of Senior Ministry Supervisors to the Projects

As each project has been approved, the proposal has been reviewed by the appropriate minister and his staff. The ministry personnel that have been appointed to supervise and participate directly in the project activities are listed in Appendix II.

One demonstration of the interest and commitment of the ministers occurred with a reorganization this Spring of the technical staff in the Ministry of Irrigation. Dr. El Ghamry and Engineer Ali Khalifa, ministry supervisors on the Stochastic Model of Nile project were assigned new responsibilities and Minister Aboul Atta promptly appoints Drs. Mahmoud Abo Zeid and Hassan Ibrahim as their replacements as project supervisors.

In an effort to expedite the data collection activities, General Askar, the Chairman of the Central Agency for Public Mobilization and Statistics has been informed of the program and has authorized the collection of any necessary statistical and survey data available from CAPMAS and all other relevant ministry sources.

When contractual problems prevented the establishment of arrangements between the university team and the Institute of National Planning, the Minister of Planning established a direct association with the appropriate ministry group.

Numerous ministry supervisors are coming to M.I.T. in Phase I to review progress to date and identify potential future topic areas.

3.3.5 Active Participation by Ministry Personnel

Each project has junior-level ministry personnel actively involved and assigned specific tasks. Some are acting as principal data collection agents; others are responsible for operating the computer-based and other planning techniques being developed. At least one ministry staff member is using his project related activities to support his effort toward an advanced degree.

There are approximately twenty junior ministry personnel currently active on the projects with a commitment of fifty man-months effort for the first year. While the base salaries of these participants are provided by the ministries, extraordinary costs associated with their participation have been covered by the projects.

3.3.6 Contribution to the Planning Capability of the Ministries Involved

The one contribution common to all the projects is the educational opportunity through which senior level ministry planners are exposed to modern, rational planning techniques applicable to the Egyptian environment, and junior level planners are trained in their use. Performance of the specific tasks, seminars at Cairo University, and for some, training at M.I.T. are the most direct ways our effort is improving the planning capabilities of the ministries. In addition to these training aspects, the project activities will strengthen this capability in several ways that extend beyond the specific project results.

Data collection and data base management techniques are being improved by the application of modern survey techniques and analytic methods that provide a coherent framework for needed data:

- Streamflow synthesis, necessary for the Stochastic Model of the Nile, is new to the ministry's operational framework and will permit them to extract substantially more information from their available historical data
- The project to develop improved macroeconomic planning techniques has developed a set of uniform sectoral definitions for the input-output accounts and the national income accounts.
- The computer-based planning models utilized on several of the projects organize data requirements on a rational basis, and provide an incentive for their routine collection.

Exposure and experience with modeling of technical systems, particularly the computer-based methods, not only illustrates the use of these powerful analytic tools, but also makes the ministry personnel more confident in their application, and more competent to evaluate similar analyses performed by consultants.

The exposure to new techniques has, in several instances, encouraged the ministry groups to not rely so heavily on an in-house capability for longer term planning exercises. The short term demands on ministry personnel often limit the effective organization of longer range efforts. Increased confidence in available academic capability in performing these analyses is improving the efficiency with which these planning efforts are carried out.

In some cases, the project activities have stimulated the participating ministries to pursue complementary activities.

- With the assistance of the Urban Transport team, the Transport Planning Authority of the Ministry of Transportation organized and carried out a comprehensive traffic survey of the Greater Cairo Area.
- In response to initial analyses of the Highway Maintenance Policy Project, the Ministry of Transportation has organized a request to A.I.D. for Highway Testing Equipment.

In other cases, the project teams have been requested to participate in other related planning efforts, or to expand their effort into related topics of interest

- The Ministry of Planning invited the M.I.T./Cairo University Macro-economics Project team to participate in the preparation of the 5-Year Plan.
- Based on the preliminary assessment of the capacity expansion model, the Ministry of Electricity requested the M.I.T./Cairo University team to develop a similar model for the lowest cost combination of plant types for a given, daily, weekly and seasonal load variation.

3.3.7 Project Development Capability

Within three months of the beginning of the project 15 proposals had been identified from which 9 projects were funded. Within the next three months an additional two projects were organized. The funding level for the first year projects has reached $439,000 and LE 240,000.

As a result of the experience in developing the first year's projects, a standard procedure has been developed through which new projects are to be developed:

1. The Executive Committee at M.I.T. and Cairo University have a continuing responsibility to identify areas in which new projects may be developed. Continuing contact with participating and interested ministry groups, A.I.D. and other donor agencies, and with the project teams themselves will be the principal mechanism by which new project areas are identified.

2. One or more faculty members, whose expertise most closely fits the project requirements, will be given the responsibility of developing the project. It will be his (her or their) responsibility to discuss the project area with ministry and A.I.D. officials, identify the project participants and draft a proposal.

3. When a formal proposal is drafted and accepted by all principal participants, the Executive Committees at M.I.T. and Cairo University will review the proposal to insure it meets the objectives and is within the scope of the program. A copy of the proposal will be made available to the A.I.D./Cairo Project Manager for his comments.

4. When the Executive Committees approve the project, the Director of the Technology Adaptation Program and the Vice Rector for Research and Graduate Studies at Cairo University authorize the Program Administrator to establish accounts and disburse funds in accordance with the project budget.

This procedure was developed during the first three months of the program and has been followed in all projects approved so far.

The key element in the effort of the executive committees to identify potential project areas and appropriate faculty participants. Both the M.I.T. and Cairo University Executive Committees have members from the schools of engineering, economics and social science to insure familiarity with the capabilities of potential project participants.

Moreover, Professors Ismail, Shafei and Shahbendar have had considerable exposure to relevant activities and agencies in the ministries. Professor Shafei as the former Minister of Economy, Professor Ismail as the former president of Cairo University and member of the Joint Working Group on Science and Technology, and Professor Shahbendar through his affiliation with the Ministry of Health and the Joint Working Group. At M.I.T., Professors Eckaus, Moavenzadeh, and Choucri have for the past six years, developed a number of similar research projects through their activities on the Technology Adaption Program, and other international efforts in developing countries.

3.3.8 Administrative Organization

The administrative organization of the program consists of three major components: the Office of the Vice Rector for Research and Graduate Studies at Cairo University, the M.I.T. Technology Adaptation Program, and the Technological Planning Program Liaison Office established at Cairo University for the direct supervision of program activities in Egypt. The administrative organization of the Liaison Office was established during the first three months, and the offices became operational during the second quarter.

These three administrative components are coordinated so as to insure the technical effort achieves the specified goals efficiently, and contractual requirements of A.I.D. are satisfied. A full description of the administrative organization and principal activities of the last nine months are presented in Chapter 5.

3.3.9 Financial Planning and Control Procedures

The M.I.T. Office of Sponsored Programs and the M.I.T. Comptroller's Office have developed a set of documentation requirements and reporting procedures for the administration of the Liaison Office. These comply with M.I.T.'s normal accounting practices for government sponsored research projects. The Liaison Office has been organized from the standpoint of financial administration as an M.I.T. field office, reporting directly to the M.I.T. Comptroller. All original documentation is returned to M.I.T. by the field office. All financial reporting to A.I.D. is through the M.I.T. Comptroller.

3.4 Overview of Program Activities for September 15 to December 15, 1977

The technical effort of the next three months will focus on the completion of the analyses and development of recommendations on the specific projects. The bulk of the data collection effort has been completed. The majority of the Phase I projects are scheduled to be completed by December 31. The rest will be completed by early 1978.

To complement the evaluation of Phase I in the next three months, a draft proposal for the Phase II effort outlining potential future project areas, and educational programs is being submitted to A.I.D./Cairo with this report. To accomodate for the completion of the Phase I effort and the negotiations required for Phase II, a time and budget extension to June 30, 1978 has been granted. A request will be made to extend the due date of the next progress report from December 15, 1977 to Janaury 1, 1978 so that the completed project final reports may be included.

4. Summary of Technical Projects: Progress to Date and Planned Activities

During the first three months of the program, M.I.T. faculty traveled to Cairo to identify specific project areas for Phase I. From the fifteen proposals submitted by April 1, nine were approved by the Executive Committees and work begun in the spring. Two additional projects, the Investment Planning Model for the Egyptian Electric Power System and, Engineering Applications for the Egyptian Plastics Industry, were approved by July 1 and work commenced during the summer. The following paragraphs summarize the progress to date in each of these projects and the planned effort for the rest of the first year. The first progress reports of the projects were submitted with the TPP Program Progress Report submitted June 15, 1977. The second set of progress reports are attached to this report as Appendix V.

4.1 Stochastic Model of Nile Inflows to Lake Nasser.

A Stochastic Model of Nile Inflows at several key locations above Lake Nasser will provide the Ministry of Irrigation with an extended and better organized data base for studies of reservoir and diversion operating policies. It will provide the basis for accurate river discharge forecasting, essential for efficient operation of river structures and optimal planning of irrigation activities, and will be an integral part of any future extended basin simulations.

In the first quarter ten locations in the Nile basin above Aswan were selected, from which four or more will be selected for final analysis. An analysis of the Nile Water Budget was performed, daily streamflow data at each location recorded on magnetic tape, previous statistical analyses of Nile flows reviewed, and a simplified multivariate Markow Model tested at M.I.T.

During the summer, the bulk of the data collection was completed, and the analytic models to be applied have been formulated. Data have been checked for errors and consistency using a double mass analysis program. A chi-square discrimination program was prepared to select the statistical distributions for the selected stations. The Markow monthly streamflow generator was installed at Cairo University in June. A Broken Line Generator for annual values of streamflow, which preserves several statistical variables not preserved by the Markow model, and a companion Disaggregation Model which generates consistent monthly values from the annual values, were developed at M.I.T. and installed at Cairo University in August. Training seminars were given to Cairo University personnel responsible for operating the models.

In September, the Ministry will make available all necessary data not yet available. The effort in the fall will focus application of the models to the data base, complete the deregulation of the streamflows, and generate the synthetic streamflow records at the principal river stations. Ministry

personnel will be trained in maintaining the data base and operating the models. The ministry supervisors, Dr. Ibrahim and El Shibini will visit M.I.T. for two weeks in October. Discussions on potential future research topics will continue, and focus on the physical hydrology of the White Nile, and the development of streamflow forecasting techniques. A final report for the project will be submitted December 31, 1977.

4.2 Nile Delta Groundwater Model.

A computer model of the Nile Delta Aquifer is being developed which can estimate the capacity of the aquifer, evaluate the capability of the aquifer to act as a storage reservoir, and evaluate the impact of various irrigation and drainage plans on groundwater waterlogging. Within the first year's effort, the model will be developed and a detailed analysis of sea water intrusion process will be performed.

During the first quarter, the data collection and analysis was initiated. Existing seawater intrusion and aquifer flow models have been reviewed, and an existing aquifer flow model, AQUIFEM, has been prepared for use in Cairo. Steady state analysis of the seawater intrusion problem has demonstrated the transient characteristics of the seawater wedge and a transient model is being developed.

During the summer, the AQUIFEM model was installed on Cairo University computers, and an additional finite-difference model of the aquifer, NILAQC, was developed. Ministry participants submitted a report on compiled data necessary for the model simulations, and seminars on simulation modelling were given by M.I.T. participants and a training program in groundwater modelling has been established at Cairo University. At M.I.T., a complete finite element grid for the Delta aquifer has been developed.

In a separate modelling effort focused on potential future work in systems analysis, information was collected from the Office of the Water Master Plan and a simulation analysis of the operation of the High Dam and the Toshka Spillway was performed. Preliminary findings have been presented to the Ministry.

The next three months' effort will focus on completing calibration of NILAQC and AQUIFEM, safe yield analyses of the aquifer, compiling the steady state analytical sea water intrusion studies, completing the transient analytic models of seawater intrusion, and continuing background studies on the systems analysis of the river basin. Dr. Hefney, Director of the Groundwater Research Institute, and ministry supervisor on the project, will visit the United States for two weeks in October. A final report will be submitted on the first year's effort on December 31.

4.3 Housing and the Construction Industry

The project includes three subprojects with each covering a particular aspect of the housing situation in Egypt. The work program for the projects is essentially in three phases: Phase 1) familiarization with situation of Egypt, identification of data required, initiating collaborative contacts with appropriate government agencies, and detailed structuring of research; 2) collection of required data through field surveys, published reports, discussions with the various ministries, and outlining tentative areas of conclusions and recommendations; and 3) evaluation, analysis of data; preparation of recommendations, discussions of preliminary conclusions with informed officials and professionals, preparation of final report, and identification of areas/issues which require further detailed research.

The "Housing and Public Policy" subproject is concerned with national housing policy with the objective of developing a model for evaluation of public policy options. A basic model of the housing market has been developed based on extensive discussions with ministry experts, previous studies, and field research. Sufficient specific data has been collected to allow initial computer runs to test the model as well as to suggest preliminary recommendations. The final phase of the work will focus on calibration of the parameters of the computer model through inputs of more refined detailed data. Various alternative scenarios will be tested for consideration of the ministries concerned with housing.

The goal of the subproject "Housing Construction Industry and Materials Supply" is to determine priorities for the allocation of resources and investments to increase the availability of building materials. The focus is on resources production, distribution, and consumption of selected materials, both conventional and unconventional. Extensive data has been collected on cement, steel, bricks, gypsum, and glass, and data is almost complete for lumber, floor tiles, and sanitary fixtures. Consumption data is still being prepared. The data will give some indication of housings' share in production and consumption of major building materials and allow the determination of alternative scenarios of materials usage in housing. Recommendations will be developed in the final phase for maximizing the efficiency of use of both traditional and alternative materials.

The final subproject, "Housing Construction Systems and Design Norms", is concerned with developing guidelines/references for appropriate housing and physical planning. There are two primary areas: 1) a study of the indus- building systems in Egypt with focus on the dwelling scale; and 2) a study of the larger scale aspects of the planning of settlements. To gather data for both areas, a field survey has been undertaken in six selected low-income areas. These surveys are intended to be the prime sources for determination of user needs, physical characteristics of dwellings, existing space standards and cost, and income correlations. Close

collaboration has been established with one of the plants producing prefabricated panels and the study on industrialized building systems, which allows direct applicability in recommendations and possible testing of u ified designs in future research. Also, direct working collaboration has been initiated with the group concerned with settlement patterns/standards and the General Organization for Physical Planning which assists towns throughout Egypt in preparing master plans and housing subdivisions. Alternative planning models for low-income areas based on existing and proposed codes, existing settlement realities, and developer/financing mechanisms will be developed in the last phase of the work.

Joint recommendations will be prepared combining inputs from all subproject areas for the final phase of the work.

4.3 Urban Transportation Policy for Cairo.

This project will assist the Transport Planning Authority and other agencies involved in transportation planning decisions in Cairo in strengthening their project implementation and policy making process. A traffic survey identifying major flows and sources of congestion in the Cairo area, and an analysis of several short term projects and policy level solutions are the major activities during this year.

A traffic count and Origin/Destination survey was accomplished on April 18, 1977 for two hundred and seventy (270) stations in metropolitan Cairo. The direct survey costs were funded by a grant to the Transport Planning Authority by A.I.D. The survey data were assembled in the spring into an O/D matrix. Based on the results of the survey, a set of traffic routing recommendations were made to the T.P.A. and were implemented. To initiate the project programming effort, a review of U.S. programming literature was undertaken, and information on auto ownership collected for Cairo.

During the second three months of the project, a set of speed and delay studies were completed and a traffic assignment model has been developed at M.I.T. for use with the survey results. Data has been collected on a set of transportation projects currently being planned, and combined with a literature review of programming techniques in the U.S. to form the basis of a set of recommendations on project programming methodologies suitable for use in Egypt. The review of auto ownership is essentially complete.

During the remainder of the year, the traffic analyses will be completed with computer analyses of possible alternative projects to be performed at M.I.T. and Cairo University. Analysis of the project programming process will be completed, and recommendations on a programming method for transportation improvements in Cairo will be presented to the Transport Planning Authority.

4.5 Highway Transportation Policy in Egypt.

A highway transportation planning framework developed at M.I.T., the Road Investment Analysis Model (RIAM), is being applied to the analysis and planning of highway investment decisions in Egypt.

During the first three months, a zone comprising roughly one-fourth of the road network of the Delta was selected for analysis and two specific links were investigated in detail. The net benefits of alternate construction amd maintenance policies have been assessed and the most cost effective policy recommended to the Transport Planning Authority. In a separate activity, a study of the present stocks and requirements for road evaluation equipment was performed and a list of recommended new equipment is being reviewed by the Transport Planning Authority.

During the summer, the computer model was installed and tested at the National Computation Center of CAPMAS. A portion of the zone under study was selected for the network analysis. The link evaluation model of the RIAM was modified at M.I.T. to incorporate the network aspects. Traffic count data were collected and an O/D survey of the network zone was performed in August. The input data for the network analysis were prepared in Cairo. Several seminars were given at Cairo University and the Transport Planning Authority on the capabilities, and data requirements of the network model.

Installation of the RIAM at Cairo University was delayed by hardware incompatibilities but will be completed in September. The network analysis model will be completed, and calibration of the traffic assignment parameters (value of time and diversion intensity) will be accomplished by a series of preliminary network analyses. The study network will then be analyzed under the proposed and alternative maintenance policies and investment schedules. Cairo University participants will visit M.I.T. to contribute to the preparation of the final report, due in December.

4.6 Government Incentives for Small Scale Industry.

A set of policy recommendations to provide better public support for the small scale sector will be developed on the basis of surveys and field research. The project will develop a general overview of the performance in five industries — shoemaking, woodworking, metal working, garments and carpets. One of these areas will be selected for an intensive field survey of the production facilities.

Data were collected during the first quarter from three principal sources: the Industrial Control Authority, the General Organization of Industrialization, and the Organization of Artisans and Production Cooperatives. Yearly surveys performed by CAPMAS were also collected. A 1974 survey of thirteen (13) industrial areas, with over one hundred thousand (100,000) establishments responding, performed by the Organization of Artisans and Production Cooperatives, was reviewed and will provide the base for the planned field survey.

During the summer, shoe-making was identified as the topic of the first field survey, the survey questionaire was completed and the survey team identified. A review of loans and loaning arrangements for the Industrial Development Bank was completed. During the last two weeks in June, the project team interviewed a range of government officials directly responsible for administering programs in the small industry sector, and organizers and members of production cooperatives. At M.I.T., a literature survey reviewed programs to develop the shoe and leather industry in developing countries, and representatives of the United States shoe industry and importers were interviewed to determine the types of obstacles facing expanded export of Egyptian footwear.

The field survey of small shoe-makers in Egypt will start in September, and a set of tentative recommendations on government policy and direct assistance to the shoe industry will be drawn up. Recommendations on lending practices and institutions will also be drafted, and opportunities for technical assistance by A.I.D. discussed.

4.7 The Development of Improved Macroeconomic and Sectoral Planning Methods.

The objective of this project is the development, in several stages, of improved methods and skills required for overall and sectorally specific methods of economic planning. The first task is to collect and make consistent the national accounts and input-output data needed for a simple multi-sectoral planning model. The consistency of proposed sectoral output targets with investment and export plans will then be tested.

The first three months of the project were concerned with establishing the outlines of the research to be done, recruiting personnel and assigning particular tasks to the individuals involved.

Data preparation proceeded far enough to begin testing, during the summer, the consistency of the national income accounts for 1973, classified sectorally, with the input-output table for that year. That yielded experience with the types of problems to be encountered in working with the most recent data, which are currently being prepared. In addition, a paper evaluating more current macroeconomic conditions in the Egyptian economy was prepared in conjunction with the project on Egyptian Labor Migration.

Changes in the structional relationship of this project to the ministry of planning have recently taken place. The previous Minister of Planning requested the project be linked to the ministry through the Institute of National Planning (INP). After the initial phase of data collection, contractual an financing requirements of the INP made this connection no longer feasible. The present Minister of Planning has assisted in providing a satisfactory alternative, with direct working relations established with his staff.

4.8 Egyptian Labor Migration.

This project is surveying several aspects of the migration issue including available demographic data, current educational and labor requirements, demographic profiles of other Arab countries, and present policies. A model of the Egyptian migration will be developed as a conceptual framework for assessing the social/economic/political benefits and costs to Egypt.

During the Spring, demographic statistics were collected that outline the structure of the Egyptian labor force, and wage, income, tax, and other economic data for Egypt and Kuwait have been assembled. A survey of the experiences and policies of other developing countries was performed to permit a more systemmatic analysis of the Egyptian situation.

The efforts of the second quarter focused on the implications of labor migration in the construction industry as an industry in extremely short supply of a variety of skilled workers. The Ministry of Labor has expressed interest in developing procedures for regulating migration in this industry. Several papers were drafted on migration issues in the Middle East and world-wide.

During the next three months, the analysis of migration in the construction industry will be completed, broader data will be "cleaned", and a more systemmatic, quantitative analysis of the dimensions of labor migration in Egypt will be made. This comprehensive perspective will assist in evaluating current policies and identifying appropriate policy interventions.

4.9 Health Care Delivery Systems.

This project is developing an overview analysis of the public health system in Egypt as it affects malnutrition. The study will provide the Ministry of Health with recommendations on ways to improve the delivery of public health services to better cope with the problem of malnutrition. It focuses on the organizational management responsibilities of the Ministry rather than the specific hardware needed to upgrade the delivery system.

During the first three months, the selection of the project participants and planning the survey and data collection were the principal activities. Data on a number of development and health variables were collected for twenty-four (24) governorates. Development variables included % of women in paid work force, crude birth rate, % of total illiteracy, % female illiteracy, % urban, % hourseholds with electricity and % households with pure water in building or dwelling. Two major health variables were studied: infant mortality and crude birth rate.

During the summer, statistical analyses of the relationship between malnutrition indicators and development were performed. The correlation between both sets of variables was low, but high interconnections among development variables and close relationships to infant mortality existed. Significant regional influences were identified. Literacy and reduction in

birth rate had little individual influence on infant mortality, but their combined effect correlated more closely.

A questionaire on health delivery has been drafted and will be disseminated to the Ministry of Health's administration in the fall. Two papers are being prepared on the history of health services in Egypt and a review of malnutrition in Egypt. A sample survey is also planned for two governorates to obtain more systematic data on health status and malnutrition.

4.10 Engineering Applications for the Plastics Industry.

The plastics industry in Egypt can potentially satisfy demand for a wide range of engineering products for industry, housing, public works, and agriculture. Several ministries were currently committed to major projects using plastic materials in new applications: pipe for potable water and irrigation drainage, building materials and fixtures, garbage bags, and packaging of foodstuffs and other goods. Currently the industry produces a variety of consumer goods, but the technical sophistication required for these "engineering" applications is generally lacking.

The objective of this project is to develop a capability in plastics technology at Cairo University and in several private and public companies that will support the ministries' plans to expand the applications for plastic. Project participants from M.I.T. and Cairo University will select a set of case studies and work directly with industrial firms in identifying and solving technical problems in product and mold design, applicable standards, and quality assurance. Raw material and product testing methods and equipment will be developed. A training program in these aspects of plastics technology will be organized at the university and made available to industry engineers.

The first two applications selected are the design of high strength polyethylene bags and the establishment of standards and quality control procedures for PVC pipe. The largest public sector company, National Plastic Co., is collaborating on these projects. Laboratory tests have been performed on the current sealing techniques for polyethylene bags, and applicable standards and procedures for a range of plastic pipe materials have been gathered.

During the next three months, testing equipment will be developed and recommended procedures will be implemented at the production facility for the bag and pipe applications. At the request of the General Organization for Standardization of the Ministry of Industry, a set of standards synthesizing current U.S., German and Italian specifications will be developed for plastic raw materials. Additional applications will be identified and training seminars in relevant topics in plastics engineering will be held at Cairo University.

4.11 Long-Term Investment Planning for the Egyptian Electric Power System.

The Ministry of Electricity is confronted with the task of selecting electric generation projects from a wide range of hydroelectric, fossil fuel, and possibly nuclear options. The selection is complicated by the numerous bilateral agreements, concessional aid, and financing arrangements attendant on each of these options. The technical staff of the ministry is well trained in the engineering requirements and difficulties of the alternate projects, but are not conversant in the techniques for economic assessment and ranking of these alternatives for the number of economic and social objectives which confront them.

The objective of this project is to develop a methodology, and to train ministry personnel in its use, to perform these assessments on a regular basis. A simplified model will be developed for the capacity expansion problem, and data on the alternate projects applied to it. If warranted, more sophisticated models will be applied to account for the characteristics of the individual projects.

The simplified model has been constructed and data is currently being gathered on the costs of the alternatives. The model has been computerized at the Ministry of Electricity. Data collection is almost complete for six new power plants, and preliminary "equivalent costs of capacity" have been calculated.

Appreciating the potential of these simplified models, the Ministry requested the project team to investigate a second problem: the time variations in demand and the optimal mix of plant types (i.e., steam generators or gas turbines) to accommodate it. A simplified model of fairly general applicability has been developed, and a computer algorithm to determine the minimum cost plant mixture ratio has been prepared.

During the fall, the data required for these two simplified models will be collected and more sophisticated analyses performed as the preliminary results warrant. Concrete results for the first two models are anticipated by December.

5. Program Administration

An agreement between Cairo University and the Massachusetts Institute of Technology, describing the broad objectives of the TPP was signed on January 16, 1977 by Dr. Soufi Abo Taleb, President of Cairo University and Dr. Walter A. Rosenblith, M.I.T. Provost. A more detailed administrative agreement was signed by Dr. Hassan Hamdy Ibrahim, Vice Rector for Research and Graduate Studies, Cairo University and Mr. Stuart H. Cowen, Vice President for Financial Operations, M.I.T. Copies of both these agreements are attached as Appendix I.

During the first three months, the principal administrative activities were the organization of the Executive and Steering Committees, selection of program personnel, and the physical organization of the M.I.T. and Liaison Offices. By May 1, the Liaison Office renovations were completed. During the second quarter, administrative procedures for project development, travel and financial reporting were finalized. The accounts and disbursement procedures for the individual projects were also established. The administrative organization and program personnel are presented in Appendix IV.

5.1 M.I.T. Administrative Activities: June 15 - September 15, 1977

The program office at M.I.T. is responsible for travel arrangements, disbursement of funds, telex communications with the Liaison Office, and administration of the Visiting Fellows Program. During the third quarter, the following major administrative changes or activities took place:

- Two part-time secretaries were hired to assist with travel arrangements and clerical work.
- The blanket travel procedure was implemented as outlined in the June 2 letter from Mr. Franklin Moulton, the Contracting Officer for the Program. A list of projected travel for the second six months of the contract was submitted along with a report of the travel undertaken during the first six months. All program related travel for the third quarter is presented in Appendix III.
- The second group of participants in the Visiting Fellows Program spent from one to six weeks at M.I.T. Five participants representing four projects worked with their counterparts on project activities. Dr. Mahmoud Darwish, Vice Rector for Undergraduate Studies at Cairo University, made an informal visit to M.I.T. during August, at which time he discussed the overall progress of the program and its administration at Cairo University. He also met with members of the M.I.T. administration who explained the procedures for admitting foreign students.

- Arrangements were made for Mr. Robert Long from the M.I.T. Comptroller's Accounting Office, to travel to Cairo to assist Mr. Greene in setting up the final procedures of a financial reporting system consistent with the requirements of M.I.T. and U.S. A.I.D.

5.2 Activities of the Liaison Office: June 15 - September 15, 1977

The Liaison Office is now permanently established in the Faculty of Engineering and has been designated the Cairo University/M.I.T. Program Office. The office was renovated during the winter. Office equipment and staff were selected during the spring and the office was operational as of May 1, 1977. In June, Mr. Robert Greene established his permanent residence in Egypt as the Program Administrator.

During the summer, numerous changes and additions to the facilities and staffing of the office have taken place. In a related event, a new Vice Rector of Research and Graduate Studies and a new Dean of Engineering were appointed. Dr. Hamdy of the Faculty of Medicine is the new Vice-Rector and Dr. Yehia Kabil, the former Vice Dean, is the Dean of Engineering. Drs. Hamdy and Kabil are fully aware of the objectives and activities of the program and their respective responsibilities, and they have promised their full support.

Other Program Office activities during the summer include:

1. Space - The Vice Rector and Dean of Engineering have agreed to provide the program with an additional floor in our present building in the Civil Engineering block at Cairo University. This additional space will allow us to consolidate our Executive Committee and support staff on one floor--with the space on the other floor being devoted to offices for visitors, conference and seminar rooms, and space for additional equipment such as a computer which may ultimately be installed.

2. Staffing - The Cairo University/M.I.T. Program Office staffing was expanded during the third quarter to include: a) Part-time translator for program and/or administrative documents; b) Full-time accountant; c) Full-time public relations officer; d) Part-time administrative/program secretary; and e) Part-time telex operator. Future plans call for the addition of a secretarial pool to

service program needs for typing in English and Arabic, the addition of an administrative/program secretary, and an accounting clerk/typist.

As the program expands and this core staff is trained, the administrative support staff will be strengthened to accommodate program requirements.

3. Consultants/M.I.T. - Mr. Robert Long, Assistant Accounting Officer, of the M.I.T. Comptroller's Office visited Egypt for 20 days in September to assist with the further establishment of M.I.T. accounting procedures, to train our new accountant, and to become familiar with our operations in Egypt so that he could serve as a link to the M.I.T. Accounting Office for any questions and/or problems which may be encountered.

4. Fellowship Administration - The Cairo University/M.I.T. Program Office provided support to some 25 Egyptians who will be visiting M.I.T. between September 1 and October 15. Procedures were developed for processing this group of Egyptians through U.S. A.I.D. and the U.S. Embassy with the responsibility for all documentation resting with this office.

5. Other Program Office Activities - The Cairo University/M.I.T. Program Office purchased two Nashua Copy Machines - one for general office use and another for large volume requirements of the program and administrative sections. A system has been developed and instituted for charging back to projects all such copies and an authorization system for the use of the facilities has been developed and implemented.

Dictation equipment has been delivered and that, together with the addition of a part-time expatriate administrative/program secretary, has strengthened the capability of the Cairo University/M.I.T. Program Office to prepare the necessary reports and documentation required for M.I.T. and U.S. A.I.D. and greatly reduce our reliance on the telex facilities.

With the addition of a post office box at the Giza Station, program stationary and calling cards have been printed and are now being used extensively for all program and administrative correspondence.

6. Financial Plans

The M.I.T. Office of Sponsored Programs and the M.I.T. Comptroller's Office have developed a set of operating procedures, documentation and reporting requirements for the administration of the Liaison Office. These comply with M.I.T.'s normal accounting practices for government-sponsored research projects. The Liaison Office has been organized as a M.I.T. field office, reporting directly to the M.I.T. Comptroller. All original documentation is returned to M.I.T. by the field office. All financial reporting to A.I.D. is through the M.I.T. Comptroller.

During the third quarter ending September 15, 1977 funding of the specific project activities increased rapidly. Estimates of the U.S. dollar and local currency expenditures are based on the monthly financial reports ending July 31, 1977, and estimated expenditures from August 1 - September 15, 1977. The expenditures to date and planned for the next quarter are presented in Tables 4 and 5.

Table 4

MIT/CAIRO UNIVERSITY TECHNOLOGICAL PLANNING PROGRAM

AID CONTRACT NO. AID/NE-C-1291

EXPENDITURES TO DATE: EGYPTIAN POUNDS

September 15, 1977

MIT LE Account Number	Account Name	Budget	to 6/15/77	6/15/77-9/15/77	Total as of 9/15/77	Forecasted 9/15/77-12/15/77
84873	Staff & Administration	3,500	1,245	1,055	2,300	1,200
84874	Liaison Office	74,400	28,980	21,701	50,681	25,000
84875	Visiting Fellow Program	7,000	2,309	2,000	4,309	4,000
84876	Conferences & Seminars	15,600	500	2,000	2,500	3,000
84877	Travel	69,900	25,199	10,824	36,023	4,000
84878	Other Direct Expenses	14,200	--	5,000	5,000	8,000
84879	Project Teams	8,700	4,620	8,058	12,678	15,000
	Sub Total	193,300	62,853	50,638	113,491	70,200
	Projects					
84880	Housing & Construction	64,900	7,424	24,950	32,374	30,000
84881	Urban Transportation	25,600	7,704	10,428	18,132	12,000
84882	Small Scale Industries	14,000	1,159	3,957	5,116	7,000
84883	Labor Migration	14,000	700	6,671	7,371	7,500
84884	Macroec. & Sec. Planning	34,800	3,150	11,656	14,806	12,000
84885	Highway Transportation	21,000	3,694	10,320	14,014	13,000
84886	Stochastic Model - Nile	37,800	2,493	11,783	14,276	15,000
84887	Health Care Delivery System	20,000	2,103	7,971	10,074	10,200
84888	Nile Delta Groundwater	13,000	2,465	6,501	8,966	8,000
84889	Invest. Plan. Elec. Power	9,100	80	2,623	2,703	6,000
84890	Plastics Industry	15,000	961	7,102	8,062	10,000
	Sub Total	269,200	31,933	103,962	135,895	130,500
	TOTAL	462,500	94,786	154,600	249,386	200,700

Table 5

MIT/CAIRO UNIVERSITY TECHNOLOGICAL PLANNING PROGRAM

AID CONTRACT NO. AID/NE-C-1291

SUMMARY REPORT OF PAST AND FORECASTED EXPENDITURES: U.S. DOLLARS

September 15, 1977

MIT US$ Account Number	Account Name	Budget	EXPENDITURES 12/15/76-6/15/77	6/15/77-9/15/77	Total as of 9/15/77	Forecasted 9/15/77-12/15/77
84720	Parent Account:					
--	Staff & Administration	272,500	117,633	78,273	195,906	78,000
--	Liaison Office	74,000	13,246	28,219	41,465	28,000
--	Visiting Fellow Program	21,000	1,140	2,000	3,140	18,000
--	Conferences & Seminars	4,000	--	--	--	2,000
--	Travel	20,000	10,845	2,827	13,672	6,000
--	Other Direct Expenses	46,200	10,198	16,563	26,761	18,000
	Sub Total for Parent	437,700	153,062	127,882	280,944	150,000
	Projects					
85046	Housing & Construction	85,900	29,192	23,438	52,630	33,300
85047	Urban Transportation	59,000	3,383	25,934	29,317	29,700
85048	Small Scale Industries	24,800	478	12,797	13,275	16,500
85049	Labor Migration	35,000	2,208	18,091	20,299	16,200
85050	Macroec. & Sec. Planning	30,500	409	16,468	16,877	13,700
85051	Highway Transportation	45,000	5,754	13,925	19,679	20,300
85052	Stochastic Model - Nile	34,000	5,077	13,336	18,413	15,600
85053	Health Care Delivery System	40,000	47	14,643	14,690	25,300
85054	Nile Delta Groundwater	32,400	2,317	15,179	17,496	19,900
85221	Invest. Plan. Elec. Power	20,100	--	8,427	8,427	11,700
85222	Plastics Industry	32,000	--	9,397	9,397	22,600
	Sub Total for Projects	438,700	48,865	171,635	220,500	224,800
	TOTAL	876,400	201,927	299,517	501,444	374,800

APPENDIX I:

I.a Overall Agreement Between Cairo University and M.I.T.

AGREEMENT between Cairo University and the Massachusetts Institute of Technology for the establishment of a Technological Planning Program,

Recognizing that benefits can accrue to both parties from the development of cooperation in the field of Technological Planning,

Wishing to assist in establishment of closer and more regular cooperation between faculties and students of both parties,

Taking into consideration that such cooperation will serve to strengthen friendly relations between the United States of America and the Arab Republic of Egypt.

Have agreed as follows:

Article I.

The objective of this cooperation is to assist Cairo University in contributing to the formulation and implementation of technical programs which will help to achieve the development goals of Egypt. This objective is to be achieved through the interaction of faculty and students of the Massachusetts Institute of Technology with their Egyptian counterparts in research teams, seminars and workshops and through mutual visits. The successful achievement of this goal will facilitate the establishment of an Institute of Technological Planning at Cairo University which will develop a body of technical, economic and social science expertise in the general area of technological development.

Article II.

The initial phase of this project, for which the U.S. Agency for International Development has provided $790,000 and £E433,000, will be for one year subject to possible extensions in order to determine the feasibility of the Program. During this phase a Technological Planning Liaison Office will be established to support the Cairo University/M.I.T. Technolgical Planning Program. The details of the Program and its budget are described in M.I.T./Cairo University Development Planning Program (AID Contract NE-C-1291) which is appended to this agreement.

Article III.

The specific objectives of the initial phase of the program are:

1. To initiate and coordinate academic interest in Cairo University in cooperating with Egyptian government agencies in organizing and expanding investigations on specific development issues.
2. To cooperate with ministries and other agencies in expanding their capabilities to perform sector-level planning, project identification and evaluation, and establish priorities.
3. To establish an institutional framework associated with Cairo University which will provide the ministries with the latest research findings in the fields of technological planning and project evaluation.

To accomplish these objectives, the program will address a set of specific development programs of current concern to the participating ministries.

Article IV.

Three general analytic approaches will be utilized on the specific projects developed under this program:

1. Engineering analysis will address specific, technical issues including availability and quality of needed resources, facility size and location, appropriateness of selected technologies, identification of feasibility issues and criteria for detailed pre-investment project analysis.
2. Economic analysis will focus on project, sector and national planning issues, economic and financial cost/benefit analyses will be employed for project evaluations. Sector studies will be used to identify potential projects and to integrate specific projects with overall planning objectives.
3. Social systems analysis will focus on social issues and overall policy formation. Specific topics will include population planning, demographic and manpower studies, social services and technology transfer studies.

Article V.

The agreement is to be carried out by the Technology Adaptation Program of M.I.T. (on behalf of the Massachusetts Institute of Technology) and by the Office of Vice Rector for Research and Special Programs (on behalf of Cairo University). For the implementation of this agreement a Joint Advisory Committee consisting of members of the Executive Committee of the Technology Adaptation Program at M.I.T., the Director of the Technological Planning

Liaison Office and two senior faculty members of Cairo University will be established. This Committee will periodically review the progress of the program, insure that specific activities are in keeping with the objectives of the program, and advise the Vice Rector of Cairo University and the rrogram Director of the Technology Adaptation Program in matters pertaining to the direction and potential new areas of investigation for the program.

Article VI.

M.I.T. and Cairo University will provide appropriate physical space in their respective campuses for this program and through appropriate means encourage the participation of their faculties and students in the program.

Article VII.

Nothing in this agreement shall be interpreted to prejudice other agreements in the fields of Technology Planning between the Parties.

Article VIII.

This agreement shall enter into force upon signature and shall remain in force during the first phase of the Cairo University/M.I.T. Technological Planning Program. During this first phase the program will be evaluated by the two institutions as well as by the U.S. Agency for International Development. The agreement may be modified, terminated, or extended with the mutual consent of the Parties.

xxx

Drawn upon and signed the 16th day of January 1977, in duplicate one copy in Arabic and one in English, both texts being equally authentic.

For the Massachusetts Institute of Technology	For Cairo University
Walter A. Rosenblith	Soufi Abu Taleb
Provost	President

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
77 MASSACHUSETTS AVENUE ROOM E19-702
CAMBRIDGE, MASS. 02139
OFFICE OF SPONSORED PROGRAMS TELEPHONE (617) 253-

I.b Administrative Agreement between Cairo University and M.I.T.

ADMINISTRATIVE AGREEMENT between Cairo University and the Massachusetts Institute of Technology for the establishment of a Technological Planning Program, hereinafter known as "The Program."

ARTICLE I - OBJECTIVE

The objective of this administrative agreement is to define the administrative arrangements between The Program at Cairo University and the Technology Adaptation Program at the Massachusetts Institute of Technology in support of the MIT/Cairo University Technological Planning Program described in AID Contract No. NE-C-1291 and in the agreement between MIT and Cairo University dated January 16, 1977, both of which are appended and serve as a basis for this administrative agreement.

ARTICLE II - ADMINISTRATION

The Massachusetts Institute of Technology will administer the Egyptian Pounds in the amount of LE 373,000 being provided by U.S. AID under the terms of this contract and the Administrative Officer of the Liaison Office will be responsible for all disbursements and for maintaining all financial records, purchase orders and invoices in accordance with MIT's standard accounting procedures established by the MIT Office of Sponsored Programs.

ARTICLE III - AUTHORIZATIONS

The Vice-Rector of Cairo University and the Program Director from MIT, will jointly authorize all Egyptian Pound expenditures for the project teams engaged in the joint research projects by jointly approving individual budgets.

Agreement - 2

ARTICLE IV - REIMBURSEMENT OF INDIRECT COSTS

The Program will reimburse Cairo University for the indirect cost, including fringe benefits, for certain faculty and administrative staff at the rate of 109% of such salaries and/or consulting fees. Such reimbursement is provided only for full-time faculty and/or administrative staff (excluding graduate students) for their direct participation in the joint research project.

Payment will be made monthly, to an account designated by Cairo University, based on salaries and/or consulting fees paid during the prior month.

ARTICLE V - OFFICE SPACE, FURNITURE & EQUIPMENT

Cairo University has provided office space, furniture and equipment as required for the Liaison Office. Renovations to this space and the purchase of some office furniture and equipment have been made with the understanding that the cost of these items will be deducted from the reimbursement of the indirect costs payable to Cairo University. This equipment plus equipment purchased from The Program's U.S. dollar and Egyptian budgets, such as a telex machine, typewriters, a copy machine and air conditioners become the property of Cairo University when delivered to Cairo University. They will be used by The Program during the period of its operation in Egypt.

ARTICLE VI - EGYPTIAN TAXES AND DUTIES

It has been determined that equipment purchased from Program funds and donated to Cairo University -- as described in Article V -- are exempt from Egyptian taxes and duties.

Further, The Ministry of Finance of the Arab Republic of Egypt issued a specific interpretation of the Program's tax status on May 21, 1977. A copy of this interpretation is appended as a part of this Administrative Agreement. The major points are summarized as follows:

1. American and Egyptian employees and consultants are tax-exempt.

Agreement - 3

2. Personal effects of M.I.T. resident staff including one automobile, are exempt from customs duties providing goods imported into Egypt are re-exported within six months after the termination of their contracts.

ARTICLE VII - PERIOD OF AGREEMENT

This agreement shall enter into force upon signature and shall remain in force during the first phase of the Cairo University MIT Technological Planning Program. During this first phase The Program will be evaluated by the two institutions as well as by the U.S. Agency for International Development. The agreement may be modified, terminated, or extended with the mutual consent of the Parties.

For the Massachusetts Institute of Technology

Stuart H. Cowen
Vice President for Financial Operations

For Cairo University

Prof. Hassan Hamdy Ibrahim
Vice President of Higher education and Research, Cairo University

APPROVED

I.c Tax Status of the Cairo University/M.I.T. Program

TECHNOLOGICAL PLANNING PROGRAM

CAIRO UNIVERSITY - MASSACHUSETTS INSTITUTE OF TECHNOLOGY

A.R. Egypt
Ministry of Finance
Minister's Office

To Prof. Dr. M.Z. Shafei
Liasion Office Director,
The Technological Planning Program of
Cairo University & Massachussetts Institute of Technology,
Cairo University.

Greetings,

With reference to your letter dated 25/4/77 concerning the signing of a contract between Cairo University and representatives of Massachussetts University of Technology, USA, for the establishment of a common program of technological and scientific research, under the title "Planning and Technology Program" and the initiation, to this effect of a liasion office to effect organization between both universities with view to the execution of this, the program that consists of various engineering, technological, economic and social studies, besides other diverse aspects that concern the Egyptian community and its present problems now financed by A.A.A. (American Aid Agency) solely, without any other source, the fact that payment shall be directly settled from this Agency's account to the private account allocation for this purpose and opened at Chase Manhatton, Cairo, and the fact that the resources allocated for this financing shall be transferred from the account of the Agency at Chase Manhatton Bank, Paris, to Chase Manhatten Bank, Cairo.

We would like to inform of the following in answer to the inquiries stated in your letter:-

(1) With regard to Customs treatment for American subjects who will be employed by this Program and exempting their furniture and cars, temporary clearance, according to Customs provisions, may be granted without collecting taxes or dutiss on personal property including one car, provided a promise should be submitted that they shall be re-exported within six months after termination of their contracts, together with a guaranty that taxes and dutiss shall be paid if such property be not re-exported during said term.

TECHNOLOGICAL PLANNING PROGRAM

CAIRO UNIVERSITY - MASSACHUSETTS INSTITUTE OF TECHNOLOGY

(continued)

(2) With view to taxes on American subjects salaries in Cairo, the Director of the Liasion Office and University professors working for the Program, also taxes on Egyptian administrators, the tax Administration is of the view that this is governed by Article 16, of law 14 for 1939. The Article says that if payment is from a foreign government fund, the sums thus dis-bursed as salaries and wages are tax exempt.

But sums paid from Egyptian fund(s), for work carried out in Egypt or to a resident therein, salaries and wages are liable to taxes.

Hence, sums that shall be paid out of Aid fund, through its account at Chase Manhattan Bank, Cairo, opened particularly for the Planning & Technology Program, Cairo University, are not liable to taxation of salaries and wages, whether paid to expatriates or Egyptians under the assumption that payment is done from a foreign government fund.

Any other sums expended from another account or from mixed funds are liable to taxation concerning salaries and wages in Egypt as stipulated by said Article.

And with our best regards.

Minister of Finance

21/5/77

Dr. Mahmoud Salah-el-din Hamed

(Translated from the Arabic Letter)

APPENDIX II: M.I.T., Cairo University and Ministry Participants on the Technological Planning Program.

II.1 Stochastic Model of Nile Inflows to Lake Nasser.

Ministry of Irrigation

Dr. Hassan Ibrahim. Director, Institute for Water Utilization; Project Supervisor.

Dr. Fouad El Shibini. Deputy Director, Institute of Water Resources.

Cairo University

Dr. Hassan H. Ismail. Principal Investigator.

Dr. Ismail E. Mobarek. Co-Principal Investigator.

Dr. Ibrahim Assiuti. Head, Department of Hydraulics.

Dr. Hassan Dorrali.

Dr. M. Salim Salem. Associate Professor, Department of Hydraulics.

Mr. Bayoumi Bayoumi Attia. Graduate Student.

Mr. Mohamed Osama Nasef. Graduate Student.

Mr. Reda M. Aly. Graduate Student.

Mr. Ismail El-Himany. Graduate Student.

M.I.T.

Dr. Rafael L. Bras. Assistant Professor; Principal Investigator.

Dr. Peter S. Eagleson. Professor; Co-Principal Investigator.

Mr. Jose Cordova. Ph.D. Candidate and Fellowship Recipient.

Mr. Kevin D. Curry. Masters Degree Candidate and Research Assistant.

II.2 Nile Delta Groundwater Study.

Ministry of Irrigation

Dr. Kamel Hefny. Director, Research Institute for Groundwater; Project Supervisor.

Cairo University

Dr. Abdel Wahen Amer. Professor of Hydraulics and Irrigation; Principal Investigator.

Dr. Ahmed M. El Kashab. Professor of Hydraulics and Irrigation.

Dr. Sherif M. Makian Ebeid. Professor of Electrical Engineering.

M.I.T.

Dr. John Wilson. Associate Professor of Civil Engineering; Principal Investigator.

Dr. Donald Harleman. Professor of Civil Engineering.

Mr. Kenneth Strzepek. Research Assistant.

Ms. Maria Veron. Research Assistant.

II.3 Housing and the Construction Industry.

Ministry of Housing & Reconstruction

Dr. Mamdouh M. El Masry. Undersecretary; Project Supervisor.

Mr. Mohamed Mesalamy. Undersecretary of Supply & Procurement.

Mr. Tarek Selim.

Mr. Mohey Salem.

Mr. Abdel Mottaleb Atolba.

Mr. Abdel El Zorghby.

Mr. Samir Neggar.

Mr. Michael Rafael.

Mr. Ramzy Shenouda Morcos.

General Organization for Physical Planning

Mr. Mohamed Hafez Ali. Chairman and President.

Mr. Michael Fonad. Vice-Chairman for Research & Development.

Mr. Ramzy-Ezzat Constantin. Director of Planning.

Ms. Hoda Naguib Amin. Architect/Planner.

Mr. Ismail Hosam El-Din. Planner.

Ministry of Industry

Eng. Kamel Maksoud. Director, Central Administration for Technical Planning and Research.

Dr. A.M. Fahmy.

Ministry of Planning

Dr. Saad Hanafy. Undersecretary.

Mr. Saleigh Gobran.

Cairo Governorate

Mr. Mohammed Shawki. Head, Planning & Development.

Mr. Anies Chali.

Mr. Farouk Kandeel.

Water Supply Authority

Mr. El-Din Farag. Director (Greater Cairo).

Sewage Authority

Eng. Safwat. Vice-President.

Prefabricated Housing Company

Dr. Abdel Fareed. Director.

Nasr City Company

Mr. Gamel Zaki. Chief Planner.

Popular Housing Company

Arch. Ismail Reda. Chief Planner.

Cairo University

Dr. Ahmed El Erian. Professor of Building Engineering; Co-Principal Investigator.

Dr. Yousef Shafik. Head, Department of Architecture; Co-Principal Investigator.

Dr. Essam Badr. Professor of Architecture.

Dr. Hassan Fahmid Imam. Professor of Mining Engineering.

Dr. Reda Kamel. Professor of Architecture.

Dr. Abdul Mohsen Barrada. Associate Professor of Building Materials.

Dr. Nasamat Abdel Kadel. Associate Professor of Architecture.

Dr. Mahmoud Reda. Lecturer, Building Engineering.

Dr. Zakia Shafie. Associate Professor of Architecture.

M.I.T.

Dr. N. John Habraken. Head, Department of Architecture; Principal Investigator.

Dr. Albert G.H. Dietz. Department of Architecture.

Dr. Fred Moavenzadeh. Professor of Civil Engineering.

Dr. William Wheaton. Associate Professor of Economics.

Dr. Janet A.K. Rossow. Research Associate.

Dr. Eric Dluhosch. Research Associate.

Mr. Reinhard Goethart. Instructor, Department of Architecture.

Mr. Phillippe Annez. Ph.D. Candidate.

II.4 Urban Transportation Project.

Transport Planning Authority, Ministry of Transportation

Eng. Ali Daghestany. Vice Chairman; Project Supervisor.

Dr. Abdel-Aal Salmawy. Technical Director.

Eng. Mohktar Hassan.

Cairo University

Dr. Mohamed El-Hawary. Professor of Civil Engineering; Principal Investigator.

Dr. Farouk Abdel Barry. Associate Professor of Civil Engineering.

Dr. Mohamed Owais. Associate Professor, Assuit University.

Mr. Ahmed Badazir. Graduate Research Assistant.

Mr. Hamdi Ismail. Graduate Research Assistant.

M.I.T.

Dr. Ralph Gakenheimer. Professor of Urban Planning; Principal Investigator.

Mr. Thomas Brigham. Project Manager.

Mr. Martin Michael. Research Assistant, Urban Studies and Planning.

Mr. Donald Keller. Research Assistant, Civil Engineering.

Mr. Atul Sharma. (SPURS Program Fellow), Economist.

Mr. F. Mostafa Ammar. Undergraduate, Electrical Engineering and Computer Sciences.

II.5 Highway Transportation Planning.

Transport Planning Authority, Ministry of Transportation

Eng. Ali Daghestany. Vice-Chairman; Project Supervisor.

Dr. Abdel Fathy Lashine. Assistant Technical Director.

Engr. Abdel Maksoud Sadek. General Director for Design and Laboratory Section.

Engr. Mohammed Khalil. Director of Geometric Design and Traffic Division.

Engr. Mohammed Shaker. Research Director, Transport Planning Authority.

Cairo University

Dr. Mohamed El-Hawary. Professor of Civil Engineering; Principal Investigator.

Dr. Mohamed Owais. Associate Professor, Assuit University.

Dr. Farouk Abdel Barry. Associate Professor.

Dr. Sherif M. Ebeid. EDP, Scientific Computation Center.

Mr. Dorria El-Aggon. Programmer, Scientific Computation Center.

Three demonstrators from Cairo and/or Assuit Universities.

M.I.T.

Dr. Fred Moavenzadeh. Professor of Civil Engineering; Principal Investigator.

Mr. Brian Brademeyer. Research Engineer.

Mr. Michael J. Markow. Research Associate.

II.6 Government Incentives for Small Scale Industry.

Ministry of Local Affairs

Dr. Mobarek El Rafei. Undersecretary; Project Supervisor.

Eng. Moursi. Technical Director, Organization of Handicraft and Production Cooperatives.

Ministry of Industry

Dr. Abdel Rahman El Nasser. Undersecretary; Project Supervisor.

Eng. Atwa. Technical Assistant.

General Organization for Industrialization, Ministry of Industry

Dr. Gabril. Director, Licensing Bureau.

Cairo University

Dr. Mostafa El Said Ibrahim. Associate Professor of Economics; Principal Investigator.

Ms. Laila Lotfy. Research Assistant.

Ms. Nawal Kassem. Research Assistant.

M.I.T.

Dr. Suzanne Berger. Professor of Political Science; Principal Investigator.

Mr. John Potter. Technical Officer, TAP.

Ms. Judith Chubb. Research Assistant.

II.7 The Development of Improved Macroeconomic and Sectoral Planning Methods.

Ministry of Planning

Dr. Essam Montasser. Undersecretary; Project Supervisor.

Dr. Mahmoud Saleh. Input-Output Group.

Dr. Morris Farid. Input-Output Group.

Cairo University

Dr. Amr Mohie-eldin. Associate Professor of Economics; Principal Investigator.

Dr. Gouda Abdel Khalil Associate Professor of Economics.

Dr. Ahmed El Softy. Associate Professor of Economics.

M.I.T.

Dr. Richard Eckaus. Professor of Economics; Principal Investigator.

Dr. Lance Taylor. Professor of Economics.

II.8 Egyptian Labor Migration.

Ministry Supervisors

Mr. Aly Gamal El Nazr. Undersecretary, Ministry of Economy.

Dr. Aziz Bindary. Chairman, Supreme Council on Population and Family Planning.

Cairo University

Professor Amr Mohie-eldin. Department of Economics; Principal Investigator.

Professor Aley el Din Dessouky. Department of Political Science.

M.I.T.

Professor Nazli Choucri. Department of Political Science; Co-Principal Investigator.

Professor Richard S. Eckaus. Department of Economics; Co-Principal Investigator.

Mr. Y. Boutros-Ghali. Department of Economics.

II.9 Health Care Delivery Systems.

Ministry of Health

Dr. Ibrahim Badran. Minister; Project Supervisor.

Dr. Almotax Mobarek. Undersecretary, Endemic Diseases and Rural Health.

Dr. Mostafa T. Hamami. Director, Rural Health Delivery.

Dr. Abdel-Honem Fouad. Director, General Administration of Statistics and Evaluation.

Dr. Nabil Naser. Rural Health Services.

Cairo University

Dr. Salah Shahbender. Professor of Medicine; Principal Investigator.

Dr. Shafica S. Nasser. Assistant Professor of Public Health and Nutrition.

Dr. Mervat El Rafie. Assistant Professor of Public Health and Nutrition.

Dr. Wafik A. Hannouna. Consultant.

M.I.T.

Professor Lance Taylor, Department of Economics; Co-Principal Investigator.

Professor Richard S. Eckaus. Department of Economics; Co-Principal Investigator.

Dr. John O. Field. Center for International Studies, Research Associate.

Mr. George Ropes. Research Assistant

II.10 Long Term Investment Planning for the Egyptian Electric Power System.

Ministry of Electric Power and Electricity

Eng. M.M. Abaza. First Undersecretary of State; Project Supervisor.

Dr. F. Taher. Technical Counsellor, EEA/MOEE.

Dr. H. El-Shaer.

Dr. E. El Sharkawi.

Dr. M. Sweidan.

Eng. El Gazzer.

Eng. K. Yassin.

Eng. S. Doss.

Cairo University

Professor M. S. M. Abou-Hussein. Chairman of Electrical Power and Machines Department; Principal Investigator

Prof. S. El-Sobki

Dr. H. Anis.

Eng. H. El-Kolaly.

Eng. M. Mohmoud.

M.I.T.

Professor Martin L. Weitzman. Professor of Economics; Principal Investigator.

II.11 Engineering Applications for the Egyptian Plastics Industry.

Ministry of Petroleum

Dr. Hamid Amer. Petrochemical Projects; Project Supervisor.

Eng. M. El Warraky. Petrochemicals Project.

Cairo University

Dr. Salah Bayoumi. Head, Department of Design and Production Engineering; Principal Investigator.

Dr. Mahmoud El Rafei. Associate Professor, Department of Chemical Engineering.

1 M.S.C. Candidate.

3 B.S.C. Candidates.

M.I.T.

Dr. Fred McGarry. Professor of Material Science and Engineering; Principal Investigator.

Dr. Robert Cohen. Associate Professor of Chemical Engineering.

Mr. John Potter. Technical Officer, TAP.

APPENDIX III: Program Travel During the Third Quarter - June 15 to September 15, 1977.

III.1 Travel to Cairo: 6/15 - 9/15/77.

Name	Project	Dates of Visit
Ralph Gakenheimer	Urban Transportation	6/ 1-6/24
Martin Michael	Urban Transportation	6/ 1-6/24
John Wilson	Nile Delta Groundwater Model	6/ 9-6/23
Kenneth Strzepek	Nile Delta Groundwater Model	6/ 9-6/26
Peter Eagleson	Stochastic Model/Nile	6/ 9-6/16
Jose Cordova	Stochastic Model/Nile	6/ 9-6/23
John Potter	Plastics Industry; Small Scale Industry	6/14-6/28
Suzanne Berger	Small Scale Industry	6/15-6/30
John Field	Health Care Delivery Systems	6/18-6/26
Robert Cohen	Plastics Industry	6/21-6/28
Frederick McCarry	Plastics Industry	6/21-6/28
Albert Dietz	Housing & Construction	6/27-7/04
Eric Dluhosch	Housing & Construction	6/29-7/12
Janet Rossow	Housing & Construction	7/ 1-7/15
William Wheaton	Housing & Construction	7/ 1-7/ 8
Philippe Annez	Housing & Construction	7/ 1-7/22
Reinhart Goethert	Housing & Construction	7/ 1-7/15
Martin Weitzman	Investment Planning-Electric Power	7/ 2-7/10
Brian Brademeyer	Highway Transportation	7/ 9-7/22
Robert Greene	Administration	7/15-7/30
Rafael Bras	Stochastic Model/Nile	8/ 1-8/11
Kevin Curry	Stochastic Model/Nile	8/ 1-8/11
Lance Taylor	Macroeco. & Sectoral Planning	8/ 2-8/ 9
Reinhart Goethert	Housing & Construction	8/ 5-8/25
Nazli Choucri	Labor Migration; Administration	8/ 8-8/14

Name	Project	Dates of Visit
Fred Moavenzadeh	Housing & Construction; Highway Transportation; Administration	8/ 8-8/14
Richard Eckaus	Macroeco. & Sectoral Planning; Administration	8/ 8-8/13
John Field	Health Care Delivery Systems	8/13-8/19
Edith Greene	Dependent of Robert Greene, Liaison Office Administrative Officer	8/22-
Ann Greene	Dependent of Robert Greene, Liaison Office Administrative Officer	8/22-
Eric Dluhosch	Housing & Construction	8/30-9/15
Robert Long	Administration	9/ 1-9/22

III.2 Travel to United States: 6/15-9/15/77.

Name	Project	Dates of Visit
Abdelwahab Amer	Nile Delta Groundwater	7/ 7- 7/21
Robert Greene	Administration	7/15- 7/30
Mahmoud Darwish	Administration	8/ 3- 8/ 5*
Mokhtar Hassan	Urban Transportation	8/12- 9/23
M. Owais	Highway Transportation	9/ 6-10/ 6
S. Bayoumi	Plastics Industry	8/26- 9/ 6
M. El Rafei	Plastics Industry	8/26- 9/ 6
M. El Hawary	Urban Transportation; Highway Transportation	9/ 9- 9/16

*Visit made as part of trip to United States separately funded by U.S. A.I.D.

III.3 Proposed Travel: September 15 - December 15, 1977.

	Trips to Cairo	Trips to M.I.T.
Administrative Staff		
Executive and Steering Committee Members	8	3
Other	3	1
SUBTOTAL	11	4
Project Staff		
Housing and Construction	9	6
Urban Transportation	2	1
Small Scale Industries	2	2
Labor Migration	1	1
Macroeconomic and Sectoral Planning	1	1
Highway Transportation	2	2
Stochastic Model/Nile	2	2
Health Care Delivery Systems	2	-
Nile Delta Groundwater Model	2	1
Investment Planning-Electric Power	1	1
Plastics Industry	3	0
Unspecified/Project Development	2	2
SUBTOTAL	29	19
TOTAL	40	23

APPENDIX IV: Program Administration and Personnel.

VI.1: Program Personnel (as of September 15, 1977)

MIT

MIT Technology Adaptation Program:
Fred Moavenzadeh, Director

TAP STEERING COMMITTEE

Professor Nazli Choucri, Associate Professor, Department of Political Science
Professor Richard S. Eckaus
Department of Economics
Professor Fred Moavenzadeh
Department of Civil Engineering
Professor William F. Pounds
Professor of Management
Dean of the Alfred P. Sloan School of Management
Professor George W. Rathjens
Department of Political Science
Professor Jack P. Ruina
Department of Electrical Engineering
Professor Eugene B. Skolnikoff
Department of Political Science
Director of the Center for International Studies

TAP EXECUTIVE COMMITTEE

Professor Nazli Choucri
Professor Richard Eckaus
Professor Fred Moavenzadeh

CAIRO UNIVERSITY

Vice Rector for Research:
Dr. Hassan Hamdy

TPP STEERING COMMITTEE

Dr. Hassan Hamdy,
Vice Rector for Research
Professor Yehia Kabil, Dean
Faculty of Engineering
Professor Khairi Eissa, Dean
Faculty of Economics
Professor Sobi Hakim, Dean
Faculty of Arts
Professor Hassan Ismail
Faculty of Engineering
Professor Zaky El Shafei
Faculty of Economics
Professor Salah Shahbender
Faculty of Medicine and
Vice Dean, Cancer Institute

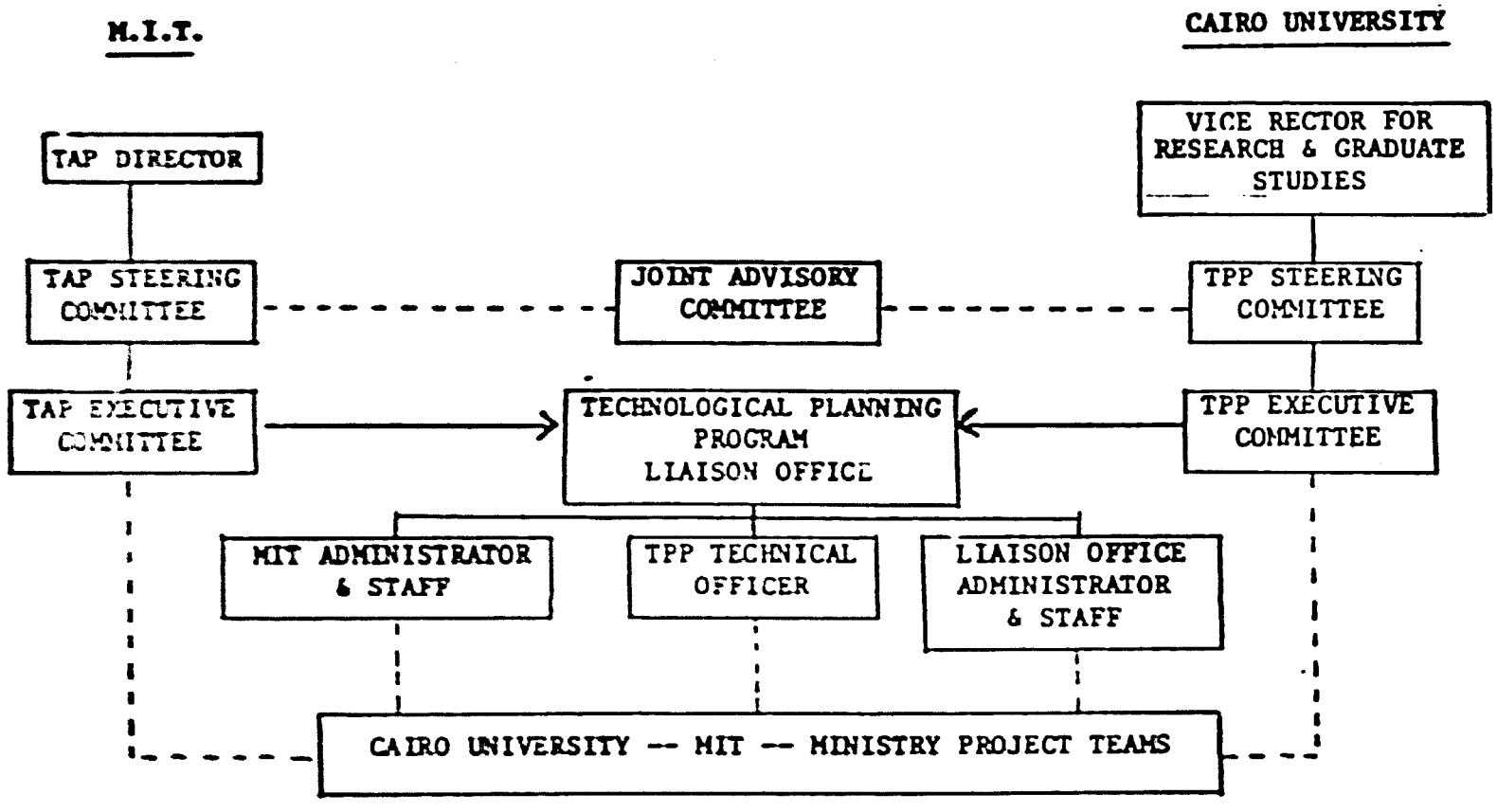
TPP EXECUTIVE COMMITTEE

Professor H. Ismail
Professor Z. Shafei
Professor S. Shahbender

JOINT ADVISORY COMMITTEE

F. Moavenzadeh	Z. Shafei
R. Eckaus	H. Ismail
N. Choucri	S. Shahbender
(to be named)	Y. Kabil

PROGRAM STAFF:

MIT Administrator: Ms. Jeanne DePass
Technical Officer: Mr. John Potter
Liaison Office Administrator: Mr. Robert P. Greene
Office Supervisor: Ms. Susan Sabri
Public Relations: Abdullah A. Makaoud

IV.2: Administrative Organization of the Technological Planning Program (TPP)