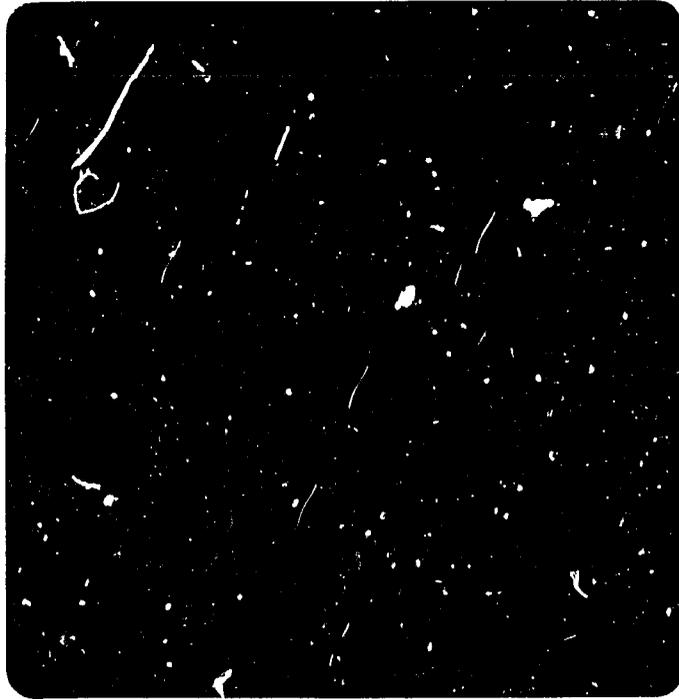


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INTERNATIONAL
ENERGY
ASSOCIATES
LIMITED



600 NEW HAMPSHIRE AVENUE, N.W.
WASHINGTON, D.C. 20037
202-342-6700
Telex 892680 CODETEL WASHDC

INTERNATIONAL
ENERGY
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IEAL-262

EVALUATION OF THE
ENERGY MANAGEMENT
TRAINING PROGRAM

Prepared for

U.S. Agency for International Development

Prepared by

International Energy Associates Limited

September 24, 1982

600 NEW HAMPSHIRE AVENUE, N.W.
WASHINGTON, D.C. 20037
202 - 342 - 6700
Telex: 89-2680 Cable: IEAL WASHDC

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1.0 INTRODUCTION AND SUMMARY FINDINGS AND RECOMMENDATIONS OF THE REPORT

1.1 INTRODUCTION

1.1.1 Background

The Energy Management Training Program (EMTP) is a course designed to teach government officials of developing countries the tools and methodology of analysis required for the formulation of national energy policies. The program is centrally funded by the Agency for International Development (AID) in Washington, D.C. It is managed and presented by the Institute for Energy Research (IER) of the State University of New York at Stony Brook, through a contract with (and the participation of) the Brookhaven National Laboratory (BNL) of Upton, New York, and its National Center for the Analysis of Energy Systems.

The program began in 1978 with a pilot 12-week course that was subsequently reduced in length to about 8 weeks. Based on the success of this initial effort, sessions were given in 1979 and 1980. An AID evaluation at that time recommended continuation through the end of 1982, increased the frequency to two sessions per year, and identified significant new activities (e.g., a newsletter, monographs, and seminars) and issues (e.g., course structure and improved management) which should be vigorously pursued during this period.

Funding history for the program is as shown below:

<u>Year</u>	<u>Cost (\$)</u>	<u>Number of Sessions</u>
1978	315,700	1 (Pilot)
1979/80	624,000	2
1981/82	1,394,000	4
TOTAL	2,333,700	7

AID requested assistance from International Energy Associates Limited (IEAL) in accomplishing an in-depth evaluation of this 5-year program to provide input to future AID decisions regarding:

- The future of the program (i.e., its potential continuance, modification, and/or termination); and
- Needs for energy policy training in developing countries (independently of the current program) and actions that might be taken by AID, Washington, in support of such needs.

AID and IEAL have jointly designed the evaluation process which is the subject of this report. This introductory section of the report describes the approach to the evaluation and the order in which this material is discussed in the body of the report.

1.1.2 Elements of the Evaluation

AID assembled and provided to IEAL for its review a substantial amount of written material describing the history and content of the course. As part of this effort, IER prepared its own summary documentation, "Background Material Prepared for Evaluation of the Energy Management Training Program for Developing Countries," May 1, 1982 (but extended and revised the report somewhat during July-August 1982, during which time the IEAL evaluation took place).

The material of record included historical evaluation documentation from the following independent sources:

- Discussion documents, budget and program justifications, and formal evaluations prepared by AID officials.
- Teletype communications from a number of foreign participants and their supervisors commenting on the program.
- Summarizations of evaluation questionnaires prepared by participants at the end of each course session.
- Discussions and recommendations offered by a formal EMTP Advisory Committee which has been convened annually since the inception of the program.

After an initial review of this material, IEAL undertook the following additional and independent activities:

- Interviews with representatives of IER to directly discuss the issues initially identified in the process and then to follow-up at a later date on some remaining questions.
- Consultation with an AID Evaluation Committee consisting of:
 - Patricia Koshel,
 - Carolyn Coleman, and
 - Thomas Ball.
- Consultation with other AID officials including:
 - Jack Vanderryn,
 - Allen Jacobs,
 - Shirley Toth,
 - Robert Ichord,
 - Tom Robertson, and
 - Bernadette Bundy.
- Consideration of the results of an interview process conducted by AID officials who met with former participants from Jamaica and Ecuador during July and August 1982, for purposes of program evaluation.
- Preparation of two independent Interview Plans to be used by IEAL for intended discussions with former participants and with non-participant energy officials in developing countries.

- Conduct of interviews with former participants and other officials during August 1982, in four countries (Dominican Republic, Indonesia, Egypt, and Nairobi).
- Preparation and mailing of an EMTP Evaluation Questionnaire to 91 additional former participants, and evaluation of the 20 responses received.
- Identification and consideration of other published material assessing the state of energy policy formulation for developing countries, both in general and in detail for specific countries participating in the EMTP program; and training needs in energy policy associated with such current conditions.

During the overseas interview process, IEAL examined both the EMTP program specifically and the general question of energy policy training needs. This and many other elements of the evaluation gave a complimentary focus to both matters under consideration. Indeed, as will be evident in the body of the report, recommendations made herein must recognize the highly interrelated nature of the two issues and the most significant recommendations are developed only after both matters have been fully considered.

1.1.3 Structure of the Report

The subsection following this introduction is an Executive Summary of the major findings and recommendations of the evaluation. While this summary is intended to include all the main points, there is substantial additional detail in the main body and appendices to this report, which IEAL recommends be reviewed carefully by those who are assessing the validity of IEAL's judgments and conclusions and who have the additional time required to achieve a deeper perspective of the issues and the information upon which IEAL's recommendations are based.

The main body of the report consists of the following sections in the order indicated:

- **History of the EMTP:** This section briefly describes the EMTP, the country participation therein, the objectives of the course, the prior evaluation and findings associated with it, and some additional matters examined by IEAL during the initial part of the evaluation. Key issues of continuing relevance, developed by the earlier evaluation, are identified for further discussion in later sections of the report.
- **Curriculum and Course Materials:** This section contains an evaluation of the course materials, structure, monographs, and related seminar activity based on the current (1982) version of the course. This evaluation was conducted prior to the IEAL interview and questionnaire process. Accordingly, the recommendations in this section are narrower in scope than those developed in later sections and are applicable if the EMTP is continued in the future in a form close to its present design.
- **Cost Considerations:** This section briefly considers the per-student cost of the EMTP and discusses the significance of the findings in this area.
- **The Interview Process:** This section discusses how the IEAL interviews were planned and accomplished, with whom they were held, and the conclusions developed therein. In addition, areas where there were divergent viewpoints are identified for further discussion in a later section of the report.
- **The Questionnaire Process:** This section presents the IEAL questionnaire, summarizes the responses received and analyzes those results in the light of the other elements of the evaluation, including the identification of areas of both agreement and disagreement between the results of the interview and questionnaire processes.
- **Needs for Training in Energy Policy Formulation:** This section discusses a spectrum of needs and potential responses by AID, Washington, in the area of energy policy formulation. The specific types of need presently or potentially satisfied by the EMTP, (or small modifications thereof) are identified during the discussion. EMTP issues developed in earlier sections of the report, but not resolved, are returned to in this section and are considered in the broadest possible context. Major options for new activities are outlined and some significant potential problems and benefits of each such major type of approach are identified and discussed.

- Recommendations: This final section of the report presents IEAL's major recommendations concerning both the future of the EMTP and possible AID responses to the larger universe of training needs in energy policy formulation not directly or effectively addressed by the EMTP.

1.2 SUMMARY FINDINGS AND RECOMMENDATIONS

The recommendations presented here are based on the review and evaluation of voluminous written material; but, more importantly, on the results of current interactions with 47 of the past EMTP participants (19 through IEAL interviews, 8 through AID interviews, and 20 through the IEAL questionnaire) as well as interviews with 15 other in-country officials. The 47 participants whose present views have been obtained in depth represent nearly one-fourth of all the participants trained from 1978 through the Spring 1982 class session.

IEAL finds that the EMTP, as presently constituted, has been seen as a beneficial experience by participants. The primary value of the course has been as an introductory overview for mid-level officials (and high-level officials in the early years) with respect to the concepts and methodologies of energy policy analysis. A number of countries have outgrown the course. Those with continuing participation are now more likely to send junior officials or those not directly involved in central policy analysis activities. Other countries, at earlier stages of experience, could still obtain benefit from the course. IEAL believes, however, that the benefits to be achieved by maintaining the EMTP in its present form are low, relative to the cost involved, and when consideration is given to the significant modification of emphasis and more cost-effective supplementary activities which AID could initiate in this area.

Accordingly, IEAL recommends the termination of the EMTP, as presently constituted, rather than its continuance.

If, however, the program were to be continued, and in the United States, IEAL recommends that AID take steps to achieve:

- Significant improvement in contractor management and documentation, the process by which participants are selected, the intensiveness and formality of related advisory/overview processes, and the degree of sensitivity shown to potential areas for conflict of interest.
- Changes in course curriculum (and length) to reflect more compactness, responsiveness to subject emphases identified in the IEAL interview and questionnaire process, and a more limited focus on the unique elements of energy policy analysis, formulation, and implementation which are not readily available through other sources.
- Changes in course structure to allow for class division, for some sections of the course, into multiple tracks, appropriate to the technical background and areas of interest of the participants.
- A requirement for greater student participation in class projects, individual assignments, practice in skill development, etc., with follow-up interaction with instructors, so that a greater level of skill acquisition is achieved, with a reduced dependency upon the lecture process as the primary or only teaching mode in the absence of student personal initiatives.

In its interviews, IEAL found that EMPT graduates from the early years are more likely to be placed close to the possible center of key energy policy studies and hence have an influence on in-country policy decisions. However, this influence is, in most cases judged to be only moderate. With the passage of time, and where a chain of participants has been sent, the later participants tend to be:

- Lower level civil servants directly associated with the overall in-country integrated energy planning, but with little ability to personally impact such planning; and/or
- Representatives of energy sub-elements not primarily concerned with integration of energy policy; and/or
- Representatives of non-energy agencies which are looking for an in-house general understanding of energy issues.

Where a chain of participants have been sent, there is essentially little or no interaction or even contact among them unless they are actually part of the same office. There is no evident perception of being a member of a "cadre" of people uniquely trained or identified to deal with energy issues for the country except to the extent of their specific current job assignments. That is to say that the EMTP is seen as an individual experience, rather than as an institutional or national experience.

Participants held mixed views about course continuation. Senior level officials who favored this intended to use it for more junior employees or participants of other agencies who would benefit from an overview or energy primer type of experience. Junior employees were primarily reflecting their own personal satisfaction with the experience. Senior and mid-level officials who favored a change did so on the basis that the course was not really fulfilling the most critical need in the area, given the particular situation in their country.

Among those who deeply considered the alternative of in-country experiences, there appeared to be a consensus on the question of whether or not such an approach should be oriented country-by-country or oriented regionally with participation by a substantial number of countries in the region. The latter approach was favored. This appeared to reflect a positive view of the benefit side of the wide range of country participation in the EMTP. While such an approach also generates problems and difficulties, a solid vote was cast in the direction of accepting such disadvantages in order to achieve, on balance, a greater benefit.

In the event of a regional training approach, mounted and managed from the U.S., it was also agreed that the location of the training should move from country to country in the region, over a number of years, so that no single country was perceived as its

dominant host. Also, such an approach should involve extensive interaction before, during, and after the training experience with the ministries who would send the students. The lecturers should also include in-country and in-region presenters.

The logistics and other aspects of such an approach were recognized as being complex. Costs could be difficult to control. Nevertheless, if well done, relevance to need and resulting benefits could be high.

The evaluation of the EMTP as a training approach has emphasized two important points:

- Each developing country is in a different stage of development as regards sophistication in energy policy formulation; hence a centrally-located, broad-based approach such as the EMTP is of varying degrees of value for the participants and tends to approach the level of an energy primer for middle (even junior) level officials with only moderate knowledge of the overall energy universe.
- In order to achieve a high degree of cost effectiveness in training there must be substantial early and continuing interaction between the course users and the course sponsors so that;
 - curriculum meets the intended needs of the user, and
 - the appropriate participants are nominated to the process.

Many mechanisms exist to provide basic scientific training regarding individual energy technologies. The unique aspects of energy policy formulation are:

- The integration of a large number of diverse concepts and tools into a structured attack on trade-offs between elements such as supply, end-use efficiency, pricing, capital availability, economic development, technology development, and national security; and

- The structural and policy development techniques necessary to translate the results of analysis into political/legislative actions which can be practically implemented by governments.

IEAL recommends that AID adopt these two concepts as the fundamental units of any future training programs in energy policy formulation. Both are embodied now, to a degree, in the EMTP, but they are joined to much additional extraneous material which increases the length of the course and reduces its overall cost-effectiveness.

AID, Washington, should continue to move in the direction of decentralizing country-specific training elements to become integrated into local AID Mission programs. In energy policy training, activities to do this were underway in each of the countries/regions interviewed (Jamaica, Dominican Republic, Indonesia, Egypt, and Nairobi/Africa). IEAL's discussions with in-country AID energy officers found them to be knowledgeable and the programs proposed in this area to be attacking real problems in a well-considered way. Accordingly, any centrally-supported program carried forward by AID, Washington, should be based on providing capabilities that cannot be provided by field missions or, because they are of wide value, can be provided and managed centrally at lower cost than if replicated by a number of Missions.

Accordingly, IEAL recommends that AID consider adopting a prioritized array of activities in the energy policy training area established in accordance with the following criteria:

- Require significant early and continuing interaction between course sponsors and national users.
- Emphasize the reduction of logistic and procedural barriers to effective course utilization, with particular emphasis on the process by which participants are selected.

- Provide for the existence of a centrally managed core support for continuity, feedback, and innovation based on experience.
- Focus first on the high- and middle-level managers of government ministries who are either;
 - the customers for, or the performers within, a central energy policy analysis staff, or
 - other key officials whose participation in decision making is key to the ability to implement programs following completion of the analysis.
- Emphasize for the above the unique elements of the energy policy analysis, formulation, and implementation process which cannot be readily learned through other processes.
- Recognize the need for a prioritized spectrum of program elements, including pilot (limited scope) activities so as to make progress in longer-term areas within limited budgets.
- Design AID-Washington programs on the premise that significant programs in this area of a national and/or regional character are also being designed and implemented by field Missions.

Taking the above criteria into account, IEAL recommends that AID, Washington, give highest priority to the direct support (and co-sponsorship, where possible and appropriate) of the program/activity array presented in Table 1-1.

In some cases the table provides for either a U.S. or regional location. Based on the EMTP interviews and questionnaire results, IEAL uniformly recommends regional (rotated) locations, and the correspondingly more intense interaction with proposed users that can be achieved thereby, over U.S. locations, except for short or prestige events.

The diverse elements of the table are prioritized as follows:

1. Central sharing and evaluation programs to increase awareness and effectiveness within AID's own related activities.

TABLE 1-1

TARGET CATEGORY	OBJECTIVES/ELEMENTS	LENGTH/LOCATION
1. Training Programs		
A. High-level Officials		
1) Countries without central planning staffs and in early phases of energy program formulation.	Nature and value of energy policy analysis, formulation, and integration, centrally approached. Experience elsewhere in organizing for and initiating activity.	Short (1 week). Regional (rotated periodically) and/or U.S.
2) Countries with central planning staffs but of limited sophistication.	Value of approach. Importance of coordination, data gathering, computer access. Issues and approaches to resolution relevant to needs.	Short (1-2 weeks). Regional (rotated periodically).
3) Sophisticated but still developing countries.	Case studies in successful policy analysis, formulation, and implementation (world-wide).	Short (1-2 weeks). U.S.
B. Middle-level Officials		
1) Countries in early phases of energy policy formulation.	Unique aspects of integrated approach to analysis, methodologies to accomplish, implementation problems and how to deal with them. Case histories relevant to needs. Mechanisms for initiating greater in-country capability. Acquisition of specific skills in integration, policy formulation, and presentation to decision-makers.	Long (3-6 weeks). Regional (rotated periodically) and/or U.S.
C. Middle-level Officials		
1) (Government/university or energy center) in countries of at least mid-level sophistication.	Elements of in-country curricula to teach energy policy analysis methodology. Case histories of growth of internal capabilities. Sources of technical and financial assistance.	Short to intermediate (2-3 weeks). Regional (rotated periodically) and/or U.S.

TABLE 1-1 (Cont.)

2. University Pilot Program

A. University Officials

Financial and technical assistance in the institution of a multi-disciplinary energy policy graduate level course (2 universities).

3-year program to create, operate, evaluate, and improve.

3. Seminars

A. Mid-level Officials of Central Policy Analysis Units

Share implementation experiences

Short (1-2 weeks).
Regional (rotated periodically).

B. Mid-level Officials

Combination teaching and sharing, limited to specific regionally relevant issues and methodologies such as expanding use of coal, deforestation, price subsidization, data gathering, etc.

Short (1-2 weeks).
Regional (rotated periodically).

4. Central Sharing and Evaluation

A. AID Washington Officials

Program office activity to facilitate:

As appropriate.

- transfer of experience between Missions.
- identification of Mission-wide needs of significant priority.
- evaluation of usefulness of Washington programs by field.
- monitoring of field programs by Washington and assistance to the field in evaluations based on broader scope of Washington experience.

B. AID Field Officials

Periodic seminars (training and sharing) to increase knowledge of cross-Mission activities in energy policy formulation and to upgrade awareness of successful case histories and methodological advances.

Short (1 week).
U.S.

2. The basic energy policy course for mid-level officials reduced in length and focussed in accordance with the criteria recommended by IEAL.
3. Short training courses for high-level officials, specifically designed to accommodate differing degrees of sophistication and hence varying as to the specific course objectives.
4. Supplementary seminars as sharing/training experiences for both central policy analysts and for those working specific resource, end-use, policy, or methodology problems.
5. Short to intermediate course directed at officials concerned with increasing in-country capabilities and providing them with an enhanced capability to accomplish this.
6. A university pilot program directed at putting a graduate level program in place in two countries.

In addition to the university effort, a fully operational program might involve, on an annual basis:

- 3-4 short courses for high-level officials;
- 2 sessions of the longer energy policy course (in different regions);
- 1 short-to-intermediate session of the course to multiply in-country internal capabilities; and
- 3-4 seminars.

A program of this magnitude, if well designed and managed, integrated with local Mission activities and pre-planned in detail with participant countries has the capability to be very effective. It must be closely monitored and evaluated, however, at each stage, since the activities are complex and the process could readily degenerate in quality without continuous attention and a high degree of contractor effort.

2.0 HISTORY OF THE EMTP

2.1 INTRODUCTION

This section briefly summarizes background material regarding the establishment and early history of the Energy Management Training Program (EMTP). It is included here as an orientation for the reader and draws heavily on material from AID's files including the May 1, 1982, Institute For Energy Research (IER) report entitled "Background Material Prepared for Evaluation of the Energy Management Training Program for Developing Countries."

The concept of the EMTP was actively promoted to the Agency for International Development (AID) in 1977 by the Brookhaven National Laboratory (BNL) in association with the Institute for Energy Research, State University of New York at Stony Brook. The two institutions had collaborated previously on a number of energy analysis studies relating to regional and national energy policy. AID supported the project for 1978 funding on a test basis. BNL was the contractor and lead entity with IER in a supporting role.

A three-month trial course (with some 80 guest lecturers) was given in 1978. Based on an evaluation of this experience the course was shortened to 2 months (and the number of lecturers was reduced to about 35). The activity was funded for the 1979 and 1980 time period, and one session was held in each year. The number of lecturers was further reduced in 1980 (over 1979), but the course length was held essentially constant.

Beginning in 1979, and continuing thereafter, IER became the dominant entity of the BNL/IER partnership.

Following the 1979/1980 sessions, a decision was made to extend the course an additional two years and to give two sessions (Spring and Fall) each year.

As of the summer of 1982, when the evaluation reported here took place, IER/BNL had given six training sessions (1978 through Spring of 1982), training 195 people from 57 countries (see Appendix A for a complete listing).

The shift in dominance between BNL and IER, and the growth in size of the program are illustrated by the budget summary in Table 2-1 below:

TABLE 2-1

ALLOCATION OF EMTP BUDGETS
BROOKHAVEN NATIONAL LABORATORY (BNL) AND
INSTITUTE FOR ENERGY RESEARCH (IER)

<u>CONTRACT YEAR</u>	<u>TOTAL AMOUNT</u>	<u>BNL</u>	<u>IER</u>
1978	\$ 315,700	\$182,122	\$ 133,578
1979/80	624,000	99,600	524,400
1981/82	<u>1,394,000</u>	<u>194,687</u>	<u>1,199,313</u>
Totals	\$2,233,700	\$476,409	\$1,857,291

BNL is, of course, a not-for-profit U.S. government multi-purpose national laboratory under the direction of the U.S. Department of Energy (DOE).

The EMTP Brochure, which IER prepares and mails to candidate participant countries, describes IER as follows:

The Institute for Energy Research (IER) is an organized research unit of the State University of New York located on the Stony Brook campus. Built around a professional staff of experienced energy policy analysts and a technical support staff, IER organizes and conducts energy planning and management training activities to meet a wide range of needs. In addition to the EMTP, the Institute conducts short executive seminars on topical energy planning subjects co-hosted by developing country institutions and on-the-job training sessions at U.S. universities, institutions, and industrial enterprises.

IER has developed a computerized energy information system designed specifically for developing countries that is currently being installed in the Dominican Republic. Survey techniques developed by IER for transportation energy demand and household fuel consumption have been applied throughout the world, including, most recently, Thailand, Indonesia, Mexico, and Kenya. Current research efforts are directed at the analysis of investment-pricing relationships.

2.2 COUNTRY/PARTICIPATION

Appendix A identifies the number of participants from each country for each course session. Some 57 countries have sent participants to the EMTP. However, not all countries have been eligible for AID assistance and this matter has received attention during the current year. Initially, the AID program manager (Jerome Boskins) had concluded that the presence of more sophisticated country representation in the class would improve the learning/sharing experience of the EMTP and would benefit the AID-countries attending the course. Accordingly he was aware of the diverse attendance being sought, and believed it to be within AID legal groundrules and of benefit to the overall program.

More recently, specific guidance has been given by the present program manager (Shirley Toth) that such non-AID representation should be held to no more than 10 people in a session and any such participant should have his subsistence expenses paid by an

entity other than AID. This approach has been followed in the past in the case of attendance from the Peoples Republic of China and some other countries. Fellowship (subsistence) funds have come from IER, and organizations/programs of the United Nations. IER indicated that approximately 15 participants had been supported in this way. Subsistence expenses are identified in the IER brochure as approximately \$2500 per person per session.

A related matter concerns international transportation costs. AID policy is that participants are to pay their own expenses to and from Stony Brook. However, some countries have maintained that they cannot participate under these circumstances. Accordingly, the EMTP 1981/1982 budget (four sessions) included \$40,000 for subsidization in such cases.

With respect to the first of the above two matters, IEAL supports the judgment that participation of countries at a higher level of development is of benefit to participants from less developed countries; however, IEAL also agrees with the current AID posture that such participants should bear a portion of the expense of their presence from non-AID sources.

With respect to the second issue, IEAL questions the wisdom of AID's use of travel subsidization in selected cases. The participating government's proposed use of the trainee in the critical task of energy policy development, following his/her training suggests that travel funds will not be a bar to attendance if there is a high value placed on the course. It is pointless to train someone who will not play an influential role on return (given the high cost, small size, and presumed elite character of the course). If the participating country really will not provide travel expenses, the likelihood of such an influential role for the participant, if AID funds travel, is viewed as very low.

2.3 OBJECTIVES

The original project paper for the 1977 determination to initiate the EMTP, as reviewed from AID files, discusses the original motivations for support and objectives intended to be achieved. A number of these are quoted below with parenthetical IEAL comments on their current status:

- "The primary purpose ... is to develop an effective training course in national energy planning and management." (Whether or not this has been achieved is, of course, a central question of the current evaluation.)
- "The course ... will consist of lectures, seminars, case studies and internship projects It will ... include lecturers from these [developing] countries." (Internship projects have been dropped. Lecturers are currently all from industrial countries.)
- "The course [in the future] will be presented in several locations in LDCs [less developed countries] to make it easier for host countries to provide travel expenses and to reduce support costs of the participants." (This has not been done.)
- "Methodologies will be featured ... which will require a minimum investment of time and effort to utilize in the countries represented. The use of models requiring computers will be kept to a minimum." (This emphasis appears to have been lost. It may never have been a viable objective, given the nature of the analytic approaches required for effective policy analysis.)
- "[If successful] ... indications of the increased use of energy management techniques, energy data systems, and energy-economic analysis will be evident" (Such indicators of growing sophistication are, in fact, visible in participating countries. Whether or not they are primarily traceable to participation in the course is not at all clear.)

2.4 PRIOR EVALUATIONS

2.4.1 Introduction

It was recognized from the beginning that the EMTP was an experiment and that it would need to receive continuing evaluation and undergo continuing change.

An Advisory Committee was established in late 1978. AID evaluations were conducted as part of the course extension decisions for the 1979/1980 contract period and the 1981/1982 contract period.

The purpose of this section is to briefly examine this historic advisory/evaluation material; to inquire whether or not actions were taken on the views presented; and to identify matters in that historic material which are still relevant.

The material is examined chronologically in the following sections.

2.4.2 Advisory Committee Activities

IER has prepared material summarizing the activities of the EMTP Advisory Committee. This is presented in Appendix B. Six meetings were held between the summer of 1978 and the Spring of 1982. Written reports exist for only three of these. Meetings lasted for about half a day, and, in at least one case, the discussion section of the annual meeting lasted for only one hour, according to the record.

Suggestions of the Committee with regard to course content, logistics, and selection criteria have had a demonstrable effect in leading to changes in these areas based on their advice. In this sense the Committee has been both helpful and effective. Many of

its recommendations have apparently been made as the direct result of discussions between the Committee and program participants.

Several deficiencies of the process are, nevertheless, apparent:

- The time periods for consideration and discussion are inadequate for independently minded Committee members to have acquired enough knowledge of the situation to have functioned in a deeply questioning mode. Furthermore, the meetings and/or membership appear to have consisted largely of friendly faces with only a few "outsiders" in attendance.
- The lack of detailed formal records and explicit follow-up discussion regarding the outcome of prior recommendations does not indicate a fully effective process.
- Some meetings appear to have been occupied with business other than the EMTP, thus again suggesting the lack of following normal models of a truly independent and questioning advisory/evaluation process.

Some suggestions of past Committees are interesting because of their continued relevance. They include:

- Interest of the 1979 Committee in a newsletter.
- Interest of the 1979 Committee in major structural changes in the course (identical to ideas proposed by participants in the IEAL interviews and questionnaire responses as discussed in Sections 5.3.7 and 6.4.6 of this report).
- Interest of the 1979 Committee in having the EMTP support the building of in-country institutions so that participant countries could eventually conduct national energy management training programs of their own.
- Views of the 1981 Committee that:
 - too much computer use was assumed,
 - more was needed on project analysis, and
 - course compactness could be improved and weekends were empty.

- Interest of at least one member of the 1981 Committee in breaking the class up into groups, after the overview material had been presented, a change in structure identical to one of the 1979 proposals.

The record indicates that IER responded positively to Committee suggestions where it was in ready agreement or where it was convenient to do so, and gave little serious consideration to other more difficult but significant suggestions. The Committee's own apparent lack of intensive consideration, independence, formalism and follow-up contributed to this type of response. Nor does AID management appear to have independently used or followed-up on those Committee recommendations which IER failed to adopt. Perhaps there were significant behind-the-scenes discussions. The record available to IEAL does not indicate this to be the case.

2.4.3 AID Evaluation

The 1978 AID evaluation is largely pro forma in the sense that the decision at the time to proceed out of the test program and initiate a continuing course was well justified on the basis of the pilot experience in 1978.

There is no evident recognition in the 1978 material that the major management responsibilities were about to be transferred from BNL to IER.

The AID evaluation of May 23, 1980, prepared by Jerome Boskin of AID, is substantive and enormously perceptive. Its major finding, "That a very useful EMTP course exists and, while further improvement is possible, routine training of mid-career persons can proceed," is quite restrained in its language. In equally restrained language it indicates:

- Knowledge of significant management deficiencies at IER/BNL which need follow-up and fixing.
- An interest, similar to that of the 1979 Advisory Committee, in examining major structural changes in the course.
- An interest, similar to that of the 1979 Advisory Committee, in contributing to the strengthening of in-country training capability.
- Concern that key policy issues regarding the role of the course, in contributing to overall AID policy and in existing as one element of an overall AID view of energy training, were not being examined and needed attention.
- An explicit inability, based on available materials, to "judge thoroughly the content of the EMTP course".

Because of its incisiveness and continuing relevance, the key discussion section of the report is included as Appendix C.

2.5 ADDITIONAL IEAL INQUIRIES

2.5.1 Introduction

This section covers two additional miscellaneous points, developed during the initial IEAL review of the available background material, which do not fall readily into other sections of the report. These relate to the matters of:

- BNL's attitude towards the IER/BNL relationship; and
- IER's management capability.

Questions in this area arose initially out of a 6-hour interview IEAL conducted with Robert Nathans and Peter Meier (IER's Director and Deputy Director, respectively) at the beginning of the evaluation. Some further detail was then developed in brief telephone interviews with Dr. Nathans (IER) and Dr. Manowitz (BNL) at the close of the evaluation.

Each of the topics indicated is discussed briefly in the following subsections.

2.5.2 BNL's View Of The EMTP

A telephone interview was held with Dr. Bernard Manowitz, Chairman of the Department of Energy and Environment, Brookhaven National Laboratory (BNL). Dr. Manowitz was emphatically supportive of the continuance of the EMTP and BNL's involvement therein. BNL is seriously interested in maintaining and exercising a continuing capability in international energy studies. This interest extends well beyond the specific relationship with IER and the EMTP and has involved BNL personnel in direct discussions with AID on a variety of other topics.

Dr. Manowitz agreed the leadership role for the EMTP had passed from BNL (the initial sponsor) to IER. He ascribed this to the departure from BNL, in 1978, of Philip Palmedo (founder of an independent consulting firm, Energy/Development International) together with the strengths and interests of the personalities subsequently involved at both BNL and IER. He volunteered that the recent movement of Peter Meier from BNL to IER had, in his opinion, added significant strength to IER that was influencing the development of the EMTP curriculum in a positive way. He similarly viewed the present key staff in this area at BNL, Vinod Mubayi and David Jhirad, as significant contributors to the value inherent in the overall BNL/IER relationship.

2.5.3 Management Issues

There is continuing evidence that, if the EMTP is to be continued, there needs to be substantial improvement in the overall management of the activity. Observations on this point are included in AID's own 1980 evaluation.

There is basis for significant concern with the general lack of documentation of key events over the 5-year history of the EMTP. The course began as a trial program and has been modified every year in an evolutionary way with respect to the makeup of the class, curriculum, emphasis and use of case studies, participant activity, etc. IER has verbally described, in interviews with IEAL, continuing innovation in its attempts to learn from past experiences and to keep the course relevant to the needs of current participants. As a major experimental effort in a new and important area, the entire process should have been subjected to more extensive documentation, and post-activity evaluation so that the fruits of such innovation were able to be captured and understood by others.

Similarly there is little adequate documentation, even of current curriculum, a problem which also existed in 1980. Key monograph material (see Section 3.4) is still not in the form that it ought to be for an activity that has been ongoing through six teaching sessions.

No formal follow-up process has been instituted with regard to activities of past participants. Official listings of participants often omit job titles and simply designate the ministry where they were employed. Student files (which IEAL has inspected) contain scanty information with obvious gaps in continuity, in some cases, where correspondence or other communications must exist but are absent from student folders.

There have been important problems with the selection process (see Section 5.3.4). While IER is believed to have approached this process seriously and systematically, documentation is again sparse and the lack of complete rigor in the process is evident.

Problems with course location, participants' housing, logistics, etc., were experienced continuously. Significant improvements

were made. Nevertheless, administrative support still appears thin.

Many of these problems undoubtedly represent an IER response to what IER perceives as tight or even inadequate budgets. Nevertheless, IER has also had difficulty in achieving a stable staff and in accomplishing well activities that have been funded.

AID advises that attempts to determine how funds were actually spent and to assure that good fiscal management was in place are still in progress. Given the lack of formal rigor and management control seen in other aspects of the activity it would not be surprising to find a certain looseness in financial control as well.

This type of problem is not unique, particularly in relationships with university entities or small contractors which often operate in a less formal way than one would like to see. The personalities involved are undoubtedly well-intentioned. However, an organization of this character (and with as critical a mission as AID has intended) needs a strong, full-time, program-manager/administrative-control function to be performed. While additional staff and functions will increase apparent costs, better outcomes are likely to be achieved and inefficiencies avoided, so that such expenditures are likely to be highly cost-effective.

IEAL therefore recommends that, if the course is to be continued,

- Personnel be added to the staff and strong measures be taken by AID to insist on, and to monitor closely, management performance, documentation, and improvement in all administrative procedures.

3.0 CURRICULUM AND COURSE MATERIALS

3.1 INTRODUCTION

At an early stage of its evaluation of the Energy Management Training Program (EMTP), and prior to implementing its in-country interview and questionnaire process, International Energy Associates Limited (IEAL) performed an independent review of the current curriculum and course materials for the EMTP. This section summarizes the results of that review. The materials considered and discussed here are voluminous, and all acquired from Agency for International Development (AID) files; hence (with the exception of the first and last items) they are not incorporated into the report Appendices. The documents, each (set) of which are discussed in a successive subsection, are:

- EMTP Course Outline and Calendar Fall 1982 (Appendix D).
- Lecture Notes and Handouts, Spring 1982.
- Draft Monograph, Energy Planning For Developing Countries: An Introduction To Quantitative Methods, Peter Meier, August 1982.
- Draft Monograph, Energy Pricing and Demand Management, M. Munasinghe, undated.
- Draft Monograph, Energy Resource Assessment, Alfred Petrick, undated.
- Draft Monograph, Industrial Energy Conservation, B. Tunnah, undated.
- Conference Papers for Industrial Energy Management Training Seminar, Philippines, January 11-15, 1982. (The Agenda is included as Appendix E.)

Memorandum, Carroll to Nathans, January 30, 1982, subject "Evaluation of Industrial Energy Management Training Seminar, Philippines, January 11-15." (Appendix F)

Additional material, related to the 1981/1982 budgeted activities, is included concerning a planned newsletter and series of executive seminars in Washington.

3.2 COURSE OUTLINE AND CALENDAR

The material considered here is presented in Appendix D.

The text of the course outline is exemplary and attractive in concept. There is little of substance that can be discerned from it, however.

It is more instructive to consider the time allocation as developed in the course calendar. Nominally, Saturday mornings are supposed to be devoted to the course. Counting the time from Monday of the first week through Wednesday of the eighth week, and including 7 half-Saturdays, provides for 41-1/2 days of potential instruction time. The content can then be categorized as follows:

Supplementary Items

• Orientation, free time, laboratory tour, city tour, review, and special provision for travel time	6 days
• Tutorials (3 rather than the 4 listed in the outline)	1-1/2 days
• Country presentations (by the participants themselves)	3 days
• Guest speakers	Lunches
• Visits to government and business institutions	4-1/2 days
	<hr/>
SUBTOTAL	15 days

Core Of The Course

• Case studies (Dominican Republic, Tunisia, Portugal, Sudan)	5-1/2 days
• Planning Material (Course overview, planning process, reference energy system, energy data, energy assessment and planning, energy and economic development, capital planning and budgeting)	4 days
• Pricing	3 days
• Sectoral and Technology Material:	
- Fossil	3-1/2 days
- Industrial	3 days
- Renewables	2-1/2 days
- Agriculture and rural	2-1/2 days
- Nuclear	1 day
- Electrical	1 day
- Transportation	1/2 day
SUBTOTAL	<u>26-1/2 days</u>
TOTAL	41-1/2 days

Observations, judgmental in character, from this display are that:

- The core of the course is only 5 weeks out of the 8 weeks allocated. This lack of compactness would permit shortening the time or expanding the content within the present time allocation. (As will be seen later, past participants do not show tremendous enthusiasm for institutional visits or country presentations; tutorials could be minimized in part by the selection process stressing prerequisite skill levels and could be given in the evening if truly required.)
- Over half of the core of the course is devoted to sectoral and technological material. Case studies, which presumably require understanding in these areas, are intermingled in the course sequencing. In at least one view, it is the planning, policy, pricing, and integrated case study material which the EMTP uniquely offers. This, however, is only 12-1/2 days out of 26-1/2 (or out of 41-1/2). Questions are in order.

- Considering the high degree of energy price subsidization in developing countries, 3 days devoted to pricing may be inadequate.
- Project evaluation, another key need for developing countries, appears to be taught indirectly (i.e., through case studies) rather than as a distinct, well-defined, and self-contained methodology.
- In any event, reaching judgments from topic headings is as dangerous as reaching them from brief course outlines. None of this material displays what is really taught (or is attempted to be taught) in the time allocations provided. Hence, a major deficiency is the absence of a fully detailed teaching outline, the purpose of which is to convey such a sense so that both teaching objectives and methodological approaches could be understood, discussed, and evaluated.
- No specific time is allocated to problems, practice exercises, instructor critiques, or other such interactive processes; nor does the course outline promise any such activity. Nevertheless, it is mostly by doing that one truly learns anything. Except for the ability to interact with instructors by questioning, the course organization, as described, most nearly resembles a videotape presentation which the spectators may absorb or not, depending on their individual background and motivation.
- The 26-1/2 days of core lectures are divided by institutional source as follows: 8-1/2 days for IER; 7-1/2 days for BNL; and 10-1/2 days for outside consultants. There are a total of 12 lecturers. Peter Meier (IER) teaches nearly one-fourth of the core (6 days); five other lecturers teach slightly more than half (14 days); and the remaining six lecturers teach another one-fourth (6-1/2 days) combined.

IER advises that this particular course structure has evolved from interaction with participants, advisory committees, and AID over the years. IER also advises that the curriculum has in fact changed from year to year with respect to content, emphasis, and organization. Furthermore IER is now proposing further changes in future years.

IEAL's conclusions are that if the course is to be continued, then:

- The current material does not convey a sufficiently adequate sense of the actual course content for evaluation purposes.
- A detailed teaching/methodological outline should be prepared.
- The compactness of the course should be increased.
- Time allocated to institutional trips and country presentations (thus displacing other more valuable teaching opportunities) should be reduced significantly.
- Time should be shifted away from purely sectoral and technological material; and time for case studies, integrated approaches to policy analysis, and formulation should be increased (i.e., course time should emphasize those elements which are not generally available elsewhere so as to increase the uniqueness and hence value of the experience; if comprehensiveness must be maintained, then the technology-specific material should be offered in summary form).
- Student practice exercises, "homework", and other "experience-by-doing" activities should be a mandatory element of the course.

Other recommendations on course changes will be made in later sections, when a proper basis for them has been developed.

3.3 LECTURE NOTES AND HANDOUTS, SPRING 1982

This material does not contain lecture notes for the course as a whole. It is more correctly described as handouts by the various lecturers of supplementary material which in some cases includes lecture notes. Most of this material is in the form of excerpts, articles, papers, and reports prepared for other purposes and audiences, but relevant to the teaching objectives of the EMTP. Some of the material appears to have been freshly prepared or

specifically assembled for use by the EMTP and is periodically updated. Much, but not all is current. The quality of the content is high. It ranges, however, from general and philosophic to highly technological or mathematically complex, i.e., not directed towards a uniform level of comprehension or sense of need.

As source material it is useful, but incomplete, and it has not been subjected to an overall design of maximizing its value as "take-home" material. The latter approach would put much more emphasis on summary, survey-type material and lists of high-quality reference materials and sources. It tends to have the appearance of material assembled individually by each lecturer without a common comprehension of its role both during and after the course.

The above remarks are intended to be more factual and descriptive rather than critical. This is because substantive material, viewed as central to the course, has been assembled separately in monograph form (and is reviewed in the Section 3.4, which follows).

IEAL recommends that if the course is to be continued, then:

- Specific guidance should be given to all lecturers on the concept and purpose of handouts to be assembled, and that such guidance stresses the concept of choosing material with continuing value, assuming that participants take this supplementary material home with them.
- At least summary-type lecture notes be prepared for all lectures, recording and emphasizing bottom-line, practical, policy and methodology-oriented material contained therein, and in a form useful for later reference. (Such material could readily be prepared from the text of the detailed teaching plan previously recommended in Section 3.2.)

3.4 DRAFT MONOGRAPHS

Peter Meier's draft monograph is entitled Energy Planning for Developing Countries: An Introduction to Quantitative Methods. Of the four documents considered in this section, it is most nearly complete. There is a coherent structure, clear exposition of basic teaching materials, adequately detailed quantitative treatment, references, and problems. All of the material is relevant to needs and the nature of the relevance is constantly emphasized. The quality of the writing and rigor of the teaching material is consistently high.

Mohan Munasinghe's draft monograph is entitled Energy Pricing and Demand Management. This document appears to be a combination of material originally written for other purposes, and now partially revised, plus freshly written material. It is well-referenced, but quantitative material is several years old and much more recent and important data are available. The mathematical, theoretical treatments of basic concepts are sound and well organized. The discussion material presented is insightful. However, the pricing and foreign exchange issues are so fundamental for most developing countries that more extensive treatment of how to apply these tools to energy policy development would be in order. Case studies are used in the back of the document for this purpose but, in most cases, seem to lose basic messages in a welter of manipulation of numeric data. In summary, the draft presently contains much valuable material, but also needs more overall structure, updating, and expansion of treatment to achieve a form comparable to the standard set by Meier's text.

Alfred Petrick's draft monograph is entitled Energy Resource Assessment. The approach is more anecdotal and illustrative than Munasinghe's and the sense of overall teaching structure is less clear. The examples are detailed and informative but the data

are old. As a result, a large amount of page space in the document does not have any real continuing value as data, and is too detailed for the teaching of concepts. In one section the name and address of a commercial contractor in Rockville, Maryland, and the charges for his services are detailed at some length. Nevertheless, Petrick is clearly knowledgeable and covers significant territory with practical expertise. The overall result, however, is still one of "exposure" to important ideas rather than a structured teaching tool.

B. Tunnah's draft monograph is entitled Industrial Energy Conservation. The document presently exists more in "outline and bullet" form than as text. There does not appear to be any clear structure or common approach between sections. The material is illustrative and the data often not of recent vintage. Checklists and other generalized material abound. Of the four documents, this one could most aptly be described as an assemblage of supplementary notes and materials to accompany (but not substitute for) organized lecture material.

Under the current contract, these documents, together with a fifth monograph (on Rural Energy Systems and Renewable Energy), a draft of which was not available for review, are to be completed for AID's future use. The five monographs are budgeted at \$62,000.

In discussions with IER, Nathans and Meier indicated to IEAL the difficulty of achieving significant further improvement of the existing material, noting that they were dependent on the good will of the authors to invest further time in the effort. This does not appear to be fully consistent with the separate budgeting for the monographs and presumed payments to authors to produce a defined product. If these indeed are the final products, then IER has performed well on its own writing responsibilities but has not done a good job of managing the output of the other authors.

3.5 PHILIPPINES SEMINAR

A Seminar on Industrial Energy Management for the ASEAN Countries was held in Manila, January 11-15, 1982. The agenda is included as Appendix E. An internal IER evaluation of the activity (memorandum, Carroll to Nathans, January 30, 1982) is included as Appendix F.

The Philippines Seminar is one of two to be conducted under the contract at a total budgeted cost of \$52,140. The second seminar is now being organized.

IER reported the major highlights of the Philippine conference in a 2-1/4 page double-spaced report. Major conclusions are reproduced in full below:

The most significant issue identified by the seminar participants was that government must provide the proper climate for IEM programs to be successfully implemented. Specifically, government must provide investment incentives for industrial energy conservation, such as investment tax credits, combined with effective industrial fuel pricing to encourage improved energy utilization in areas where industry would not otherwise take direct action.

The seminar participants reached a consensus concerning the establishment of national government-industrial cooperative committees to review national programs or potential programs for IEM. Such a committee could combine the perspectives of public and private sectors. It was evident from the discussions that governments are interested in GNP growth, balance of payments and social goals and their energy implications while industry is moved by profits and the extent to which energy costs have become a larger fraction of overall production costs.

A recommendation for the formation of an ASEAN Center for Energy Conservation, to be an information clearinghouse, a training unit, and perhaps a provider of energy audit services, also was presented.

IER's internal evaluation (Appendix F) starts by noting that, as the result of an administrative failure, it was not possible to obtain a formal participant evaluation of the seminar. It then summarizes comments received from a variety of (named) sources. The evaluation notes negative as well as positive views. On the basis of the comments recorded there, IEAL would summarize the seminar as a modest success.

IEAL has reviewed the available collection of papers from the conference. Material presented in papers by Alan J. Streb (U.S. Department of Energy) and Sam Berman (Lawrence Berkeley Laboratory) is exceedingly useful and represents information on industrial energy management which is currently missing from and should be captured and built into the EMTP course and the course monographs discussed in the preceding section. Owen Carroll's (IER) paper is a good theoretical treatment, but one which ends up emphasizing the existence of an IER (commercially available) modeling capability. Two papers by B. Tunnah, a "guest" lecturer for the EMTP, are presented as products of a commercial energy consulting firm (E/DI Europe, Ltd.) and contain some material identical to that included in his EMTP draft monograph. Country presentations (except for the Philippines, which had an extensive presentation) are mostly exceedingly brief summaries of the status of activities. The other countries with presentations were Indonesia, Malaysia, Singapore, and Thailand.

In summary, the best material at the seminar came from people not normally associated with the EMTP. There appear to have been management problems in the administration of the event. The overall rating, based on review of the papers and the informal comments captured by IER, cannot be seen as better than "good-to-fair."

3.6 NEWSLETTER

The 1981/1982 budget included \$14,400 to provide a newsletter to participants (600 copies-per-issue/4 times-per-year). The objective was to strengthen ties among participants and between the participants and the U.S. host institutions (IER and BNL). These objectives appear sound. IER advised that an effort was made to institute such an activity and that it failed. Presumably, remaining available funds were then used for other purposes.

3.7 EXECUTIVE SEMINARS

The 1981/1982 budget included \$8,240 to provide 3 energy planning seminars for AID officials in Washington, D.C. This was subsequently determined not to be feasible. Presumably, the allocated funds were then used for other purposes.

4.0 COST CONSIDERATIONS

The Institute for Energy Research's (IER's) presentation of its cost-per-participant-per-session is shown in Table 4-1 based on the 1981/82 period. For a total budget of \$1.4 million and 160 students in 4 sessions, the average is about \$8,700 per student. This cost estimate is not precise since some students received United Nations or IER fellowships (i.e., non-AID funds were provided for some or all of their living expenses). Also, the calculation benefits from an assumed increase in the number of participants per session in 1982 over 1981. However, it is also true that some budgeted funds were intended for other purposes (such as seminars) distinct from the main-line EMTP course activity.

No precise accounting of actual detailed expenditures and their purpose is available to permit an adequate analysis of variable and direct costs. IEAL obtained additional cost material from AID and IER. However, a number of these materials reported different figures for the same item of historical cost, possibly reflecting that they had been prepared by different people at different times for different purposes.

IEAL has examined a draft study, "On the Analysis of Participant Training Costs and Services," dated March 25, 1982, and prepared by Development Associates, Incorporated. Costs reported there for a variety of programs ranged from \$924 to \$11,800 per participant training year. The IIE Conventional Energy Program (50 participants, 12 months) has a unit cost of \$8,448 per participant training year. Assuming 160 students for 2 sessions of the

TABLE 4-1
EMTP EXPENDITURES 1981-82

	<u>Budgeted</u>	1981 Expenditures		1982 Estimated Expenditures		<u>Total</u>
		<u>IER</u>	<u>BNL</u>	<u>IER</u>	<u>BNL</u>	
Salaries w/fringe	\$257,796	\$132,307	12,038	\$138,327	\$12,277	\$ 294,949
Lec./Advs./Ed. Fees	105,040	25,000		38,000		63,000
EMTP Participants	266,000	145,460 (35)		244,415 (45)		369,875
Travel	196,400	53,264	3,369	64,500		121,133
Per Diem	16,200	8,128		8,700		16,828
Supp'ies/Materials/Computer	66,900	29,126	18,139	44,910	8,100	100,275
Printing/Distribution	62,000	18,000		20,000		38,000
Rent (Conferences)	<u>1,864</u>	<u>639</u>		<u>1,200</u>		<u>1,839</u>
	972,200	411,924	33,546	540,052	20,377	1,005,899
Overhead	<u>421,800</u>	<u>102,981</u>	<u>67,804</u>	<u>135,013</u>	<u>75,180</u>	<u>390,978</u>
TOTAL	\$1,394,000	<u>\$514,905</u>	<u>\$101,350</u>	<u>\$675,065</u>	<u>\$95,557</u>	\$1,386,877
		<u>\$616,255</u>		<u>\$770,622</u>		
Unit Cost - 2 sessions		\$ 8,804		\$ 8,562		\$ 8,668

EMTP and a total training period of 16 weeks (8 weeks per session, two sessions per year) an equivalent figure for the EMTP would be about \$28,000 per participant training year.

Such simple accounting treatments should be viewed with caution, however. EMTP overhead, including IER salaries, can easily be calculated as half of total costs; travel costs, which include subsidization of participants' foreign travel, are the third largest single expenditure line item; etc.

IEAL considered using available evaluation time to dig more deeply into this territory. This was not done for the following reasons:

- Considerable effort would have been required to obtain, validate, and make sense of the data to the point where a reliable direct/variable cost analysis could have been developed.
- The high participant-year cost implied by the summary material is not surprising given that actual teaching occupies less than one-third of a year and the nature and size of the overhead items.
- The non-routine character of the art of energy policy formulation and hence the need for extensive curriculum development/modification activities in parallel with training makes cost comparisons with other courses, teaching more standardized material, of doubtful validity.
- IEAL's main-line evaluation was raising serious questions regarding the true usefulness of the course to meeting AID's objectives, regardless of its cost.
- The need for increased training experiences to be conducted from a central base (thus lowering per-participant overhead allocations) was simultaneously emerging.

In summary, IEAL views the EMTP costs as high. Because of the state of poor documentation, both as to details and purposes of

expenditures, extended analysis in this area was viewed as requiring more effort than the potential significance of the conclusions would warrant. Ample evidence already exists, and is reported in previous sections, that management and fiscal control procedures need substantial improvement. Subsequent sections will support the need for extensive reconfiguration of the course, if it is to be continued. Extended examination of the historical cost data is, to that extent, sterile and less valuable than consideration of course structure, content, and effectiveness in meeting its intended objectives.

5.0 THE INTERVIEW PROCESS

5.1 INTRODUCTION

This section discusses how the interviews were planned and accomplished, with whom they were held, and the degree to which the approach used was judged to have accomplished its objectives.

In joint discussion with the Agency For International Development (AID), it was agreed that International Energy Associates Limited (IEAL) should spend about 3-1/2 weeks in travel status, conducting interviews with the former Energy Management Training Program (EMTP) participants, supervisors and other in-country information resource people, including AID field office officials. The choices of countries and time periods required two key decisions:

- It was judged as preferable to go to fewer countries and spend more time, digging deeper, in each country, rather than the converse.
- It was judged as preferable to select for interviews countries which had provided both a large number of total participants and steady annual participation over the 1978-1982 time period, rather than to sample countries where the experience had been less intense.

This approach was acceptable since depth of penetration was viewed as the primary objective for this element of the evaluation. It was also recognized that other processes (i.e., separate discussions by AID officials in other selected countries, which were summarized and provided to IEAL, and the written

questionnaire to all countries) would provide a parallel approach to an overall "representative" understanding.

Other factors taken into consideration in selecting the country interview targets were:

- Geographical dispersion;
- Differing levels of economic development;
- Differing characteristics of the energy problem; and
- Aspects of political significance to the country or region in terms of overall relationships to AID's program and/or U.S. international relations.

IEAL prepared a basic Interview Plan (Appendix G) to be used with EMTP participants. A separate plan was prepared for use with Energy Officials and Supervisors (Appendix H). Both plans were reviewed by AID prior to use and AID suggestions regarding emphasis with respect to questioning in selected areas were adopted.

The final itinerary provided for Roger LeGassie to interview and conduct research in Indonesia (5 days), Egypt (5 days), and Kenya (3 days); and for Ed Wonder to interview in the Dominican Republic (4 days). The travel schedules are attached as Appendix I.

The approach used for questioning was essentially chronological:

- Explanation by the interviewer of the purpose, structure, and confidentiality of the interview.
- Factual information on the interviewee, institution, and chain of other attendees from the same country.
- Objectives and anticipation of the interviewee and others which elicited interest in the EMTP.

- Operation of the selection process leading to the interviewee's participation in the program.
- Interviewee's experiences in the EMTP in the U.S. and evaluation thereof.
- Aftermath of the training program, perceptions of actual benefits/disbenefits from the experience.
- Discussion of alternatives to and/or desirable restructuring of the EMTP based on the above; and how the value of such future programs can be objectively monitored/ascertained in the future by both the U.S. and the participating country.
- Summary by the interviewer of his understanding of the key opinions of the interviewee, for direct verification by the interviewee, to ensure accurate summarization of the results.

The design of the plan is based on starting with relatively comfortable questions, gaining the confidence of the interviewee, and gradually probing into the areas of greatest interest as the interviewee becomes more relaxed and more candid in his/her responses.

The local AID Missions were requested by cable to begin the scheduling of interviewees prior to IEAL's arrival. This served both to attempt to increase the effective use of in-country time and also to make clear to participants that the activity was AID-sponsored and AID-supported.

5.2 CONDUCT OF THE INTERVIEWS

In the four capital cities, 27 EMTP participants were targeted for interviews prior to travel, and 19 were actually interviewed. Of the remainder, most were on leave or vacation; however, one had moved to a research facility out of the city and another simply refused to meet for an interview even after the agreement of his supervisor had been obtained. Of those interviewed, one

had not actually attended the course, due to last-minute illness, although officially carried on the Institute for Energy Research's (IER's) records as a participant.

In addition to the participants, interviews were also held with 6 in-country energy officials/supervisors, 6 AID field officials, and a World Bank representative stationed in Jakarta.

A complete list of interviews targeted and accomplished during the IEAL field travel is given in Appendix J. When interviews conducted by AID officials are included (Section 5.4.5) some 27 participants and 15 other officials were met with for a total of 42 interviews.

The interview plans were used in the field as designed, and they were judged to have worked well. After the first few interviews, both interviewers no longer required the plan document as an aid and could devote their entire attention to the discussion and recording of key impressions.

Interviewees appeared comfortable that the confidentiality of the discussions would be maintained. As expected, the early parts of the interview mostly involved the presentation of positive and general views about the EMTP. After about a half-hour, however, the discussions generally became more open and wide-ranging, including a substantial amount of anecdotal material and an evident greater degree of candor. This change in openness was facilitated by the interviewers' ability to use illustrations, when asking questions, which directly related to on-going energy problems or issues in the country. Accordingly, time spent earlier in discussion with the AID field official and in reviewing key energy assessment reports and studies for the country, prior to the interviews, was exceedingly valuable in achieving a high degree of communication with the interviewee.

Interviews with participants lasted in many cases up to 2 hours and the majority were of 1-1/2 hours duration. In only one case was the discussion extremely short (because the interviewee wished to express a very strong negative opinion of the course and then terminate the interview). In about 50% of the cases, the interviewees had very specific ideas about modifying the course or about desirable alternatives or both, and wished to devote considerable time to this section of the discussion.

Based on the above measures of:

- High degree of target coverage achieved,
- Interview duration,
- Degree of candor developed, and
- Interviewee's expressed interest and direct involvement in creatively proposing possible future actions,

the process is judged to have achieved its objectives (in a logistical sense).

The substance of the discussions is presented in the following Section 5.5.3 and 5.4. The presentation approach used here is first to summarize main themes which were developed in all the countries visited. This is followed by individual summary sections on each country visited in which country-specific issues or other kinds of special considerations were raised.

5.3 RESULTS OF THE INTERVIEW PROCESS -- MAIN THEMES

5.3.1 Introduction

In all four countries visited by IEAL, and in comparison of notes between two independent interviewers, striking agreement was encountered on a large number of points which are discussed below. Some points are viewed as major, others as less significant. They are presented below, not in order of importance, but

rather in the order in which the issues arise in the structure of the interview plan. This summary reflects all 32 IEAL interviews (19 with participants, 13 with others). However, unless specifically noted in the text, the interviews with others were "confirmatory" with respect to these matters, rather than "primary" sources.

The main theme topics covered in this section are:

- employment status
- expectations and benefits
- selection process
- EMTP course experience
- aftermath of the course
- alternative approaches

Other important matters, which are more country-specific, are reserved until later to Section 5.4

It is important to keep in mind in reviewing this section that the countries examined herein have sent a "chain" of participants to the EMTP over a number of years. The views and conclusions presented here do not necessarily apply to countries which are now entering the program or to those which have had less "continuous" representation over its history.

5.3.2 Employment Status

All participants had energy-related job functions when they went to the EMTP. The majority signed employment agreements to remain with their agency for a specified (but variable) time period. Most are still either in the same job, one or two steps up the

career ladder, or in a closely related function. Only a small number have either left the energy field or have gone sufficiently far afield in their job activities that the value of their training (as it should be seen from the perspective of the AID Energy Training Program) has been "lost".

The relationship between career advancement and the EMTP is a secondary and natural relationship, not a primary one. If employees are selected for training because they are seen as "comers" or as exceptionally competent, career advancement is a parallel event, not highly dependent on specific training. The employees themselves hope that training will lead to career advancement, but more often, and more realistically, they value it as an opportunity for personal growth or as one of the rewards of their current position.

EMTP graduates from the early years are more likely to be placed closer to the possible center of key energy policy studies and hence are an influence on in-country policy decisions. However, as will be discussed shortly, this influence is, in most cases, judged to be only moderate. With the passage of time, and where a chain of participants has been sent, the later participants tend to be:

- Lower level civil servants directly associated with the overall in-country integrated energy planning but with little ability to personally impact such planning; and/or
- Representatives of energy sub-elements not primarily concerned with integration of energy policy; and/or
- Representatives of non-energy agencies which are looking for an in-house general understanding of energy issues.

Where a chain of participants have been sent to EMTP there is essentially little or no interaction or even contact among them

unless they are actually part of the same office. There is no evident perception of being a member of a "cadre" of people uniquely trained or identified to deal with energy issues for the country except to the extent of their specific current job assignments. That is to say that the EMTP is seen as an individual experience, rather than as an institutional or national experience.

Even within the same office, the expectations of a new assignee generally do not reflect significant discussion with a nearby prior attendee on the substance of the course. As a result, the expectations of even recent attendees as to course content and benefits have been erroneous, even though these attendees are selected by the same supervisor as their office mates and sit in close proximity to a co-worker who has attended earlier.

Earlier attendees, with the most potential to impact policy development, still found it very difficult to do so for a variety of reasons, including:

- The "country leader" and the "political appointees" who really make policy were not truly "customers" for the output of their office. Such leaders might still be relying more on their own instincts or other more closely trusted ministers for energy advice than on the person or office nominally charged with energy policy formulation.
- Even though the office leadership had a sense of what was needed, the resources available, even to do studies, and particularly the skill level of lower-level staff, might be extremely limiting.
- Coordination across other key ministries might be poor or non-existent so that even cogent analysis would have difficulty being considered, much less implemented, by other important sections of the government.
- Data, particularly on price elasticities, are very scarce; and computing/modeling capability (essential to energy policy integration studies), while available to sub-elements such as the Petroleum or Power Authorities, was not available to the energy policy staff.

- Non-integrated elements playing a key role in energy, such as, again, the Petroleum or Power Authorities, were really not subservient to the energy policy group and hence could undercut its ability to formulate and implement policy.
- Political considerations, particularly the intersection between overall economic development and energy, were not being adequately dealt with in energy policy analysis; hence, practical solutions (in the sense that they could be implemented politically) were not being devised, even where there was general agreement on the nature of the problems that needed to be addressed.

5.3.3 Expectations and Benefits

The majority of participants had no clear idea, before going (nor did their supervisors) as to the detailed nature of the course. In cases where there was an expectation of acquiring specific job-related skills (as compared to a broadened overall understanding of energy issues, information, and techniques), such expectations were uniformly stated to have been incorrect.

Acquisition of specific skills requires more than a set of 1- to 3-day modules. Nevertheless, most participants said that overall skills (understandings) were acquired which did indeed improve their ability to do their job. Most often cited as a key benefit to future thinking was information in the course about the Brookhaven Reference Energy System (and follow-on systems which it has spawned) as an aid in structuring how to think about the energy problem. (As noted earlier, computer models, while employed by outside consultants/contractors, are not presently an integral part of ongoing integrated planning efforts.)

Over time, the course has begun to be perceived primarily as a broadening, overview-type experience most useful (because of its length) to junior civil servants, as an introduction (and an excellent one for that purpose) to energy matters.

How the course is perceived is very much a matter of the participant's prior knowledge of the field. Junior attendees invariably tend to find it beneficial and wish that it had gone deeper into the particular areas of their job focus. Some senior participants see it as a "benefit" they can provide junior employees (for whom such overseas trips are a prestige supplement to what are otherwise low civil-servant salaries). Most participants thought that a "short" version of such a course might help decision makers more truly to become supportive of and customers for such an analytic policy-development approach. However, a very senior official in one country flatly asserted that those actually involved in decisions already understood all the concepts of the course and placed a higher value on the use of knowledgeable consultants to examine alternative policy approaches as opposed to trying to use the relatively inexperienced in-country policy staffs.

In summary, the value of the course is seen more and more as related to personal career development, an overview and broadening experience, most suitable as an introductory experience for junior to mid-level people.

Attendees now are tending more and more to be proposed in accordance with those views.

Earlier in-country expectations of different potential benefits and larger impact are gradually being abandoned.

There is extensive agreement that exposure to energy planners and energy problems in other countries is beneficial. This is a desired aspect and expectation of both EMTP participants and their supervisors. (Views on this become particularly important when in-country and/or regional training is considered as an

alternative to the EMTP, as discussed in Section 5.3.7.) Nevertheless, "networking" between participants, across national boundaries, has not occurred in most instances. Similarly, IER attempts to establish a newsletter to foster such networking have failed.

Again, the indication is that the EMTP is a personal experience which one has, absorbs, and then lays aside, rather than an experience which gains strength and multiplies its effectiveness by generating post-course interaction among its co-participants.

5.3.4 Selection Process

Participants mostly are selected by a supervisor, who may be two or more levels their senior. The initiative is generally with the supervisor rather than the employee. In some countries, candidates from a number of sources are centrally screened; this is judged, however, to be more the exception than the rule. Where a chain of participation exists, there is usually at least an informal understanding of whether or not there will be candidates in the future and from what part of the system they will come.

All four countries visited will continue to nominate and send participants if the EMTP continues in existence.

Most nominations that have been accepted by IER appear to be reasonably responsive based on job description and agency location. There is judged, however, to be a liberal percentage of nominees who have been sent as a job reward or who are "professional travelers"; going from seminar to seminar. Very specific clear cases of questionable value to attendance were directly identified by the interviewers, identified to the interviewers by others in the country, and identified as having come from other

countries by the EMTP participant being interviewed. The disturbing frequency of these anecdotal remarks suggests deficiencies in the selection process.

Most nominations appear to have arisen as a result of direct interaction between IER (e.g., blanket mailings) and supervisors. In most cases, neither the AID technical official nor the AID training officer appear to have become significantly involved until late in the process. At the point of involvement, the AID in-country role appeared to be mostly that of trouble-shooter and fixer. In some cases, the attempts of the AID official to become actively involved (for example, to cause the rejection of an inappropriate candidate who had been "selected" by IER) were politically suppressed in-country.

IER notes that its direct dealings are necessary because of the general passivity of "over-worked" AID officials who have higher or other priorities. IER would welcome (and says it has sought) greater AID involvement. IER also states that its acceptance letter makes such acceptance contingent on AID approval. This is mostly seen, however, as optics, since it is extremely difficult for AID to displace an "approved" candidate in all but very exceptional cases.

Regardless of how the situation has come about, an important asset, the AID in-country official, is not being well used in the process, and particularly during its early stages.

Another significant problem in the selection process relates to language ability. In each of the four countries there was at least one participant interviewed whose English language ability was judged directly by the interviewer as marginal for adequate comprehension of the course. Most interviewees indicated that there were a number of such people in the specific session of the course which they attended. Several complained strongly that the

level of the course instruction sank to a lower level than otherwise would have been necessary in order to accommodate such problems. Again, anecdotes were offered of night tutorials given by the students themselves to try to assist poor comprehenders. Only a minority of lecturers were cited as rapid speakers; therefore the comprehension level of the students themselves is the issue.

As a balancing point there are undoubtedly many countries where the best candidate may be poor in English language skills. There is a clear tendency to compromise on this point in order to get adequate country representation. This is certainly a factor which tends to support the viability of training centers in other countries teaching in other languages. For example, the Instituto de Economia Energetica, in Argentina, can likely provide related training to students from South American countries speaking Spanish more effectively than can the U.S. at the EMTP, using English.

Criticism with respect to English language capability was not limited to the EMTP among AID programs. The Florida course on technology, which AID also supports, was also identified as having problems of a similar character.

IEAL's judgment, based on the views of the students themselves, is that it is a better approach to maintain high language standards for the most effective teaching of those who attend, rather than achieving a broader cross-section of students but giving them, collectively, less effective training. This is clearly a matter on which reasonable people may differ; however, in the end, it is most important that this issue be faced squarely and a definite position taken.

In the case of the EMTP, it appears that such a position has been taken. IER's 1982 brochure states that "A practical command of

English as a second language, both written and oral, is mandatory for all applicants." In the implementation of this policy, the word "practical" is perhaps being interpreted somewhat loosely.

It has been suggested that applicants should have objective demonstration of capability, e.g., a minimum numerical score on the TOEFL (Test of English as a Foreign Language). IER notes that it can be awkward to try to enforce such a policy with a high-level official. IEAL's view is that an objective test should be a requirement and that any exceptions should be approved only at a high level in the in-country AID office, with advice given to AID Washington of the exercise of such an exception.

In the above discussion IEAL has made two specific recommendations regarding the selection process:

- Involve local AID officials (program and training officer), and do so early in the process.
- Enforce minimum objective standards for English comprehension.

IEAL has additional recommendations in this area, but has deferred these to a later discussion of alternatives to the EMTP (Sections 7.2 and 7.3) since the issue of who is selected, and how, for what training is best discussed in the broadest context.

5.3.5 EMTP Course Experience

The course length (8 weeks) was generally viewed as well chosen. Those who wanted a longer course length proposed this so it could go deeper, but then recognized the difficulty of finding attendees who could be absent from their jobs (and families) for such a long period. Those who wanted it shorter mostly also had in mind bringing it in-country and targeting higher level officials.

Class size (about 35) was viewed as either acceptable or slightly too large.

Handouts were valued, retained, and quickly displayed in a surprising number of interviews. However, they were criticized as not being planned for retention and later use. Class notes were regarded as the more valued "take-away" from the course. Lists of references were regularly cited as highly useful material after one returned home. The suggestion was to increase the survey and reference content in the handouts. The single most useful materials, repeatedly cited, were Peter Meier's material (now in a monograph entitled An Introduction to Quantitative Methods, and M. Munasinghe's material (now in a monograph entitled Energy Pricing and Demand Management). These individuals were also repeatedly cited as the most effective and interesting lecturers.

IEAL's independent evaluation of the Spring 1982 handout material is presented in Section 3.3.

The curriculum was viewed as comprehensive, balanced, relevant, technically correct, current, and generally complete. Depth of treatment was lacking, as is inevitable in a course of such broad scope. Many diverse and specific comments were easily related to a narrow interest associated with the specific job function of the interviewee and were accordingly not given much weight by IEAL. Outside this category of comment, two comments which arose with some substantial frequency related to the need for greater coverage of:

- Overall energy efficiency as compared to a more specific lecturing focus on industrial energy efficiency; and
- Project evaluation techniques to analyze choices among options, some of which could be of widely different character. (Also termed trade-off analysis.)

IEAL's judgment is that the first point is the least substantial. The EMTP course does indeed emphasize industry as a primary energy user, connected to economic growth. However, separate modules explicitly discuss the relationships between vehicle efficiency and transportation energy use; others discuss energy use in the household (particularly relevant to still predominantly rural economies as in Africa) with substantial emphasis on efficiency questions.

IEAL's independent evaluation of the current curriculum is presented in Section 3.2.

Instructors were viewed as, in the main, of high quality. The better ones, naturally, were viewed as being available for too short a time. Time for personal interaction was adequate.

The case history approach was highly regarded as a teaching tool. This was a main theme of comment. Participants appear to want fewer lectures (in a university sense), more practice (but structured and directed close-in) and even more emphasis on and use of overall case histories of policy analysis for real (named) countries.

The country presentations which the students themselves give to the rest of the class were not well regarded. Most students were described as ill-prepared to participate. Some presentations were tourist- rather than energy-related.

Field trips to energy facilities were also not highly valued, if they displaced teaching experiences.

Discussions at the World Bank and AID were described as interesting, but did not otherwise elicit a high level of enthusiasm.

Some participants felt that time could have been managed better but there was no major common element to the comments in this area.

Creature comforts and logistics were sore points, and the EMTP has experimented with approaches to moderate these problems over the years. Again, however, comments in these areas were restrained and without strong emotion.

Class make-up (different countries, different energy issues of interest, different degree fields) was the subject of considerable comment and decidedly mixed views. The exposure to differences was widely recognized to be both a major benefit and a source of problems. On balance, the existing approach (world-wide attendees) got more support than the primary alternative (regional attendees) as long as one was discussing a centralized course experience located in the U.S. We will return to this matter again in Section 5.3.7.

Attendees evinced a high regard for the technical expertise and personalities of the IER leadership and staff. The evolutionary nature of the EMTP course over time was noted and applauded in a few cases. In general, however, questions about self-inspection and the seriousness associated with the appraisal process at the end of the course drew forth only neutral or conventional responses.

5.3.6 Aftermath of the Course

A number of matters associated with the aftermath of the course have already been discussed in earlier sections because they appeared to connect better logically with issues which first emerged in those sections.

Most, if not all, participants prepared a written report for their agency. Based on similar experiences in U.S. government agencies, many such reports are devoid of serious content and are pro forma in character.

In some cases, a continuing connection/relationship has been built between individuals/agencies with IER and with private companies associated with EMTP lecturers. These relationships are not viewed as exclusive, however, and are judged to exist more because of the private-sector initiatives taken than for any other reason. No such continuing relationship with staff of Brookhaven National Laboratory (BNL) was observed, although in some cases, initiatives were taken to get on the access list of future BNL reports.

Only a modest number of attempts to share EMTP learning with others in-country were identified. Accordingly the multiplicative effort of the training is judged as low to nil, except to the extent that other individual students continue to be nominated to the course.

About a third of the participants appeared to have received other training courses, attended lengthy seminars, or had other equivalent experiences. In those cases the EMTP experience was rated very high, relative to the other experiences, but was also noted to be different in character. The other training was likely to be narrower in scope and deeper. EMTP's characteristic of breadth (combined with general excellence in the treatment of the material) was at one and the same time its most unique and valuable characteristic and its most generally observed weakness.

5.3.7 Alternative Approaches

There was not general agreement among the interviewees on any single specific alternative. Indeed, the consensus, if there was one, was on the point that any approach to training is difficult, fraught with possibilities for failure in implementation, and very much dependent on the individual skills of the personalities involved.

Accordingly, the approach in this section is first to describe the participant's reactions to three different issues which IEAL returns to for its own analysis later (Section 7.0 of the report). The discussion includes some specific but recurring views of a smaller number of participants because they were:

- Volunteered;
- Apparently the result of careful consideration of the question prior to the interview;
- Strongly held and presented with conviction.

Participants held mixed views about course continuation. Senior level officials who favored this intended to use it for more junior employees or participants of other agencies who would benefit from an overview or energy primer type of experience. Junior employees were primarily reflecting their own personal satisfaction with the experience. Senior and mid-level officials who favored a change did so on the basis that the course was not really fulfilling the most critical need in the area, given the particular situation in their country.

Among those who deeply considered the alternative of in-country experiences, there appeared to be a consensus on the question

of whether or not such an approach should be oriented country-by-country or oriented regionally with participation by a substantial number of countries in the region. The latter approach was favored. This appeared to reflect a positive view of the benefit side of the wide range of country participation in the EMTP. While such an approach also generates problems and difficulties, a solid vote was cast in the direction of accepting such disbenefits in order to achieve, on balance, a greater benefit.

In the event of a regional training approach, mounted and managed from the U.S., it was also agreed that the location of the training should move from country to country in the region, over a number of years, so that no single country was perceived as its dominant host. Also, such an approach should involve extensive interaction with the ministries who would send the students before, during, and after the training experience. The lecturers should also include in-country and in-region presenters.

The logistics and other aspects of such an approach were recognized as being complex. Costs could be difficult to control. Nevertheless, if well done, relevance to need and resulting benefits could be high.

Specific anecdotes were cited of externally-mounted, in-country training or seminar events which were badly done. The general prevalence of "sour" experiences of this type was judged as one primary reason it was not the clear basis of a consensus. Participants viewed this approach as excellent in theory, but fragile in practice.

Another area extensively discussed was the building up of the university base for the creation of future home-grown expertise. There was general agreement that this was necessary and

desirable. Each country visited was examining training/educational needs of this character, at least in theory. However, there was considerable skepticism and pessimism regarding how quickly, and how effectively, university curricula could be modified and expanded to meet objectives in training for energy policy analysis capability. In some cases, existing universities were seen as political problems (sources of social dissidence); in others, the view was that quality problems needed to be fixed first since graduates from existing programs were well below the capability of their foreign counterparts; in others, the university structure was perceived as antagonistic to the interdepartmental or interdisciplinary approaches which would be required for an effective curriculum in this area. In summary, AID support in this area was viewed as potentially appropriate; however, the fact that benefits would only appear far in the future made it of less interest; further, delicate relationship and institutional questions suggested that the timing and character of the attack on this problem needed to be determined on a country-by-country basis.

Participants liked the breadth of the course but, without exception, wanted it to go deeper. Some would accomplish this by lengthening the course, but most felt 8 weeks to be about right. There are only two basic alternatives (with a supplementary third consideration) to meeting the contrary objectives for length and breadth in a fixed time period:

Reduce the level of treatment for some items, while achieving increased depth for others. Thus, some of the breadth will be achieved by more of a survey or summary approach in order to gain deeper treatment of other items. The course curriculum has already moved in this direction over time and can be moved further, using questionnaire results (discussed in Section 6.4.4) and comments from other parts of the interview process to determine what should be expanded or contracted.

Maintain a portion of the course time for overview treatments, but divide the remainder of the time into parallel sessions on different topics which will be attended by different sections of the participants. These parallel sessions will go deeper, will be designed for engineers or economists (one of the basic splits suggested), and will spend less time trying to teach basic economics to engineers and vice versa.

Both of the above diverse approaches were actively proposed by about an equal number of participants who had thought seriously about the question. The first is evolutionary and can be accommodated by continual reexamination of curriculum emphasis. The second would increase the number of instructor-hours required (hence increase costs) and would generate some management and participant assignment problems; nevertheless, it is a technique widely used in seminars and symposia and would allow participants to obtain a deeper treatment of areas of particular relevance to their job needs.

In parallel with either approach a supplementary third consideration involves increasing the time-effectiveness of whatever process is used. Elements of this which appear available, based on comments received, are:

- Use handouts (assigned reading material) for breadth and use class-time for depth. The total content of the course can be increased by this process.
- Remove "dead-time" now built into the curriculum. As noted in Section 3.2, some six days of the current 41-1/2 day course fall into this category; and another nine days are of questionable value.
- Increase use of evenings and weekends. Some participants observed that, even with the current use of Saturday mornings, there was still a lot of free time (and boredom, given the relative physical isolation) which should have been put to more productive use.

The above discussions all assume a high-level of productivity for in-class time, not realized in fact because of the problems described earlier of uneven technical background and language capability. Attacking this problem in the selection process would provide a further "boost" in time available for deeper treatment of specific techniques and/or deeper analysis of key case examples.

Those few who responded substantively to the question of how better to monitor effectiveness were in agreement on three points:

- Monitoring and evaluation needed to be done by those who could be completely objective (and thus not the course managers).
- Monitoring and evaluation could not be accomplished by an advisory board process of meeting for half-a-day and interacting only with current participants.
- Monitoring and evaluation needed to use in-country contacts and to tap the reflective comments of those who had returned to the work environment and actually tried to use their training.

5.4 INTERVIEW PROCESS -- COUNTRY-SPECIFIC ISSUES

5.4.1 Dominican Republic

A complete report on interviews in the Dominican Republic (DR) is attached as Appendix K. This section summarizes material contained therein which is country-specific and which is viewed as particularly relevant to the overall evaluation.

The DR shares with its Caribbean neighbors and with many other developing countries a number of important characteristics. These include the relative newness of energy planning, an inadequate supply of energy expertise (especially that related to

planning), insufficient project management skills and inter-agency coordination at the planning level, as well as heavy dependence on imported oil, the depressing effect of oil prices on economic growth, and the cost and scale of the effort to alleviate economic pressures stemming from energy.

As in other countries discussed below, the President is the ultimate customer for energy planning; whereas the Energy Commission is an advisory (only) group of Ministers with a technical group which does energy policy/planning studies reporting to it. Organizationally, therefore, a strong energy unit with a budget capability to implement does not currently exist. Also, there is a certain instability of key people at the top levels of the government which can also effect the top layer of civil servants. All of these features emphasize the fragility of the effectiveness of training and the need for AID officials close to the scene to ensure that AID efforts are targeted to the right people who will not only remain in place but who will also be able to substantively affect decisions. These conditions are not unique to the DR, but are widely shared by many other AID-supported countries.

Specific areas where more training/awareness seemed to be needed include:

- The basic concept of energy planning as a policy tool.
- Project analysis and management skills (including investment analysis).
- Training educators who could, in turn, then begin to implement a graduate-level multi-disciplinary university program in energy planning.
- Energy price-economic development links.

Of the six DR participants in the EMTP, as listed in IER official records, two were found never to have attended the course.

Good English language capability is not widespread and the DR therefore has difficulty in fielding good candidates. A training capability in Spanish would be of significant value.

Because funding is a problem, available programs funded by others are often used rather than attempting to develop a true statement of needs and then setting out to satisfy them. The use of one centrally managed program, available to all, is cheaper for the donor but less effective for the recipient than is a unique program tailored to specific in-country needs.

The DR has used the EMTP as a primer for people who would not be directly involved in energy planning per se upon their return, but whose responsibilities would be more project-related. Given that the EMTP curriculum needs considerable strengthening in the area of project analysis this use is probably neither very cost-effective nor what AID envisaged when it established the EMTP.

IER, separately from its role as EMTP manager, is about to make the computer modeling program which it developed (with funding from the Al-Edis Institute) operational in the DR. The important allocation of financial and human resources involved should be watched closely by AID to see whether this important new energy analysis tool becomes part of the solution or part of the problem.

5.4.2 Indonesia

Indonesia shares with the DR and others the use of a Cabinet Council (The BAKOREN), which reports to the President and which

can reach to a lower level energy planning group for policy studies. However, organizational problems persist. These include the reporting point of the planning group (the target of specific upgrading recommendations in a recent World Bank assessment report) and the continued autonomy of separate, strong, state-managed oil and gas and electricity authorities. In addition, there appears to be a strong separate focal point for energy policy development through the close relationship of the Minister for Research and Technology (BPPT) and the President.

The planning group for the BAKOREN has used the EMTP extensively; however, the IEAL interviewer was not impressed with the expertise displayed. By contrast, the key planning/project analysis official in the BPPT displayed both extensive capability and grasp of issues, and was the most negative of any participant interviewed on the value of the EMTP to meeting his country's needs. BPPT has turned instead to external consultants (such as Bechtel) for illumination of energy policy issues and is described as having been influential in achieving Presidential energy policy decisions which were enunciated without prior discussion with the BAKOREN or even the individual Minister most directly involved.

Indonesia has made major evident progress in addressing energy issues and in perceiving key issues and actions for priority in the future. Five-year plans exist and are subject to periodic updating. Basic directions have been set. The focus is now on implementation problems (including cross-ministry coordination and trade-off analysis). Even though Indonesia is an oil exporter today, its income from oil exports will drop sharply in the future and will disrupt its economic growth unless major internal changes are made in energy use. Thus, even though Indonesia might not appear to qualify as strongly for AID support as do other countries (and undoubtedly should be a heavier

co-funder of activities as compared to less-fortunate countries), it remains in a critical transitional state as far as energy policy is concerned and could be viewed as a crucial testing ground for policy implementation issues of major significance to other countries.

Particularly key areas, where policy is regarded as established but implementation is lagging, relate to:

- Addressing the remaining energy price subsidies and achieving either their removal or at least their differential biasing of market actions in policy-favored directions.
- Implementing the large-scale use of domestic coal resources, which interlocks with issues of lack of internal expertise, permitted scope of foreign investment, human resettlement, industrial development policies, and inter-governmental coordination.
- Achieving progress in energy efficiency (lowered energy use per capita) in the face of continuing price subsidies, while simultaneously dealing with the increased energy use per capita that accompanies improvements in the standard of living of individual citizens.

5.4.3 Egypt

Egypt was perceived as a country where energy policy issues can scarcely be examined seriously because of the predominance of even more basic problems:

- The flight of trained/skilled people from the country.
- The general incompetence or ineffectiveness of all but a few people at the top of the governmental structure, and the poor quality of the resource available to be used by those who do possess the needed skills.
- Low productivity, fostered by government policies to keep people in some type of job status as a replacement for welfare and to maintain "unemployment" at reasonable levels.

- Continuing high population growth implying continuing large growth in energy needs.
- High level of energy price subsidization (in-country prices are evaluated as averaging one-fifth of their world energy price counterparts in 1982, in an internal AID analysis attached as Appendix L).
- Current energy policy decision to seek a solution in a near-term commitment to nuclear power with its attendant capital-intensive requirements in a country that is people-rich and capital-poor.

Any energy-related AID activity in Egypt needs to be of a highly targeted character. Such a plan has in fact been proposed by local AID officials (but not examined in detail by IEAL). It is doubtful that the EMTP, unless significantly modified so as to transmit practical analysis skills, could be of much value to the proposed activity. In terms of its participants, of all four countries visited, Egypt displayed the highest percentage of people who were never in or who had moved out of positions of potential influence in energy policy, following their return.

5.4.4 Kenya

Kenya has a newly established Department of Energy, but one which appears to lack position relative to the older established Ministries. A central planning staff exists which has used EMTP extensively. However, the head of that staff no longer plans to use EMTP. Other ministries are expected to continue to nominate representatives.

The central planning staff is small, suffers from lack of resources, and, except for its principal and one other person, were not intellectually impressive in the interview process.

A three-year major energy assessment study was performed for Kenya by the Beijer Institute of the Royal Swedish Academy of

Sciences. IEAL reviewed this study in detail and found it to be of extraordinarily good quality. However, discussions with both the Kenya participants and the in-country AID energy official revealed that acceptance of the study as a basis for energy policy development is lagging.

As a rural economy (as is much of Africa) Kenya's primary fuel sources are wood and (wood-derived) charcoal. Its deforestation problem is viewed as intense. Population growth rate is exceedingly high. Energy and related economic development issues therefore need priority attention.

Unless Kenya begins to act on the basis of the high-quality country-specific analytic work already available (albeit performed by others) it is doubtful that generalized training of more potential mid-level analysts will accomplish anything of near-term value, although it may be helpful for the future.

As in Egypt (and in other countries on the EMTP list such as Jamaica) there is a new local initiative underway, embodying support of energy policy development. This initiative contains a focal point on deforestation and is intended to serve an African regional need. Such approaches have significantly greater potential value than do the briefer treatments of deforestation now presented in the EMTP.

Of the seven EMTP participants, one technical person was categorized by the local AID official as an inappropriate nominee; another, although an employee of the Ministry of Energy, introduced herself as an administrative assistant; a third was only peripherally involved in energy matters.

5.4.5 Jamaica and Ecuador

In addition to the IEAL interview process, AID officials also conducted interviews and reported the results to IEAL.

The interviewer for Jamaica was John Kadyszewski. His summary report is included as Appendix M. He talked with five of the six EMTP participants from Jamaica and a supervisory official. (The sixth participant -- from the Jamaican Development Bank -- has joined a private consulting firm).

The interviewer for Ecuador was Carl Duisberg. His summary report is included as Appendix N. He talked with 3 of the 4 Ecuadorian participants (the fourth was in France on a one-year training course on planning/managing hydrocarbon resources).

Findings of both interviews conform highly with those of IEAL in other countries. They have been completely incorporated in the preceding material.

5.4.6 World Bank Energy Assessments

In the course of preparing for in-country interviews, IEAL reviewed in detail a November 1981 report entitled Indonesia - Issues and Options in the Energy Sector -- UNDP/World Bank Energy Sector Assessment Program. IEAL also interviewed Izzet Zincir, Senior Operations Officer, World Bank, Jakarta, Indonesia. Finally, in Kenya, IEAL was shown (but could not review in detail) and discussed the contents of a May 1982 World Bank assessment of the energy situation in that country.

Based on this (admittedly small) sampling of contacts and material, IEAL has formed a very strong impression that the World Bank products in this area are exceptionally comprehensive, creative, and of high quality. On the basis of this impression, IEAL

recommends further strengthening of the ties between AID's energy policy development and training activities and the World Bank assessment activity, both at the in-country and Washington, D.C., levels.

In several discussions, there were occasional references to DOE energy assessments for developing countries. These references were uniformly negative. IEAL has not inspected any of this material and has no independent judgment to offer on this matter.

6.0 THE QUESTIONNAIRE PROCESS

6.1 INTRODUCTION

Recognizing that the in-country interview process was deliberately biased toward countries with high and continuing representation (hence not representative of the overall EMTP class), IEAL recognized the necessity of seeking other means of sampling attitudes in other countries.

Two such sources were already available for IEAL review:

- In the fall of 1979, as part of an evaluation process at that time, IER cabled supervisory personnel requesting views on the EMTP and plans for future nominees.
- IER has summarized the results of questionnaires which it distributed to participants at the end of each class session. (IEAL sought unsuccessfully to obtain copies of the individual responses from particular countries from IER, but was advised that such individual responses were not identifiable by source and were obtained on the basis that they would be maintained confidentially in any event.)

The first set of material is included in IER's January 31, 1980, "Briefing Report to USAID Project Evaluation Team," and resides in AID's project files hence is not reproduced here. IEAL's summary evaluation of this material is presented in Section 6.2.

The second set of material is included in IER's May 1, 1982, "Background Material Prepared for Evaluation of the EMTP for

Developing Countries." It also resides in AID's project files and is not reproduced here. IEAL's summary evaluation of this material is presented in Section 6.3.

IEAL believes that the first process was too open-ended to be useful (e.g., it was unlikely that a one-paragraph reply from a supervisor would volunteer that the course was useless and no future nominees would be proposed), and that the second, while markedly better, still tended to capture one-sided answers by the way certain questions were phrased. Accordingly IEAL independently prepared its own questionnaire and, after review by AID, mailed it to 91 former participants. The only exclusions on this mailing list were:

- The 1978 class, on the basis that the 3-month long first test class was not representative enough of the current EMTP to be useful for the intended purpose.
- The spring 1982 class, on the basis that it had just been required to complete a questionnaire by IER and had been interviewed by Shirley Toth; hence, an immediately subsequent questionnaire would be badly received.
- Participants from Jamaica, the Dominican Republic, Indonesia, Egypt, and Kenya, on the basis that they were being interviewed directly.

Of the 91 questionnaires, 20 have been returned (providing a response rate of 22%) and have been separately provided to AID for project files. IEAL's summary evaluation of these responses is presented in Section 6.4.

6.2 FALL 1979 CABLES

In the fall of 1979, as part of a project evaluation activity at that time to consider a contract extension, IER dispatched cables

to the 26 participants and their supervisors in governments involved in the 1978 three-month trial program. The cable to the supervisors asked three questions:

- Has the 1978 participant been assigned responsibilities in national energy planning?
- Should the course be expanded?
- How many additional people will be nominated over the next five years?

As is evident, this cable does not really seek an evaluation of the course experience. Responses were received from 18 supervisors and 13 participants. A sampling of 11 of these 31 responses (presumably the more favorable responses) was located in an IER "Briefing Report to USAID Project Evaluation Team," dated January 31, 1980. The sample responses (three of which were from a single country) divided about equally between participants and supervisors. The first two questions were uniformly answered affirmatively; however, a number of responses suggested that the course should be less theoretical, more detailed, and result more in the direct acquisition of new skills. The response to the third question tended to average out at about 1 person per year as the expected rate of nomination in the future.

6.3 CLOSE-OF-SESSION QUESTIONNAIRES

IER has routinely used a close-of-session evaluation form for participants to fill out. Individual responses are treated as confidential; however, IER has prepared aggregated summaries of the responses, through the Fall 1981 session, which IEAL has reviewed.

Responses from the early sessions dealt with some specific issues of logistics (living conditions, where the course was offered,

number of lecturers, course length) which resulted in changes in these arrangements. These are not discussed here since they are not believed to have current relevance. The focus below is on matters of continuing significance.

Course quality: Good (as compared to either excellent or fair). Dropped as a question on later evaluation forms.

Topic emphasis: Continuing themes are requests for more detail, more compact presentations, more case study work and practice assignments, more quantitative emphasis. With respect to specific topics, even as late as Fall 1981, greater emphasis is called for on:

- Modeling and demand forecasting;
- Project evaluation; and
- Pricing policy and investment models.

Logistics: Living/working conditions have been a continuing problem, never completely resolved to the group's satisfaction, despite continual attempts to experiment and/or improve conditions.

Course Design: The 1978 participants opposed the concept of offering the EMTP at regional centers. The 1979 participants strongly supported the concept and also strongly supported short in-country assessment seminars. The 1979 participants split about 50/50 on the broad country participation actually employed in the EMTP itself vs. several alternatives that would restrict the type and/or source of participants for each session in the U.S. Questions in this area were dropped thereafter.

Administrative: There are continuing indications that the administrative staff/functions could be strengthened/expanded.

Country reports: Early responses find value in the oral country reports but later responses (similar to the results of the IEAL interviews) do not.

Newsletter: The concept is strongly supported in its first appearance (1979). However actual attempts to establish a newsletter failed and questions in the area of post-course communication devices were dropped thereafter.

Field trips: In 1979, visits to facilities were favored over trips to have discussions with U.S. officials. Thereafter, however, questions became more close-ended and only evaluated the study tour discussions at each of the locations (AID, United Nations Development Program, etc.) actually visited. These were generally found to be useful. It should be recalled here that the IEAL interviews found only mild interest in either facility or official visits, with most participants rating more detailed course time s of higher priority than any kind of field trip.

Compactness: There are continuing indications of lack of compactness, repetition, and time lost to activities of only modest value. There are also occasional indications to the contrary.

Lecturers: This question does not appear until Fall 1981. Meier and Minasinghe are singled out as particularly outstanding. (There were the identical names volunteered during the IEAL interviews.) Tschannerl's time allocation was viewed as insufficient, thus suggesting a good reception to his material. Other lecturers received only modest praise or, in some cases, severe criticism. Some, but not all, of those so criticized have been deleted from the roster of lecturers.

6.4 IEAL QUESTIONNAIRE

6.4.1 Introduction

The International Energy Associates Limited (IEAL) Questionnaire and cover letter, dispatched to 91 Energy Management Training Program (EMTP) participants, are enclosed as Appendix O. The 20 replies received represent a 22% response rate.

IEAL's analysis follows the topic structure of the questionnaire.

6.4.2 Objectives In Attending Program

The professional and personal aims most often cited for attending the course were:

- Acquisition of a specific skill (15 responses);
- General improvement of knowledge (broadening experience) (8 responses); and
- Opportunity for promotion (3 responses).

The current job functions, when stated by skill speciality, scattered widely and appropriately (except for the Director of Administration of a Petroleum Development Corporation). The specific job functions most often mentioned were:

- Systems analysis (6 responses);
- Pricing policy (4 responses); and
- Project evaluation (3 responses).

Twelve of the 20 respondents were in the same job they held prior to attending the EMTP. Four others had changed jobs but were still involved in energy matters. Four did not provide the required information.

The anticipated benefits that were cited most often were to:

- Learn of the existence and applications of specific tools and techniques to be applied to a range of energy policy analysis issues (6 responses).
- Interchange information and experience with others in the same field from developed countries as well as developing countries (6 responses).

In this section, one resposdee, from Sri Lanka, volunteered a negative portrayal of the energy policy analysis situation in that country which suggests that the EMTF investment there has been dissipated.

6.4.3 Selection Process

The primary selection process cited was that of being directly named by one's supervisor (15 responses) without prior awareness of the program (9 responses). The Agency for International Development (AID) was specified as an information source in 2 responses. Competition with others was cited as a selection consideration in 3 cases.

6.4.4 Changes In The Program

Table 6-1 displays how participants filled in a matrix which allowed them to propose more, less, or the same level of treatment of various course elements. Examination of this table reveals that:

- In total, participants tend to either want more (94 total checks) or about the same (77 total checks) of everything.
- There is sharp disagreement as to whether there should be more (6 checks) or less (9 checks) modelling. The intermediate position in this category shows only 4 checks.

The predominant choices for increased emphasis are evaluated to be:

- information Systems,
- demand forecasting,
- project evaluation, and
- pricing policy.

Informative comments contained in this section of the questionnaire were made on the following points:

- Two respondents singled out the Conventional Resource Expansion element of the course as completely inadequate.
- Three respondents commented on the importance they attached to the Information Systems and Energy Assessment elements.
- Single respondents highlighted the;
 - need for more case studies, and
 - difficulty of accessing computer programs in developing countries.

The respondents split about evenly on retaining the present course length or significantly extending it. A medium time period for an extended course appears to be about 3 months.

The majority of respondents (16) favored field trips to energy installations. (This finding is in sharp disagreement with the IEAL interview results.) No single facility type dominated significantly in the examples given.

Only four participants cited specific contact with the EMTP (i.e., IER and Brookhaven Laboratory) following their return. The predominant response (7) on how such continuing contact could be helpful was the need to remain informed on recent developments in their field. Other specific suggestions were for the EMTP to:

- Organize programs to develop an in-country training capability.
- Sponsor regional seminars for past participants.
- Employ past participants to assist in developing and/or presenting future training courses.
- Sponsor 1- to 2-month special job assignments for past participants to increase their experience and expertise through involvement in actual projects.

One specific negative reference was made with respect to contacts by EMTP lecturers seeking consultancy assignments.

6.4.5 Impact of the Program

Respondees split about evenly as to whether they acquired specific new skills which benefited their job performance (13) or viewed the primary benefit to be associated with a broadened overview understanding (11). Some cited both benefits.

Identification of course elements that provided the most personal benefit is included in the previously referenced Table 6-1. The responses are consistent with the previous identification of elements to be expanded in future courses.

Specific positive comment statements were volunteered by two respondees concerning the excellence of Peter Meier's lectures and the value of the modelling segment which he teaches.

The specific acquired skills most often cited were:

- Demand modelling and/or the use of the Reference Energy System (8 responses); and
- Pricing policy and/or investment analysis (4 responses).

TABLE 6-1
RESPONSE TO IEAL QUESTIONNAIRE

Topic	Participants' Desired Level of Emphasis (Number of Responses)			Curriculum Elements of Most Value to Participants
	More	Less	Same	
Introduction to Energy Planning	4	4	10	7
Information Systems	9	2	8	10
Modelling	6	8	4	6
Assessing Present Energy Situation	6	5	8	10
Demand Forecasting	11	1	5	13
Renewable Energy	9	1	9	8
Conventional Resource Expansion	7	2	8	3
Project Evaluation	12	2	4	10
Pricing Policy	11	2	6	10
Industrial Conservation	9	1	9	5
Investment Models	10	3	6	5

NOTE: Predominant responses (as evidenced by both sets of responses) are boxed for emphasis.

The vast majority cited beneficial aspects associated with contacts made through the EMTP experience.

Eight respondees had engaged in teaching others following their return; and four others cited specific plans to do so. (This finding differs sharply from the IEAL interview results, which found little evidence of such activity in the countries that IEAL visited.)

Of those who responded, 8 participants stated the training had resulted in positive changes in the way their offices now operated; 10 participants stated that there was little or no change, although, in some cases, it was hoped that changes would ultimately evolve.

Only three respondees denied seeing any potential value to their colleagues from EMTP participation. Potential future participation was about evenly divided between engineers and economists, with a scattering of other disciplines (e.g., geologists, physicists) occasionally mentioned as well.

6.4.6 Summary Evaluation Of The Program

Most participants had received other training and therefore had at least a minimal basis of comparison for the EMTP experience. One respondent limited his comments to a sharp complaint about poor physical accommodations and unsatisfactory living allowance. The substantive comments on course substance were distributed as follows:

- Superior, most comprehensive, truly unique (5 responses).
- Good (6 responses).
- Not very satisfying, needs change (1 response).
- Markedly inferior to a nearly identical course in Japan of the same length (1 response).

Numerous, widely scattered suggestions for modification and improvement were given (based on the premise that the course was to be continued). It should be recalled that about half of the respondees had proposed that the course be lengthened significantly. The more significant comments are:

- Present more detail (deeper treatments) (4 responses)
- Use case studies as the key to the course (3 responses)
- Develop a "multi-track" approach, in which some integrating material is taught to all participants but which then provides for the class to break up into smaller sections in which specific elements are taught in more detail (in parallel) to those with the most particular interest in those areas (3 responses, including some further variations of this basic concept of course segmentation)
- Use more international lecturers, including lecturers from the developing countries themselves (2 responses)
- Do not attempt to teach the skills themselves (e.g., modelling); require this basic capability to be in hand as part of the selection process; do teach how to integrate these tools and techniques into a policy formulation methodology (1 response)

Some comments on regionalization appear in this section, but that discussion is deferred to a later section in which there is a specific attempt to focus on regionalization.

Diverse suggestions for alternative use of funds were offered, with no duplication of ideas. Suggestions included:

- Establish in-country energy study centers and libraries;
- Establish in-country training capability;
- Fund exchange fellowships or a master's-level program in an American university; and
- Fund energy tours, case studies, in-country energy projects, and/or seminars.

Participants divided closely on the feasibility of the EMTP being presented at a regional location (supported by 12) as opposed to being presented in the U.S. (supported by 8). The greatest concern of the latter group was the ability to field equivalent quality of instruction. That group also perceived value in the U.S. experience per se through greater personal/professional exposure to an advanced society. One respondent suggested that the U.S. version of the EMTP be supplemented (not replaced) by the support of regional seminars specifically held for former participants of the U.S. experience.

Of the 20 respondents, only one declined to make a overall summary recommendation. The views of the others may be categorized as:

- No modifications are necessary (0 responses)
- Rework the U.S. version of the EMTP in evolutionary ways that have only a modest impact on organizational approach, length, and cost (8 responses)
- Rework the U.S. version of the EMTP in revolutionary ways that have a potentially major impact on organizational approach, length, and cost (4 responses)
- Terminate the existing U.S. version of the EMTP and replace it with a similar (but revised) program; given regionally, and, if feasible, rotated periodically in location among the countries of the region being served (7 responses)

This response can be read in two different ways. In one interpretation, more than half of the respondents favor a U.S. course and more than half of those so responding would seek only modest changes. In another interpretation, more than half of the respondents see major changes required and more than half of those so responding would move the course out of the U.S.

The IEAL interview process (Section 5.0) supports the conclusion that there is no clear consensus in this area. The predominant interview judgments, however, were in the direction of the second interpretation, involving regionalization of the course.

7.0 NEEDS FOR TRAINING IN ENERGY POLICY FORMULATION

7.1 INTRODUCTION

This section addresses the needs and opportunities for assisting training in energy analysis and policy formulation in developing countries, from the perspective of programs that might be supported by the Agency for International Development (AID), Washington, D.C.

The ultimate objectives of the participant country (and therefore AID's generalized objective) are to have in place a series of related capabilities:

- A strong central planning staff, connected to a high level of decision making in the country, capable of identifying and analyzing key energy policy issues, defining alternative policy choices, and evaluating these in both technical and political terms so that effective and practical decisions can be taken to increase the availability of domestic energy supplies, promote efficiency in energy end-use, maintain energy costs at reasonable levels, and make effective use of scarce capital within the overall development goals of the country.
- An effective energy data collection system providing the information required both to perform the analysis needed and to monitor the results of policy choices taken.
- Enough alternative sources of in-country energy analysis capability to ensure that central staff analyses are subject to adequate peer review and debate prior to implementation of particular proposals so as to avoid major errors in decisions based on such analysis. Usually one would find this capability in either or both of subelements

of the energy agency itself or in other ministries (such as budget, economic development, transportation, etc.) whose affairs would be heavily impacted by energy-based policy changes.

A functioning university system (post-graduate) and/or other mechanisms to provide in-country training in energy policy formulation as a scientific discipline and career path to assure continued vitality and capability in this area over a span of years.

Obviously, AID funding cannot be expected to provide for the training of the thousands of people (world-wide) implied by the above statement. After five years of operation, the Energy Management Training Program (EMTP) has trained a few hundred people. As we have seen, not all of these have actually acquired significant skills or even achieved a key role in energy planning.

Therefore, it is appropriate to focus on activities which have a high potential to be cost-effective in a variety of different ways:

- To directly reach a large number of people at low cost.
- To induce a multiplication of the AID-supported training effort by promoting further dissemination of that training by the original AID-supported participants.
- By supporting the specific development of in-country training capabilities at universities or other in-country entities designed specifically for this purpose.

Training programs for government officials can be defined by the following sets of parameters:

- Characteristics and job functions of the participants being targeted for training (i.e., high-level, middle-level, or junior; overall central-planning, specific energy-sector oriented, or energy-related).

- Course objectives (hence content and length).
- Class and topic diversity (i.e., in-country, regional, or world-wide; economists, engineers, or a wide variety of background disciplines).
- Location (in-country, in-region, or centrally located, as in the U.S.).

In addition, consideration must be given to the use of seminars (information exchange mechanisms) as supplements to formal training courses; and to activities addressed to non-government (or mixed) entities such as universities and energy-analysis centers, related to but separate from governments.

Some approaches may be seen as the primary responsibility of the participant government, other donor agencies, and in-country AID missions. Some training should also be provided by industrial companies as an integral part of project activities.

The objective of this section of the report is to narrow this large territory to smaller specific areas potentially suitable for support by AID, Washington. The following subsection will use criteria developed by IEAL to accomplish this task. The next subsection (7.3) will then consider each of the candidate approaches so identified and discuss key issues involved with a decision to implement them.

7.2 CANDIDATE TRAINING APPROACHES

The purpose of the discussion which follows is to develop criteria that can be used as the basis for proposing specific candidate training approaches.

The evaluation of the EMTP as a training approach has emphasized two important points:

- Each developing country is in a different stage of development as regards sophistication in energy policy formulation; hence a centrally located, broad-based approach such as the EMTP is of varying degrees of value for the participants and tends to approach the level of an energy primer for middle (even junior) level officials with only moderate knowledge of the overall energy universe.
- In order to achieve a high degree of cost effectiveness in training there must be substantial early and continuing interaction between the course users and the course sponsors so that;
 - curriculum meets the intended needs of the user, and
 - the appropriate participants are nominated to the process.

Furthermore, course length, language problems, and other similar logistics and procedural problems can be important barriers to the effective accomplishment of the desired objectives.

Nevertheless, a continuing program, aimed at meeting AID, Washington, objectives, will benefit from the strong base of a primary contractor providing central management of diverse but related activities, continuity, and evolving program elements based on experience.

Just as the needs in-country will differ radically among countries, so will the needs of high-level and middle-level managers even in a single country. These people are AID's primary target. The number of junior employees is so large and their effect on policy formulation is sufficiently remote that major efforts to enhance their training (except as parts of other ongoing activities) cannot be cost-effective and should be viewed as outside the limits of AID's resources.

Furthermore, many mechanisms exist to provide basic scientific training regarding individual energy technologies. The unique aspects of energy policy formulation are:

- The integration of a large number of diverse concepts and tools into a structured attack on trade-offs between elements such as supply, end-use efficiency, pricing, capital availability, economic development, technology development, and national security.
- The structural and policy development techniques necessary to translate the results of analysis into political/legislative actions which can be practically implemented by governments.

International Energy Associates Limited (IEAL) recommends that AID adopt these two concepts as the fundamental units of any future training programs in energy policy formulation. Both, to a degree, are embodied now in the EMTP, but they are joined to much additional extraneous material which increases the length of the course and reduces its overall cost-effectiveness.

The above idea can be restated as follows. Energy policy analysis, formulation, and implementation covers an enormous territory of knowledge. Rather than providing "equal time" to each of the subelements of this territory, much of which can be learned from a large variety of sources, AID should emphasize the unique areas of integration, trade-off analysis, and translation of that analysis into implementable programs which can truly impact the energy future of the participant country.

Application of this criterion, to more sharply focus what is trying to be achieved, together with the criterion to emphasize the degree of interaction between course developers and users, will significantly increase the cost-effectiveness of AID's efforts.

Next, it must be recognized that no single activity can fully meet the scope and diversity of needs. Even with a limited focus, there is a need for a spectrum of activities with a variety

of complimentary objectives. For this reason, also, some needs must be seen as having higher priority, and effectiveness tests need to be employed as an evaluation tool to determine which programs are only of marginal value within the limits of available resources. Certain supplementary activities should therefore be considered for support on a pilot (limited) basis rather than as full-scale programs.

Finally, AID, Washington, should continue to move in the direction of decentralizing country-specific training elements to become integrated into local AID Mission programs. In energy policy training, activities to do this were underway in each of the countries/regions interviewed (Jamaica, Dominican Republic, Indonesia, Egypt, and Nairobi/Africa). IEAL's discussions with in-country AID energy officers found them to be knowledgeable, and the programs proposed in this area were found to be attacking real problems in a well-considered way. Accordingly, any centrally supported program carried forward by AID, Washington, should be based on providing capabilities that cannot be provided by field Missions or, because they are of wide value, can be provided and managed centrally at lower cost than if replicated by a number of Missions.

The above discussion can be reiterated briefly as series of criteria:

- Require significant early and continuing interaction between course sponsors and national users.
- Emphasize the reduction of logistic and procedural barriers to effective course utilization, with particular emphasis on the process by which participants are selected.
- Provide for the existence of a centrally managed core support for continuity, feedback, and innovation based on experience.

- Focus first on the high- and middle-level managers of government ministries who are either:
 - the customers for, or the performers within, a central energy policy analysis staff, or
 - other key officials whose participation in decision making is key to the ability to implement programs following completion of the analysis.
- Emphasize for the above the unique elements of the energy policy analysis, formulation, and implementation process which cannot be readily learned through other programs.
- Recognize the need for a prioritized spectrum of program elements, including pilot (limited scope) activities so as to make progress in longer-term areas within limited budgets.
- Design AID, Washington, programs on the premise that significant programs in this area of a national and/or regional character are also being designed and implemented by field Missions.

Taking the above criteria into account, IEAL recommends that AID, Washington, give highest priority to the direct support (and co-sponsorship, where possible and appropriate) of the program/activity array presented in Table 7-1.

7.3 DISCUSSION OF ALTERNATIVES

Table 7-1 presents a multi-program array consisting of the following elements:

- The basic energy policy course for mid-level officials, reduced in length and focussed in accordance with the criteria recommended by IEAL.
- Short training courses for high-level officials, specifically designed to accommodate differing degrees of sophistication and hence varying as to the specific course objectives.
- Short to intermediate courses directed at officials concerned with increasing in-country capabilities and providing them with an enhanced capability to accomplish this.

TABLE 7-1

TARGET CATEGORY	OBJECTIVES/ELEMENTS	LENGTH/LOCATION
1. Training Programs		
A. High-level Officials		
1) Countries without central planning staffs and in early phases of energy program formulation.	Nature and value of energy policy analysis, formulation, and integration, centrally approached. Experience elsewhere in organizing for and initiating activity.	Short (1 week). Regional (rotated periodically) and/or U.S.
2) Countries with central planning staffs but of limited sophistication.	Value of approach. Importance of coordination, data gathering, computer access. Issues and approaches to resolution relevant to needs.	Short (1-2 weeks). Regional (rotated periodically)
3) Sophisticated but still developing countries.	Case studies in successful policy analysis, formulation, and implementation (world-wide).	Short (1-2 weeks). U.S.
B. Middle-level Officials		
1) Countries in early phases of energy policy formulation.	Unique aspects of integrated approach to analysis, methodologies to accomplish, implementation problems and how to deal with them. Case histories relevant to needs. Mechanisms for initiating greater in-country capability. Acquisition of specific skills in integration, policy formulation, and presentation to decision-makers.	Long (3-6 weeks). Regional (rotated periodically) and/or U.S.
C. Middle-level Officials		
1) (Government/university or energy center) in countries of at least mid-level sophistication.	Elements of in-country curricula to teach energy policy analysis methodology. Case histories of growth of internal capabilities. Sources of technical and financial assistance.	Short to intermediate (2-3 weeks). Regional (rotated periodically) and/or U.S.

TABLE 7-1 (cont.)

2. University Pilot Program

A. University Officials

Financial and technical assistance in the institution of a multi-disciplinary energy policy graduate level course (2 universities).

3-year program to create, operate, evaluate, and improve.

3. Seminars

A. Mid-level Officials of Central Policy Analysis Units

Share implementation experiences

Short (1-2 weeks).
Regional (rotated periodically)

B. Mid-level Officials

Combination teaching and sharing, limited to specific regionally relevant issues and methodologies such as expanding use of coal, deforestation, price subsidization, data gathering, etc.

Short (1-2 weeks).
Regional (rotated periodically)

4. Central Sharing and Evaluation

A. AID Washington Officials

Program office activity to facilitate:

As appropriate.

- transfer of experience between Missions.
- identification of Mission-wide needs of significant priority.
- evaluation of usefulness of Washington programs by field.
- monitoring of field programs by Washington and assistance to the field in evaluations based on broader scope of Washington experience.

B. AID Field Officials

Periodic seminars (training and sharing) to increase knowledge of cross-Mission activities in energy policy formulation and to upgrade awareness of successful case histories and methodological advances.

Short (1 week).
U.S.

- A university pilot program directed at putting a graduate-level program in place in two countries.
- Supplementary seminars as sharing/training experiences for both central policy analysts and for those working specific resource, end-use, policy, or methodology problems.
- Central sharing and evaluation programs to increase awareness and effectiveness within AID's own related activities.

IEAL believes that each program/activity unit in this array merits AID support. Obviously, all are not of equal priority. In some cases, IEAL has indicated the possibility of both regional and U.S. locations for the activities. Frequency of the activity is not indicated on the Table. The purpose of this section is to briefly discuss the above matters; priority, location, and frequency.

Because of the importance of AID's own programs at the Mission level, and the high cost-effectiveness of internal guidance/monitoring/evaluation functions, first priority is placed on the (relatively) inexpensive program activities for AID officials, shown as unit 4(A and B) on Table 7-1.

Next priority should be assigned to the upgrading/modification of the EMTP as reformulated under unit 1.B.1 on Table 7-1. The alternative of continuance of the EMTP as an energy-wide "primer" is viewed as less cost-effective.

Next in priority are the programs for high-level officials in the less sophisticated countries represented by units 1.A.1 and 1.A.2 on Table 7-1. The support and understanding of such officials, as customers for energy policy activity, cannot be underestimated in importance. A modest investment in engaging and nourishing such support, if it assists in translating analysis into action, can be very cost-effective.

Next priority is given to the seminars, unit 3(A and B) on Table 7-1, as the primary basis for continual upgrading and experience sharing among those who are dealing directly with modifying the energy future of their country.

Next in priority is the training effort directed at officials who would seek to enhance in-country capability, unit 1C on Table 7-1. This is given higher priority than the pilot university program, unit 2A on Table 7-1, because the results will hopefully impact the in-country situation earlier, more broadly, and at lower cost than the two-country, three-year pilot effort.

Last priority is attached to the short training exposure for high-level officials on case histories in other countries which would be held in the U.S. This has some value as a prestige experience, helping to reinforce relationships, and could readily be mounted at a moderate incremental cost if the other programs were in place. However, the primary targets remain the less sophisticated countries and the need to begin to "grow" more extensive in-country capability.

Based on the EMTP interviews and questionnaire results, IEAL uniformly recommends regional (rotated) locations, and the correspondingly more intense interaction with proposed users that can be achieved thereby, over U.S. locations, except for short or prestige events. Nevertheless, the regional events will benefit by being centrally designed and managed by a core support contractor for AID. Hence, the emphasis on out-of-country activities does not reflect lack of support for a U.S.-based institution which could be IER (as now), a DOE National Laboratory (BNL, ANL, or others), or an entirely new arrangement. This approach is likely to entail greater costs than an operation primarily confined to the U.S.; however, the effectiveness will increase

sharply if adequate funds are provided to accomplish the necessary advance work to predefine participants, their needs, and suitable locations. Co-sponsorship of host in-country institutions should be actively sought, given that this approach will also provide for an infusion of funds to the host country.

Frequency and specific locations for courses (as well as subject matter for seminars) should be based on careful field work, including the participation of local AID Missions. Time should also be provided for transition from the present approach to the new program. A fully operational effort might, on an annual basis, involve:

- 3 to 4 short courses for high-level officials;
- 2 sessions of the longer energy policy course (in different regions);
- 1 short-to-intermediate session of the course to multiply in-country internal capabilities; and
- 3 to 4 seminars.

A program of this magnitude, if well designed and managed, integrated with local Mission activities, and pre-planned in detail with participant countries has the capability to be very effective. It must be closely monitored and evaluated, however, at each stage, since the activities are complex and the process could readily degenerate in quality without continuous attention and a high degree of contractor effort.

8.0 RECOMMENDATIONS

IEAL finds that the EMTP, as presently constituted, has been seen as a beneficial experience by participants. The primary value of the course has been as an introductory overview for mid-level officials (and high-level officials in the early years) with respect to the concepts and methodologies of energy policy analysis. A number of countries have outgrown the course. Those with continuing participation are now more likely to send junior officials or those not directly involved in central policy analysis activities. Other countries, at earlier stages of experience, could still obtain benefit from the course. IEAL believes, however, that the benefits to be achieved by maintaining the EMTP in its present form are low, relative to the cost involved, and when consideration is given to the significant modification of emphasis and more cost-effective supplementary activities which AID could initiate in this area.

Accordingly, IEAL recommends the termination of the EMTP, as presently constituted, rather than its continuance.

If, however, the program were to be continued, and in the United States, IEAL recommends that AID take steps to achieve:

Significant improvement in contractor management, documentation, the process by which participants are selected, and the intensiveness and formality of related advisory/overview processes.

- Changes in course curriculum (and length) to reflect more compactness; better documentation of teaching materials; responsiveness to subject emphases identified in the IEAL review, interview, and questionnaire process; and a more sustained focus on the unique elements of energy policy analysis, formulation, and implementation which are not readily available through other sources.
- Changes in course structure to allow for class division, for some sections of the course, into multiple tracks, appropriate to the technical background and areas of interest of the participants.
- A requirement for greater student participation in class projects, individual assignments, practice in skill development, etc., with follow-up interaction with instructors, so that a greater level of skill acquisition is achieved with a reduced dependency upon the lecture process as the primary or only teaching mode in the absence of student personal initiatives.

In preference to this intermediate step outlined directly above, IEAL recommends that AID consider adopting a prioritized array of activities in the energy policy training area established in accordance with the following criteria:

- Require significant early and continuing interaction between course sponsors and national users.
- Emphasize the reduction of logistic and procedural barriers to effective course utilization, with particular emphasis on the process by which participants are selected.
- Provide for the existence of a centrally managed core support for continuity, feedback, and innovation based on experience.
- Focus first on the high- and middle-level managers of government ministries who are either;
 - The customers for, or the performers within, a central energy policy analysis staff, or
 - Other key officials whose participation in decision making is key to the ability to implement programs following completion of the analysis.

- Emphasize for the above the unique elements of the energy policy analysis, formulation, and implementation process which cannot be readily learned through other processes.
- Recognize the need for a prioritized spectrum of program elements, including pilot (limited scope) activities so as to make progress in longer-term areas within limited budgets.
- Design AID, Washington, programs on the premise that significant programs in this area of a national and/or regional character are also being designed and implemented by field Missions.

A potential program of this character has been outlined by IEAL in Section 7.2 of this report. It contains a modified and re-focussed version of the EMTP, given regionally rather than in the U.S., as one of its high priority elements. The total program consists of:

- The basic energy policy course for mid-level officials, reduced in length and focussed in accordance with the criteria recommended by IEAL.
- Short training courses for high-level officials, specifically designed to accommodate differing degrees of sophistication, and hence varying as to the specific course objectives.
- Short to intermediate courses directed at officials concerned with increasing in-country capabilities and providing them with an enhanced capability to accomplish this.
- A university pilot program directed at putting a graduate-level program in place in two countries.
- Supplementary seminars on sharing/training experiences for both central policy analysts and for those working specific resource, end-use, policy, or methodology problems.
- Central sharing and evaluation programs to increase awareness and effectiveness within AID's own related activities.

APPENDIX A

Country Participation in the EMTF

APPENDIX A

COUNTRY PARTICIPATION IN THE EMTF

PARTICIPANT TRENDS 1978-82

PARTICIPANTS BY REGION/COUNTRY ^{/1}

REGION	COUNTRY	1978	1979	1980	Spring 1981	Fall 1981	Spring 1982	TOTAL
A-Caribbean								
	Antigua				1		1	2
	Barbados		1				1	2
	Bolivia	1	1					2
	Brazil	1	1	1	1		1	5
	Chile	1	1					2
	Colombia		1	1		1	1	4
	Costa Rica			1			1	2
	Dominica						1	1
	Dom. Republic	1		2	1			4
	Ecuador		1	2		1		4
	Guatemala				1			1
	Guyana			2	1		1	4
	Haiti	1	1					2
	Honduras			1				1
	Jamaica	2	1	1	2		1	7
	Mexico		2	1		1		4
	Nicaragua	1		1				2
	Panama		1					1
	Peru	1						1
		9	11	13	7	3	8	51
No. Africa-Mid East								
	Abu Dhabi		1					1
	Egypt	2	1		2	1	2	8
	Ethiopia			1				1
	Jordan	1	1		2	1		5
	Kuwait				1			1
	Morocco		1		2		2	5
	Tunisia	1	1			1		3
		4	5	1	7	3	4	24

^{/1} Prepared by IER (1982)

REGION	COUNTRY	1978	1979	1980	Spring 1981	Fall 1981	Spring 1982	TOTAL
Asia								
	Bangladesh	1			2	3	2	8
	China, Peo. Rep. of			3	3	3	2	11
	India	1				2	3	6
	Indonesia			3	2	1	1	7
	Korea	3	1	1	2	1	1	9
	Malaysia						1	1
	Palau, Rep. of					1		1
	Philippines		2	1	1	1		5
	Sevchelles					1		1
	Sri Lanka	1	2	1	2	1		7
	Taiwan					1		1
	Thailand	3		2		2	2	9
		9	5	11	12	17	12	66
Africa								
	Burundi			2			1	3
	Cameroon				1			1
	Gambia, The					1		1
	Ghana			1				1
	Kenya	1	1	1		2	2	7
	Liberia				1		1	2
	Madagascar				1	1		2
	Malawi				2		1	3
	Nigeria	1	1		2	1		5
	Rwanda					1		1
	Senegal		1			1		2
	Somalia					1		1
	Sudan	1	1		1	2	2	7
	Tanzania	1	1	1	1	2	2	8
	Zaire				1		1	2
	Zambia		1	1	1	1	1	5
		4	6	6	11	13	11	51
Other								
	Azores (Portugal)			1				1
	Portugal			1				1
	USA					1		1
				2		1		3
		26	27	33	37	37	35	195

APPENDIX 3

Advisory Committee Meetings and Recommendations

APPENDIX B

ADVISORY COMMITTEE MEETINGS AND RECOMMENDATIONS

CalendarAdvisory Committee MeetingsEnergy Management Training Program

<u>Date</u>	<u>Place</u>	<u>Attendees</u>	<u>Written Report</u>
August 7, 1978	AUI, Washington	E. Minnig, J. Bosken, S. A. Olende, W. Porter, S. Munson, T. O. Carroll, R. Chatterjee, I. Creedon	Yes
October 22, 1979	ODC, Washington	J. Howe, E. Minnig, W. Gouse, M. Esman, A. Von Lazar, K. C. Hoffman, P. Pelham, R. Nathans, T. O. Carroll, J. Bever, P. Palmedo	Yes
July 24, 1980	ODC, Washington	J. Howe, R. Nathans, J. Bever, P. Pelham, E. Minnig, T. O. Carroll, P. Palmedo, K. Hoffman, A. Von Lazar	No
May 7, 1981	ODC, Washington	J. Howe, E. Minnig, P. Pelham, K. Hoffman, W. Gouse, A. Von Lazar, M. Esman, R. Nathans, J. Bever, T. O. Carroll	No
October 21, 1981	Brookhaven National Lab	T. O. Carroll, M. Esman, K. Hoffman, J. Howe, D. Jhirad, P. Meier, V. Mubayi, R. Nathans, R. Shepard, S. Toth, G. Tschannerl, A. Von Lazar	Yes
Spring, 1982	Meeting cancelled due to change in Evaluation Meeting which was then held in Washington. Advisory Committee who attended this meeting were: Peter Pelham, Ted Minnig, Jim Howe, and Shirley Toth.		No

ADVISORY COMMITTEE
MEETINGS AND RECOMMENDATIONS /1

The Advisory Committee to the Energy Management Training Program was formed in late 1978 as a mechanism for systematizing advice and counsel to the administrators of the Program. The original membership of the Committee was approved by the AID Program Officer, Sam Bosken. He, and later his replacement, Shirley Toth, attended all the Advisory Committee meetings. Individual members were chosen on the basis of either experience in one or more aspects of energy planning or experience in the training of individuals from developing countries in other areas of technological planning.

Meetings of the Committee have taken place usually once a year (see Exhibit 1:Calendar of Meetings).The meetings usually, but not always, had two objectives: to meet privately with participants in the on-going session of the EMTP in order to solicit their off-the-record comments on the substance and logistics of the Program, and, in extended informal sessions with IER and BNL staff, to review and comment on any and all aspects of the Program. These sessions lasted anywhere from one to two hours. James Howe, formerly of the Overseas Development Council, the Solar Energy Research Institute, and now International Development Energy Associates, has been and continues to serve as Chairman of the Advisory Committee. He chaired the sessions and summarized the comments of the Committee at the end of the sessions (which were not always written up).

The advice and counsel of the Advisory Committee have been valuable to the organizers of the EMTP in several non-specific but important respects. They have helped us to retain a perspective of what could be accomplished in a short 8-week session vis-a-vis other mid-career training efforts in other technical areas offered by AID, the World Bank, and other U.S. universities. They have provided us with specific suggestions (on the basis of the prior experience of several members) for how the logistics of the course could be improved. They have served as an "outside" sounding-board for the complaints of participants. Finally, they were instrumental in giving us, the organizers, a "feel" for how we were doing, particularly in the first years of the Program when our collective experience in dealing with energy planning issues was less substantial than it is now.

Specific recommendations, suggestions, and comments offered by individual members of the Advisory Committee were taken up on a case-by-case basis by the EMTP administration. For the most part, these dealt with (1) course content, names of potential lecturers, places for tours, and performance of EMTP technical and support staff; (2) participants' personal comforts, and (3) participant selection criteria, mix of technical backgrounds of classes, regionalization and follow-up activities.

Highlights of the Advisory Committee's advice in each of these areas and their disposition are summarized below.

1. Course Content, etc.

- a. In 1979 the Advisory Committee recommended a shift from a 12-week to an 8-week course. This was accepted.
- b. In 1981 they suggested shortening the course to 7 ½ weeks by meeting on Saturday mornings. This was accepted.
- c. In 1980 the Committee commented on the need for more material in energy conservation at the expense of less on the mechanics of various renewable resource technologies. This was accepted.
- d. In 1979, at the suggestion of the Committee, we moved to the modular system.
- e. In 1980 we introduced efforts to get students with planning background to interact more freely with those with engineering background through group role playing, as a result of suggestions by the Advisory Committee.
- f. The 1979-80 extended U.S. tours came about as a result of Advisory Committee suggestions to Sam Bosken, and Advisory Committee members' suggestions were solicited as to the places and organizations to be visited.
- g. EMTF administrative organization was strengthened starting in 1979, in response to a suggestion from the Committee, when Dr. Owen Carroll was appointed Educational Director and Mr. James Bever became Logistics Director. The Committee also was consulted in 1980 in the changeover to Dr. Peter Meier as Deputy Director.

- h. The original contacts with Dr. Irving Friedman, First Boston Corporation, and Mr. Jacques Gorlin, then Economic Advisor to Senator Javits, came about through suggestions of the Advisory Committee.

2. Participants' Personal Comfort

- a. In 1980 we moved participants and sessions to the Stony Brook campus in response to suggestions by the Advisory Committee.
- b. In 1981 we shifted sessions back to Brookhaven and stopped transporting participants to the Stony Brook campus every day by bus (40 miles round-trip) as a result of advice received from the Committee.
- c. We introduced vans driven by participant drivers in 1981 as a means of increasing participants' mobility while living at Brookhaven, and arranged for access to kitchens in which participants could prepare meals. These improvements were the result of Advisory Committee feedback from participant contact.
- d. As a result of Advisory Committee recommendations, the 1981-82 EMTP budget included funds, with the approval of AID, for selective payment of participant travel to insure participation by individuals from AID countries where travel funds were not available.
- e. In 1981, an additional EMTP secretary-assistant was added to the IER staff to deal with "special" participant problems (diet, health, travel) as a result of Advisory Committee comments.

3. Participant Selection Criteria, etc.

- a. In 1979, in response to suggestions by the Committee, a strong and successful attempt was made to broaden the mix of the technical backgrounds of participants.
- b. We rejected as untimely the suggestion made by the Advisory Committee in 1979 to prepare individual EMTP sessions to meet the needs of subsets of participants on the basis of regional needs, technical proficiency of participants, state of economic development, etc., after determining that (1) it would be difficult to implement at the time; (2) the 1979 session participants were against such tendencies to compartmentalization, and (3) we did not consider there was sufficient useful material available in the field.
- c. We rejected suggestions by the Committee that we restart an EMTP alumni Newsletter in 1981 (funded in 1981-82 budget), after two lengthy and time-consuming efforts to involve participants had failed.
- d. We accepted suggestions in 1980 to lower our technical selection criteria for participants from the Africa region when it became evident we were having trouble getting sufficient numbers of acceptable applicants from that area.
- e. On the basis of suggestions made in 1979 and 1980 by the Committee, we proposed an Energy Planning Technical Assistance Program be included in the 1981-82 budget. This was designed to help institutionalize energy planning as a regular government activity in selective AID countries where upwards of half-dozen alumni of EMTP were active.

APPENDIX C

1980 AID Evaluation Report

1980 AID EVALUATION REPORT

Background

The PID for EMTP was approved in December 1975. While the World Bank was very interested in co-funding the program, its final decision was to defer possible participation until it had resolved several issues including OPEC contributions to the Bank, development of a broader energy assistance policy and further definition of an appropriate energy program. The Project Paper called for the creation of a prototype training course with one test presentation to developing country participants followed by an evaluation with recommendations for course improvement. The goal was to "improve LDC capabilities for assessing and managing their energy resources including the utilization of appropriate energy technologies." Project approval in August 1977 led to a \$320,000 PASA to the Department of Energy (DOE) for the Energy Policy Division of Brookhaven National Laboratory (BNL) in collaboration with the Institute for Energy Research, State University of New York, Stony Brook (SUNY).

The program was predicated on a developing country need for integrated energy planning as an important part of national economic and social development planning. This need was created by rising oil prices, problems of debt service and energy supply concerns. The formation of national committees on energy in some developing countries and the requirement by development banks for pre-loan energy assessments are evidence of this need. The practice of integrated energy planning had just begun in industrial nations in the mid 70's and organized training in this area, formal or informal, did not exist.

The initial course was judged a success on the basis of the number of nominations, participant response to the program, meetings between the participants and energy officers in the Regional Bureaus and DS/EY and an informal evaluation by AID/DSB. This success, coupled with a growing recognition of the severity of the energy problem in the developing countries, led to approval in December 1978 of incremental funding of \$650,000 for two additional sessions to allow curriculum adjustments prior to formal evaluation. The last of these sessions will be held in late spring, 1980. To conduct an interim evaluation, an A.I.D. team (Attachment A) visited SUNY/BNL on February 7 and 8, 1980 and this report summarizes the team findings and recommendations.

EMTP Training Course

The SUNY/BNL course that has emerged is an 8-week, modularized curriculum (Attachment B) designed to develop the skills of mid-career persons who play, or will play shortly, a significant management role in their country's energy programs. The initial participant selection resulted largely from in-country discussions by SUNY/BNL staff with candidates and/or their supervisors and was based upon technical and professional qualifications, employer interest, command of English, geographical dispersion, expected future role

in country energy planning, and in most cases, USAID nomination. (Details of duration and expense of the recruitment travel are in Attachment F.) Recruitment methods now also include mailings to developing countries and recommendations from graduates or their supervisors. Also, more emphasis is now placed on candidates with economic and planning backgrounds rather than engineering. Fifty-three participants from thirty countries have attended the two courses held so far. Attachment C lists and characterizes the countries. The institutional affiliation, job responsibility and educational level of the participants are given in Attachment D. Many of the countries involved have sent more than one person to the course(s) but often from diverse institutions. No attempt has yet been made to train the nucleus of a national planning team. Training is also needed at the policy making and junior professional levels if countries are to better address their energy/development problems and to have skilled human resources in coming years.

Course improvements continue in response to staff experiences, recommendations by the EMTP Advisory Committee (Attachment E) and participant comments on and evaluations of the source content and the lecturers (available in the project files of DS/EY). The project design called for the establishment of this Committee of outside experts to advise SUNY/BNL on curriculum development, participant selection and international development considerations. The Committee report of the October 22, 1979 meeting reaffirmed the critical need for national energy management training for officials of developing countries and concluded that the EMTP was successfully meeting this need and that the Program should be continued and strengthened. The report noted the balanced and comprehensive content of the EMTP course and suggested a reduction in the number of lectures, that more emphasis should be given to the implementation of national energy plans into executable policies, and that the need for more attention to the political, economic and social consequences of energy policy options be examined along with tools for dealing with these. Added stress on the need for integrated planning, fewer external lecturers, increased case study content and more use of developing country data are among the changes being made.

On the sole basis of written project materials and discussions with the SUNY/BNL staff, the evaluation team is not in a position to judge thoroughly the content of the EMTP course. A range of important topics and case studies derived from developing country experiences are treated in the course. The critical but difficult question is the effectiveness with which useful knowledge and skills have been imparted to participants. Future efforts to assess participant skill utilization should address the questions of the relevance of EMTP models and computer tools to the range of developing country situations and success in the translation of course concepts to practical planning activities by the participants.

EMTP staff estimates that training of 100-200 mid-career persons per year will satisfy the need at this level.* The relative merits of continued

*Although the staff gave no basis for this number, it appears reasonable: assuming each of 50 countries desires to create a sectoral energy planning unit of 10-20 mid-career professionals, a total of 500-1,000 people would need to be trained. If, on the average, a person worked in the unit for five years, then 100-200 new people would be needed each year.

training in the U.S. as opposed to in-country presentations appear to differ little at this scale. The improved access to developing country personnel and immersion in local planning problems afforded through in-country training are offset by limited lecture staff and reduced access to educational tools and supporting facilities. However, in the context of executive courses for policymakers and educators responsible for training programs, the desirability of in-country and/or regional settings should be explored in greater depth. Decisions on the content and location of future EMTP courses should include consideration of training for selected A.I.D. personnel in the field and at AID/W.

The evaluation team concludes that:

- A very useful EMT course exists and, while further improvement is possible, routine training of mid-career persons can proceed.
- The questions of training planning teams, the utility of internships or special case study activities and the ultimate role of executive training are as yet untested.

It is therefore recommended that:

- A.I.D. provide funding for four additional EMTP courses and for a field evaluation to measure the impact of past and future courses. These additional courses should test such approaches as: sessions focused on a single geographic region, sessions in which the participants are teams of planners from each country represented and sessions designed for countries with similar development and/or energy problems.
- A.I.D. give attention to training selected A.I.D. officers with appropriate energy planning, management or sectoral responsibility; such ways might include attendance at the EMTP, energy modules in the Development Studies Program and/or the International Development Intern Program and special short courses.

EMTP Staff

The SUNY and BNL staff with EMTP instructional responsibilities have backgrounds in energy policy research, modelling, economics, energy assessments and international activities as shown in the resumes of Attachment G. This expertise has been supplemented by invited lectures from universities, consulting firms, development banks, commercial banks, industry and development assistance agencies. Thus EMTP participants have been exposed to a variety of viewpoints and methodologies relating to integrated energy planning. There has been a significant reduction in the number of external lecturers with an improvement in the coherence and quality of the presentations. Current plans which even more directly relate invited speakers to specific course modules should yield further improvements.

The evaluation team shares with the EMTP Advisory Committee the concern for adequate inclusion of the political, social and developmental perspectives

of the developing countries. Although the students bring such views to the course (an argument for maintaining geographical/national diversity), lectures by a developing country energy policymaker could be a useful adjunct. The EMTP staff stated that longer term commitments on the part of external speakers was not a problem. This is supported in part by an expression of future cooperation by the World Bank Economic Development Institute whose staff has participated in past EMTP courses. The present mix of skills resident at SUNY/BNL and external expertise seems appropriate and should be maintained at its present high level of quality.

The evaluation team concludes that:

- SUNY/BNL have the appropriate staff expertise, institutional strength and facilities to conduct integrated energy planning.

Institutional Arrangements

The management of EMTP is vested in the Institute for Energy Research (IER), one of four research elements within SUNY/Stony Brook which receive line item state funds in addition to their external contract support. IER utilizes some of these funds to support EMTP-related activities. BNL, located approximately 20 miles from the SUNY campus, provides program support in the form of lecturers, computer access, developing country energy models and data, student housing and other inputs. Both BNL and SUNY are internationally known and they have a close working relationship including joint staff appointments. They are each engaged in separately funded activities closely related to integrated energy planning for developing countries. Other institutions of equal stature exist but the SUNY/BNL coalition is unusual in this subject area.

Project management decisions are made by A.I.D. with little DOE involvement. The technical resources of DOE's laboratory, BNL, are available for the program. The approach has been useful and convenient to both A.I.D. and DOE since BNL expertise in international energy matters is enhanced by their participation in, what is essentially, an A.I.D.-funded training program. While a direct A.I.D. contract with SUNY could result in a similar sharing of program activities between BNL and SUNY, based on the interests, capabilities and proximity of the two institutions, the ability of a private group (SUNY) to employ federal funds to subcontract for services from a federally funded and managed (albeit contractor operated) national laboratory would need to be investigated more thoroughly.

The evaluation team concludes that:

- There is no compelling reason to alter the existing arrangement.

Program Administration

The administrative burden accompanying short-term training of foreign nationals in the U.S. is always large. SUNY has added course development and field recruitment of participants to the duties usually attending international training, making administration a major EMTP task. In recognition,

a Deputy Director was added to the IER staff in May 1979 prior to the second course. The evaluation team feels that a portion of the increased staff resources should be directed to a number of evaluation/management topics.

EMTP is an experimental program to develop training methods for new approaches to energy planning. Measures of effectiveness and guides to course improvement for EMTP should be based upon the degree of success in imparting new knowledge and skills for practical energy planning and management in developing countries. SUNY has employed staff comments, participant interviews, questionnaires and some post-course followup to evaluate program progress. These activities have not always been as well structured as desirable and, importantly, documentation of the evaluative measures and information thus obtained could be improved. As an experiment and ostensibly as part of a larger A.I.D. energy training effort, EMTP learnings deserve careful analysis and effective dissemination. Relatedly, program costs should be examined in more detail and with a broader perspective. Allocations to course development, participant recruiting, internal evaluation, course documentation and administration itself would assist program self-evaluation and be valuable in the design of other international training programs.

Course documentation should receive more attention now that course modules exist and instructional materials are less likely to change. The voluminous collection of initial lectures, prepared with external funds, appears to have limited utility for most audiences. Possible options range from a syllabus to a carefully edited text. If A.I.D. plans extended energy training with a major EMTP role, something approaching a text would be in order. DS/EY and the contractor should (very shortly) arrive at a more precise definition of the documentation to be furnished under current funding and examine the longer term need.

Greater attention should be given to budgetary details. The nature of the contractual arrangement (PASA to DOE for the collaborative services of BNL and SUNY) requires more specific accounting and presentation of budget expenses than was available to the evaluation team. While the general structure of the expenses is in accord with the budget items of the two implementing PASAs (Attachment H), a more refined budget presentation will assist A.I.D. in its subsequent evaluation of the project.

The approval for the second and third sessions contained explicit direction that the basic course be augmented by a field tour of energy facilities and organizations in the U.S. While the tours have significant value and, in particular, offer impressive opportunities for the participants to meet with a variety of influential people in international energy activities, the tour is a marginal component of the basic program and should be continued only to the extent that budgetary resources can be made available for such activity. Alternatives to the present situation in which DS/EY finances such trips would include SUNY seeking financing from outside sources such as foundations or corporations and the individual USAIDs financing the trips of the participants from their countries.

The interaction of EMTP with the Advisory Committee and with USAIDs has been useful but limited. The SUNY/BNL staff may wish to consider responding formally to the recent Committee report and providing evaluative comments on

the course participants to USAIDs and Embassies in the interest of bi-directional communications. The Committee acting as a group or as individuals might assist SUNY in the followup of participants.

A.I.D. has financed the establishment of a program that, in the view of the evaluation team, can make a useful contribution to international development. As with many worthwhile activities, there is the danger that over-reliance on continued A.I.D. support might jeopardize the continuation of the activity if that support could not be provided in the future. By broadening its base of financial support for the EMTP, SUNY might be better assured of a long term viable program and, importantly, might make the program more available to the international development community at large. Current plans to collaborate with the World Bank in training energy planners were explained by the EMTP staff. The evaluation team endorses these steps and encourages continuing and stronger efforts along this line.

The evaluation team concludes that:

- Participant followup, analysis of program experience, budgetary presentation and program documentation require more contractor emphasis.

It is therefore recommended that:

- DS/EY and SUNY/BNL initiate evaluative and management actions in the third EMTP course to better understand and document this training experiment.

EMTP and A.I.D. Energy Policy

A clearly articulated A.I.D. policy for energy assistance to developing countries does not presently exist nor is there an overt energy training strategy. There are, however, ongoing and planned A.I.D. programs which address or include energy as a factor in development. EMTP is striving to assist developing countries to rationalize energy considerations in national economic and social development planning. The design and implementation of bilateral assistance programs could be aided if host countries were better able to define the proper sectoral and total relationship of energy to development. Course "graduates" engaged in national planning could contribute to this process. Better definition of the energy development relationship would also benefit decisions on the nature and extent of technical energy training. Nonetheless, the role of EMTP within and its importance to A.I.D. is difficult to assess given the absence of clear A.I.D. policies on energy assistance or related training needs.

The evaluation team concludes that:

- The broader energy training context within which EMTP might operate in the future is important but unclear.

It is therefore recommended that:

- A.I.D. move to establish policies and plans for energy training at all levels with consideration of relevant topics and their interaction.
- SUNY/BNL prepare a definitive outline of the steps and activities they believe necessary to enhance and further implement EMTP in pursuit of A.I.D. goals, in particular, to provide greater support for in-country energy planning efforts of host countries.

APPENDIX C

1980 AID Evaluation Report

APPENDIX D

EMTP Course Outline

APPENDIX D

ENERGY MANAGEMENT TRAINING PROGRAM

COURSE OUTLINE

1. OBJECTIVES

The course has the following objectives:

- o to develop skills in energy planning and management through an understanding of the integrated approach to a country's energy situation.
- o to familiarize participants with technical and financial options available to improve an energy situation.
- o to acquaint participants with the technologies and economics associated with energy production and conversion technologies.
- o to insure participant understanding of the financial needs and institutional constraints implied by various developmental strategies.
- o to expose participants to other developing countries' experiences through formal and informal exchanges of information.

/1 Prepared by IER

II. ORGANIZATION

The 8-week course is organized around a series of week-long modules, each focussed on a particular aspect of energy management and planning. The modules stress the use of case studies to illustrate the application of analytical and decision-making techniques to typical developing country energy policy problems.

This core curriculum is augmented by:

- o A series of Tutorials, given in the first two weeks of the course, designed to review fundamental analytical techniques (investment criteria, microeconomics, input-output analysis, national income accounts, etc.). Experience indicates that these tutorials are necessary to bring everyone to the same level of understanding of the analytical fundamentals, given the quite wide diversity in educational background (economics, engineering, public administration), and the number of years that have typically elapsed since the average participant has been exposed to a classroom environment.
- o A series of Country Presentations, given by the participants themselves. Each participant presents a particular policy related problem in his own professional experience, intended to expose participants to the problems and experience of other developing countries. The discussion of different approaches to the solution of common problems has proven to be one of the more useful aspects of the course.
- o A series of Guest Lectures, in which the participants are exposed to the views and experience of eminent individuals in the energy field: recent guest lecturers have included the Deputy Director of the recent U.N. Conference on New and Renewable Energy, the Head of the National Energy Commission of the Dominican Republic, and the senior energy advisor to the Administrator of the U.S. Agency for International Development.
- o A series of Visits to important international and U.S. institutions, such as United Nations Development Programme in New York, the Energy Department of the World Bank, the U.S. Agency for International Development, and the U.S. Trade and Development Program. Participants are given the opportunity to meet senior individuals in these institutions, and to discuss with them current problems and policy issues.

1. Energy Assessment and Planning

Provides the student with the analytical framework for national energy assessment and planning, emphasizing problems of data collection and organization, construction of energy demand/supply balances, the use of the Reference Energy System as an organizational framework for evaluation of energy strategies. Review of the techniques of demand forecasting, and management of the electric and refinery/petroleum products sectors. A case study of the Dominican Republic serves to illustrate the problems of conducting national energy assessments, and the tradeoffs to be faced in articulating the elements of a national energy plan.

2. Industrial Energy Management

Explores the opportunities for energy conservation in the industrial sector. Reviews some of the key engineering and thermodynamic fundamentals, and introduces the student to the practical and organizational problems of industrial energy audit programs. Discusses the problems of implementing conservation measures, particularly in state-owned enterprises that are typical of many developing countries. Includes case studies from several countries (Tunisia, Sudan, Peru).

3. Rural Energy Management

Review of the major issues and options in the rural sector. Techniques of rural energy surveys. Problems of rural energy supply (with special emphasis on rural electrification and possible renewables-based alternatives). Problems of fuelwood supply in the face of rising kerosene prices. Linkages to agricultural productivity and environmental questions.

4. Energy Pricing

Serves to expose the student to the theoretical and practical dimensions of energy pricing and tariffing. A case study of Tunisia illustrates the constraints to tariff pricing reform with an examination of the subsidies in the existing price structure as Tunisia becomes an oil importing country in mid-1980's.

III. MODULE OUTLINES (continued)

5. Microeconomics Tutorial

Supply-Demand Curves, Graphical Analysis, Elasticity Concepts; Problems of Statistical Estimation of Same.

6. Linear Programming Tutorial

Review of Matrix Algebra; Graphical Solution of Linear Programming Problems; Economic Interpretation of the Dual; Shadow Prices.

7. Investment Criteria Tutorial

Annuity Factors; Internal Rate of Return; Present Value and Benefit/Cost Criteria; Impact of Uncertainty on Investment Criteria.

8. Macroeconomics Tutorial

National Income Accounts; Input-Output Analysis; Treatment of Energy Sectors in Conventional Transaction and I/O Tables; Energy-Denominated I/O Tables.

9. Project Evaluation

The objective of this module is to expose the students to the techniques of project evaluation, emphasizing the evaluation of the resource, the assessment of technological aspects, and the estimation of costs.

This module has three components:

- (i) Fossil Project Evaluation--Evaluation of coal, oil, gas and uranium resources. Exploration economics. Options for negotiation with multinational corporations. Case study of coal resources evaluation in Colombia.
- (ii) Renewables--Overview of renewable resource assessment. Includes consideration of solar, wind and hydro-electric technologies, and visits to the BNL Solar House, and the BNL research project on low-cost plastic solar collectors.
- (iii) Nuclear Power--An overview of the major issues, problems and prospects for nuclear power. Includes a field trip to the Shoreham nuclear power station.

III. MODULE OUTLINES (continued)

10. Energy and Macroeconomic Development

Serves to expose the student to the relationships between energy and macroeconomic development, with particular emphasis on balance of payments problems, the impact of energy management on export performance, and the role of energy in a constrained economy. The Sudan is used as the Case Study. The macroeconomic implications of oil and natural gas discovery in a country previously wholly dependent on oil imports are given special emphasis.

11. Investment Planning

The objective of this module is to expose the student to the theoretical and practical dimensions of investment planning, and includes a field trip to the First Boston Corporation for discussions with the members of the New York investment banking community. Discussion of capital planning and budgeting. An energy sector investment plan for the Dominican Republic is used as a Case Study.

IV. TRAINING MATERIALS

To date, 4 monographs have been prepared for the program, which serve as the basic texts:

1. Energy Planning for Developing Countries: An Introduction to Quantitative Methods which covers the general analytical framework for national energy planning and the material covered in the tutorials.
2. Energy Pricing used as the text for the Pricing module of the core curriculum.
3. Industrial Energy Conservation used as the text for the Industrial Energy Management module.
4. Fossil Resource Assessment used in the Project Evaluation module.

A fifth monograph is currently in preparation, to cover rural energy management and renewable energy.

In addition to the monographs, the participants are given numerous readings to complement material presented by the class lecturers. Such complementary readings include:

- o Case studies of project evaluations prepared by the Economic Development Institute of the World Bank.
- o Technical papers, conference proceedings, journal articles.
- o Examples of National Energy plans, energy assessments, and policy documents for developing countries.

ENERGY MANAGEMENT TRAINING PROGRAM FALL 1982

Tentative #2 1/6/82

	SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1	SEPTEMBER WEEKLY THEME INTRODUCTION	19 BNL ORIENTATION [STAFF] WELCOME LUNCH GUEST SPEAKER P.M. FREE (Driver Checkout)	20 COURSE OVERVIEW [MEIER] THE PLANNING PROCESS BNL TOUR	21 RES [MEIER]	22 ENERGY DATA [CHATTERJEE] TUTORIAL-1 MICROECONOMICS	23 D.R. CASE STUDY [NATHANS]	24 TUTORIAL-II LINEAR PROGRAMMING
2	ENERGY PLANNING & ASSESSMENT	26 PETROLEUM SECTOR [MEIER] TUTORIAL-111 INVESTMENT CRITERIA	27 TRANSPORTATION [CARROLL] AGRICULTURE [MUBAYI]	28 ELECTRIC SECTOR [ALLENLUCK]	29 NUCLEAR POWER [KATO]	30 OCTOBER ENERGY ASSESSMENT & PLANNING [MEIER] COUNTRY PRESENTATIONS	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 OPTIONAL PRESENTATIONS
3	PRICING	3 ← PRICING [MUNASINGHE]	4	5	6	7 ← TUNISIA CASE STUDY [PRICING, MEIER] LUNCH: COUNTRY PRESENTATIONS	8 → D.R. CASE STUDY [NATHANS]
4	SECTORAL MANAGEMENT	10 ← INDUSTRIAL ENERGY MANAGEMENT [TUNNAH]	11	12	13	14 → RURAL ENERGY [MUBAYI] LUNCH: CORLIN COUNTRY PRESENTATIONS	15
5	PROJECT EVALUATION	17 → SUDAN REFINERY EVALUATION [MEIER]	18	19 ← FOSSIL RESOURCE [PETRICK]	20	21 → RENEWABLES [JHIRAD]	22
6	ENERGY & ECONOMIC DEVELOPMENT	24 INTRODUCTION [MEIER]	25 U.N.D.P. NEW YORK	26 OPEN	27 PORTUGAL CASE STUDY [MUBAYI] LUNCH: WEINER COUNTRY PRESENTATIONS	28	29 → SUDAN CASE STUDY [SHAIKH]
7	INVESTMENT PLANNING	31 NOVEMBER CAPITAL PLANNING & BUDGETING [MEIER] OPEN	1 D.R. CASE STUDY INVESTMENT PLANNING [SHAIKH]	2 FIRST BOSTON	3 COUNTRY PRESENTATIONS FINAL REVIEW	4	5 PARTICIPANTS' FINAL PREPARATIONS FOR WASHINGTON, D.C. TRIP 6 TRAVEL TO D.C.
8	WASHINGTON D.C.	7 WASH. WORLD BANK	8 WASH. U.S.A.I.D.	9 WASH. EXPORT-IMPORT BANK CLOSING DINNER	10	11 DEPART D.C.	12
							13

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APPENDIX E

Seminar on Industrial Energy Management for the ASEAN Countries

SEMINAR ON INDUSTRIAL ENERGY MANAGEMENT
FOR THE ASEAN COUNTRIES
January 11-15, 1982
Manila, Philippines

PROGRAM

Monday, January 11

9:00 am - 10:00 am .OPENING CEREMONIES

10:00 am - 10:30 am Coffee Break

FIRST SESSION

10:30 am - 12:30 pm Industrial Energy Management (IEM)
Alan Strebb
Introduction to the central issues involved
in IEM as an area of critical concern
The structure of IEM program from a national
perspective, government incentives to create
such programs, and fiscal incentives for
energy conservation,

Questions and Discussion

12:30 pm - 2:00 pm Lunch

SECOND SESSION

Chairman: Orlando Galang
Philippines

2:00 pm - 5:00 pm Energy Management in Asean
Countries

A review of industrial energy management
programs in each of the Asean nations
by a government representative. The patterns
of energy consumption in industry. The
scale of industrial development, age of
capital stock, technical processes in place
and their relation to energy conservation
opportunities. The perceived needs for
industrial energy management from the point-
of-view of each nation.

Presentation of Country Papers

- Philippines - Indonesia - Malaysia

Tuesday, January 12

9:00 am - 10:30 am Presentations Continued

- Singapore - Thailand

10:30 am Coffee Break

THIRD SESSION

Chairman: Indonesia

11:00 am - 12:30 pm

Commercial and Building Experience

Sam Berman

A detailed analysis of the impact of energy management programs in the commercial sector, particularly buildings. Discussion will focus on the technical analysis potential sources for finance and the implementation of commercial energy management programs and the criteria by which these were judged as appropriate investments in specific enterprises.

Discussion

12:30 pm - 2:00 pm

Lunch

FOURTH SESSION

Chairman: Indonesia

2:00 pm

Open Discussions:

Finance and Investment - Barry Tunnah, T. Owen Carroll (moderators)

Group discussion of finance and investment packages for different types of energy conservation equipment and projects, the difficulty of "selling" improved energy efficiency, acceptable payback periods and discount rates, enterprise energy investment from the diverse perspectives of the firm, the banker, and government.

(3:00 pm
Coffee Break)

Institutional Issues - Sam Berman, Allen Strabb (moderators)

Group discussion of government - industry cooperation, the structure of government incentives, realistic targets for industrial energy consumption, demonstration programs, the government role in financing industrial energy management

Wednesday, January 31

FIFTH SESSION

Chairman: Malaysia

9:00 am

Industry Experience - Gerald Decker (Moderator)

A detailed analysis of the impact of an IEM program in the chemicals industry. Particular focus will be upon the mechanisms for financing of IEM programs and the criteria by which these were judged as appropriate investments within the industry. In addition, discussion will illustrate the financial viability of the project.

(10:30 am
Coffee Break)

Discussion

12:00 pm - 1:30 pm

Lunch

SIXTH SESSION

Chairman: Malaysia

1:30 pm

Program Development for Industrial Energy Management - Group Discussions

The seminar participants will be divided into two groups for in-depth discussion of their area of interest and responsibility.

Energy Analysis at the Enterprise -

Chairman: Barry Tunnah

A brief introduction to the theory and mechanics of IEM. The basic considerations of energy use and management such as thermodynamic principles and energy-use record keeping and auditing. Energy conservation techniques that require no capital investment, such as improving maintenance and creating energy-use awareness. Other techniques requiring a minimal investment such as waste heat recuperation and electrical heat leveling will also be covered. The presentation will conclude with a review of engineering economics including pay-back period and rate of return analysis, the basis for making decisions about energy conservation measures.

(3:30 pm
Coffee Break)

Government-Industrial Energy Management Programs

Chairman: Gerald Decker, Douglas Harvey

The process of setting up energy management programs. Reporting needs, analytical procedures, employee/management roles, examples of corporate conservation programs, technical factors in fuel substitution and use of renewables, target setting procedures and results, actions that government can take. Case studies illustrating different approaches to implementation.

Joint industry - government commissions for target setting and their effectiveness. The use of government-secured and direct loans to encourage conservation investment. National versus

enterprise benefits to industrial energy management and the appropriate level of intervention on the part of government. Mechanisms for the encouragement of industrial energy management (pricing policy, targets, loans) and their use within alternative enterprise ownership (national, private, multinational) and governmental structures.

Thursday, January 14 SEVENTH SESSION Chairman: Singapore

9:00 am

Barriers to Implementing Industrial Energy Management - Panel Discussion: Panel made up of one representative from each Asean country summarize programmatic recommendations and discuss the major issues in initiating programs of industrial energy management in the Asean countries. From the perspective of the enterprise, finance and investment analysis - business tax credits, commercial and government secured loans, supplier credits, international assistance. From the perspective of government, institutional cooperation - the rate of national and international organizations, the value of subsidized demonstration projects in industry, the use of target-setting or other priority programs by national government. National, regional, and international organizations and their contribution to training needs and to the establishment of cooperative ventures for the demonstration of techniques and programs of industrial energy management

(10:30 am
Coffee Break)

12:00 am - 1:30 pm Lunch

EIGHT SESSION Chairman: Singapore

1:30 pm

Industrial Site Visit
In order to gain a sense for the equipment, processes, hardware and various aspects of plant operations, an industrial site visit is imperative. Decision-makers considering IEM programs will be given a firsthand look at energy conservation equipment, which will enhance their understanding of IEM.

Friday, January 15 NINTH SESSION Chairman: Thailand

8:30 am

Increasing the Number of Industrial Energy Managers in Southeast Asia: Discussion (UNIDO)

Defining the need for Industrial Energy Managers in Southeast Asia and the level of expertise required in enterprise and government activities. The role of existing institutions such as government training centers, private or public management institutes, universities, and regional centers in providing training. Seminar participants will be asked to prepare a list of organizations and their existing and/or potential capability to provide industrial energy management training. Programs of government - industry cooperation. Financial support that might be required to initiate programs in the Southeast Asia countries. The actions required of national and regional, industrial and governmental organizations, and the international assistance agencies such as UNIDO, UNDP, USAID, in stimulating the development of industrial energy management.

(10:30 am
Coffee Break)

12:00 pm - 1:30 pm Lunch
1:30 pm - Discussion continued
3:00 pm CLOSING CEREMONIES

APPENDIX F

Memorandum, January 30, 1982, IER Evaluation of
Philippines Seminar

Institute for Energy Research
State University of New York at Stony Brook
Stony Brook, NY 11794
telephone: (516) 246-8230

Stony Brook

MEMORANDUM

To Robert Nathans
From T. O. Carroll
Subject Evaluation of Industrial Energy Management Training Seminar, Philippines,
January 11-15
Date January 30, 1982

Unfortunately it was not possible for me to get agreement with the UNIDO people on the seminar evaluation form in time, so no formal participant evaluation was possible. However, I did talk directly with a number of participants and am passing along their comments. The overall impressions of most, if not all, the UNIDO, Asian Development Bank, and LDC participants were quite favorable. Ms. Irene Lorenzo of UNIDO was particularly pleased with the content of talks and the level of discussion they stimulated. Rather than talk about what should be done, we were able to focus in the discussion on specific countries and specific programs, and asked the LDC participants to discuss the barriers in their countries to pursuing industrial conservation policies.

Now for the summary of participant comments.

Mr. Soemodinoto of the Indonesian delegation was surprised at the level of participation we expected, and obtained, from his and other delegations (that is, their daily presentations). Apparently they are used to just listening. He expressed the opinion that we were successful in providing basic ideas for discussion through our speakers and were very successful at leading discussion around to issues the Southeast Asia representatives need to talk about — tax incentives, pricing policy, investment credits, regional engineering and technical organizations. He did seem disappointed that there remains so much disparity between levels of industrial development and concern with industrial energy in the U.S. as opposed to the ASEAN nations.

Mr. Aksaranan of Thailand represented their private sector. (With the exception of the Philippines, few private sector managers were in attendance. In the future, greater efforts should be directed to the private sector; they have important things to say.) He found the seminar very interesting but directed more toward government policy questions than to the immediate concerns of private companies. For example, he noted that discussion of investment credits for energy conservation is at present less an issue than overall capital imports policy. Nonetheless he felt the dialogue we got going between government and private sector was very useful.

Incidentally, my own presentation on tax and investment credits created quite a discussion. Mr. Mustapha from Malaysia agreed that countries like his faced difficult choices between tax and investment credits and that stronger incentives were necessary. He would have liked more time spent on the subject. Mr. Hing of Singapore, on the other hand, noted that his country has been so aggressive and forward-looking that most of what I discussed was already existing policy. He would have preferred to hear more on how to operate an energy-efficient industry. Of the delegations, Singapore seemed to feel they had the least to learn but much to give to other ASEAN countries — they may be right, but I understand that people from Singapore always think of themselves as a developed, not a developing, country.

Mr. Jerry Decker (Kaiser, formerly Dow) received many favorable comments from participants on his incisive talk. The way he puts it, industry wants to make money, and governments come and go while industry continues. Industries have a longer planning horizon than most national governments.

Mr. Beltran, Vice President of Marinduque Mining and Industrial Corporation in Manila, corroborated this view. He cited specific instances of conflicts between having tax incentives for industrial conservation and still retaining barriers to loans to support energy conservation equipment purchases, thereby raising the need for comprehensive government policy in the area of industrial energy conservation. He felt the talks did not go into enough detail on this issue.

Some other comments:

Mr. James Crooke, UNIDO, New York — He seemed genuinely pleased that the speakers were clearly well-versed in their areas of expertise and had very wide experience in the developing countries. He specifically noted that we obtained far more interaction from participants than is typical of meetings he attends and that we had some agreement on desired programs for the region.

Dr. V.V. Desai, Asian Development Bank — He expressed general satisfaction with the parts of the seminar he attended. He specifically mentioned the vitality of discussion between government leaders and private sector managers, their clear airing of differences between perceptions of economic and social good and, in this context, the desirable policy actions in industrial energy management.

Mr. A.L. Tolentino, Development Academy of the Philippines — Very impressed by the level and quality of speakers, their frank views of government-industry cooperation, and the range of discussion they provoked among all participants.

Mr. L. P. Wood, Dole Philippines - Too much focus on government role; not enough private sector participation from other countries.

Mr. I. S. Umar, Ministry of Industry, Indonesia - Would have preferred more speakers from U.S. and Europe and less discussion among the ASEAN countries. Feels much to learn; Indonesia has no conservation policy.

Ms. K. D. Perumal, Malaysian Industrial Development Authority - Found ideas for government policy the most helpful, since Ministry is now considering action.

Mr. S. H. Teong, Singapore National Iron and Steel Mills Ltd. - Meeting was interesting but did not seem to provide any information they did not already have.

Mr. K. Bejraputra, Thailand National Energy Administration - Felt the meeting was exceptionally valuable in providing ideas for his government, particularly a good picture of recent actions by other ASEAN governments.

To summarize, everyone felt the technical competence of the speakers was uniformly good. Sam Berman and Barry Tunnah, they felt, were a bit theoretical. Jerry Decker's down-to-earth approach went over exceptionally well. Many felt we did not spend enough time on the economics and financing of energy conservation. What surprised me most was that we were able to draw out the ASEAN participants so well. The meeting closed with specific proposals to create a regional industrial energy organization.

APPENDIX G

Interview Plan for Evaluation (EMTP)

APPENDIX G

INTERVIEW PLAN FOR EVALUATION ENERGY MANAGEMENT TRAINING PROGRAM

OVERVIEW

This interview plan is to be used to guide the conduct of interviews with former students of the Energy Management Training Program (EMTP) as administered by the Institute for Energy Research at the State University of New York at Stony Brook and the National Center for the Analysis of Energy Systems at the Brookhaven National Laboratory.

Mr. Ed Wonder of International Energy Associates Limited (IEAL), under contract to the U.S. Agency for International Development (AID), will conduct interviews in the Dominican Republic, Haiti and Ecuador; Mr. Roger LeGassie of IEAL will conduct interviews in the Phillipines, Thailand, Indonesia, Egypt and Kenya.

The purpose of this plan is to ensure uniformity and completeness in the interview process: uniformity so that responses among participants and countries can be intercompared; completeness so that the value received from the investment in time and travel costs can be maximized by adequate forethought regarding the major objectives to be achieved in the interview.

The value of face-to-face interviews in eliciting significant relevant information for this evaluation process has already been validated as a result of interviews of former EMTP students conducted in Jamaica by John Kadyszewski of AID.

This interview plan can be used by AID to conduct further interviews or inquiries in a consistent and structured way, for this or other training programs of a similar character.

Where perceptions and judgments are asked for in the interview, it is important to recognize that several different points of view are operative at the same time and that the interviewee's opinion of each of these is being sought:

- The personal attitudes of the interviewee,
- His/her perception of the attitudes of supervisors, coworkers, and
- His/her perception of the governmental (official) attitude.

The interview/discussion will consist of the eight modules which are listed below and which are each discussed in greater detail in subsequent sections of this plan:

1. Explanation by the interviewer of the purpose, structure and confidentiality of the interview.
2. Factual information on the interviewee, institution, and chain of other attendees from the same country.
3. Objectives and anticipation of the interviewee and others which elicited interest in the EMTP.
4. Operation of the selection process leading to the interviewee's participation in the program.
5. Interviewee's experiences in the EMTP in the U.S. and evaluation thereof.
6. Aftermath of the training program, perceptions of actual benefits/disbenefits from the experience, and

7. Discussion of alternatives to and/or desirable restructuring of the EMTP based on item 6 above; and how the value of such future programs can be objectively monitored/ascertained in the future by both the U.S. and the participating country.

8. Summary by the interviewer of his understanding of the key opinions of the interviewee, for direct verification by the interviewee, so as to ensure accurate summarization of the results.

PURPOSE, STRUCTURE AND CONFIDENTIALITY OF THE INTERVIEW

The interviewer will briefly summarize relevant background.

- AID has supported the EMTP from 1978 to the present.
- The experimental first year (1978) has been followed by five subsequent 8-week sessions with a sixth session to begin in September.
- 195 representatives from 57 countries have experienced the program to date; of these ___ were from the interviewees country; he/she personally was in the ___ group that attended from his/her country.

AID is now considering the future of the program and needs the assistance of the interviewee in helping it decide whether to continue, restructure or terminate the program. Since the purpose of the program is and has been to assist developing nations, the interviewee's experiences in entering the program, during the training, and subsequent to his/her return, together with his opinion and judgments, represent a major input to future decisions about the program.

IEAL (the interviewer) is working for AID and is given the responsibility to correctly and objectively understand and report what the interviewee wishes to communicate.

Statements made in the interview are in confidence and only for AID's use in understanding the values and problems to be attributed to the EMTP experience. The interviewee's opinions and ideas will not be communicated as such to his supervisor, co-workers or others, nor attributed to him/her personally in any formal report.

The interviewer will then summarize the structure of the interview so that the interviewee will understand the scope and order in which the various elements are to be discussed.

Following a pause for any initial questions, and assurance of cooperation of the interviewee, the main body of the interview will begin.

INFORMATION ON THE INTERVIEWEE AND AGENCY

The interviewer will obtain or verify:

- Name, job title and employing agency of the interviewee
 - at the time of selection for the EMTP
 - subsequent to his/her return
 - currently

- Primary energy related functions of the employing agency and the interviewer's primary job functions within it for the period covered above.

- Interviewee's awareness of the chain of participants over time and his/her business or personal relationship with other attendees from the same country, both prior to and subsequent to his/her own participation in the program.

OBJECTIVES AND ANTICIPATIONS

The interviewer will ask questions to elicit a statement of the government's, supervisor's and interviewee's objectives which prompted interest in the EMTP; and anticipations regarding the benefits that would follow from participation (both personally and professionally):

- How did the interviewee become aware of the program?
- What national, professional and personal objectives did he/she believe justified his/her participation? How sharply defined were these objectives prior to attending?
- Did others (e.g., his/her supervisor, other participants) perceive the same or different objectives?
- What was the experience thought or understood to consist of?
- Which elements were expected to be of most value? To whom, and why?
- What would the participant learn how to do that could be immediately applied in the job (or a future job)? Was there interest in acquiring a specific skill, and how important was this in the decision to attend?
- Why could that not be obtained more quickly or effectively elsewhere?
- What features, if any, of the EMTP were viewed as unique or especially advantageous? Why?

- Was job advancement anticipated by the interviewee? The supervisor? How much of an advantage over others did participation give the interviewee?
- What national benefits were foreseen? How significant is energy planning in the interviewee's country?
- Was participation viewed as a single event or was a chain of participants over a number of years would be required to achieve the anticipated benefits.
- Were the reported experiences or benefits obtained by/ from prior participants a significant factor in arousing interest? Were there other such factors? Explain.

The above questions are illustrative since the exact nature of the responses cannot be know in advance. When the interviewer is satisfied that he understands the basic viewpoints being displayed here, he will proceed to the next section.

SELECTION PROCESS

The interviewer will ask the interviewee to describe his/her understanding of the selection process, first mechanistically (i.e., what were the steps involved) and then judgmentally (i.e., what was the basis for the decisions that were made in the course of the process).

The interviewer will then ask questions intended to clarify some key elements of the process:

- Was there competition to be chosen? Who determined the competitors? How? Who selected the actual attendees? How?
- Was it a random (as opposed to structured) process? Who were the key players? Why? What did they do? Why?
- Was it a closed process? Did it depend on personal friendship? Did it depend on job position? Why?
- Was it a personal initiative process? Who did the "selling"? Who had to agree? Why did it operate that way?
- Did the local AID (or other U.S.) official play a role in the process? A key role? Was that good or bad?
- Were the "right" people selected (in the total chain of participants) over the years? Should there have been fewer? More? Different skill mix? How many others should participate in the future? What kinds?
- Was the historic selection process the "right" one? How could/should it be modified? Why?

EMTP EXPERIENCE IN THE U.S.

The purpose of this section is first to elicit information on the training experience in the U.S., as recalled by the interviewee, and second to acquire his/her judgments on the quality and relevance of the experience, particularly in comparison with the objectives and anticipations discussed earlier.

The interviewee will be asked to summarize the experience. The interviewer will ask questions to focus on and clarify the following points:

- Was the course length (8 weeks) too long, too short, or about right?
- Was the class of appropriate size to allow adequate personal interaction with the instructors?
- What handouts were provided (books, reprints, lecture notes)? Were they adequate in volume, adequacy, depth, currency, later usefulness as reference materials?
- Was the curriculum as anticipated? Relevant? Of adequate depth? Balanced? Technically correct? Current? Reliant on primary and high-quality sources? Complete?
- Were the lecturers and instructors viewed as experts? High-quality professionals? Competent educators? Or inadequate? Were enough different instructors used? Too many? Or about the right number?
- Was there adequate time for personal interaction with visiting experts, or did everything depend on the lecture process?

- Was the country case-history part of the training a major and important part of the experience? Useful? Or a waste of time?
- What field trip experiences were provided? Which ones were valuable and why? Should there have been more? What other experiences would have been more interesting/useful if they had been provided?
- Comment on scheduling and effective use of (scarce) time during the 8-week period. Was the pace drawn-out? Too compressed? About right?
- Did the program appear to reflect any elements that were based on learning and improving from experiences with prior classes or participants?
- Was the class make-up by countries a positive feature of the program through interaction with others with similar problems? Or was there little interaction (and benefit) because backgrounds and areas of interest were too diverse?
- Please evaluate the degree to which program sponsors and instructors appeared open and responsive to criticism and suggestions for improvement. Did the interviewee see the appraisal/critique process as a serious one? Were important suggestions made? Was there any subsequent discussion or reaction?

AFTERMATH AND EVALUATION OF THE BENEFITS

The purpose of this section is to determine the actual benefits achieved (if any) as compared to expectations of benefits, and relate them to specific features of the program if possible. The in-depth focus of this part must be guided by the interviewee's responses and cannot be prepared in detail in advance; however, the interviewer will ensure that questions are raised regarding the following general areas to ensure completeness of coverage:

- Was the interviewee required to describe and evaluate the experience to his supervisor or others? To whom? What did he/she say? How was the information used?
- Did the training program contribute to the interviewee's own career advancement? How?
- What values/benefits (if any) were seen by the interviewee's supervisor? Were there specific new skills acquired which were subsequently used? Some that were not or could not be used? Identify and explain. What specific benefits to the country's energy or economic program flowed from such application?
- Were specific broader understandings of an overview/context/information sources/ or other generalized character acquired which were subsequently used? Identify and explain. What specific benefits to the country's energy or economic program flowed from such understandings?
- Were new professional or institutional contacts established that were beneficial? How have they been employed? What benefits have been achieved through them?

- Has the interviewee received other training experiences? How does the EMTP compare with such others?
- Has the interviewee, either on his/her own initiative, or through a formal institutionally-supported effort, sought to teach others the key elements he/she acquired from the EMTP? If not, why not? If so, describe and evaluate the benefits of such further dissemination of the training experience.
- Did participation in EMTP encourage the interviewee to attend other training programs?
- Has the interviewee remained in contact with and interacted with other trainees? Stony Brook/Brookhaven? Have the U.S. institutions followed up on their own initiative to determine the longer-term value of the training? Describe. Has the interviewee subsequently contacted those institutions for assistance in dealing with national problems? Discuss. Have trainees either within the country or in various countries offered subsequent assistance or information transfer among themselves? Would an organized "alumni" program be of value? How? What features should it contain?
- In summary, how did the actual product of the experience compare with the original objectives and anticipations?

ALTERNATIVE APPROACHES

Based upon the above evaluation, the interviewer will examine with the interviewee whether or not alternative training programs could potentially be of greater value; and/or how future versions of the EMTP could be substantially improved. This will involve selectively revisiting in greater depth points already raised during the interview. The questions will, however, cover the following points for completeness:

- Would alternative use of the same resources (time and \$) have been preferable? Describe the alternative. Explain the preferred benefits.
- Discuss specifically the interviewee's perception of the feasibility/value of an in-country version of the same program, managed from a central location.
- If the existing program were to be continued, and given the earlier identification of its benefits and deficiencies, specify the modifications which would deal with those deficiencies or further enhance its values.
- How should such future programs be monitored (by the country, by AID) and what measures should be used to most objectively determine their value (relative to their cost)?

SUMMARY

At this point the interviewer will summarize briefly his understanding of the main points (of evaluation and recommendations) offered by the interviewee so as to ensure that he has correctly understood and captured them. He will then express his appreciation for the cooperation and assistance of the interviewee. Finally, he will close by reemphasizing his understanding of the continuing interest of the U.S. AID in assisting the interviewee, his/her institution and country in dealing with their energy/economic program through the services and involvement of the in-country AID representative.

APPENDIX H

Interview Plan for Energy Officials/Supervisors

APPENDIX H

INTERVIEW PLAN FOR ENERGY OFFICIALS/SUPERVISORS

The following brief version of an interview plan has been prepared for IEAL's use in conducting in-country interviews with energy officials on their perceptions of national energy training needs.

In some cases, these officials may also be former or current supervisors of country participants of the Energy Management Training Program (EMTP) under the auspices of the Institute for Energy Research of the State University of New York. For those interviewees, additional questions, identified by an asterick, will specifically focus on their view of their employee's participation in the EMTP and the benefits associated with such participation.

OVERVIEW

The interviewer will express appreciation for the cooperation of the interviewee. He will provide the needed background for the discussion:

- AID has recognized the importance of planning in the establishment of objectives and priorities for national energy programs.
- In order to be of assistance to LDC's in this area, AID established the EMTP which has provided training since 1978 to 195 national participants from 57 countries. The interviewee's country has sent _____ participants to be trained.
- AID is now evaluating this experience (looking backwards) but is equally interested in determining what the primary energy planning training needs are for the future. Such future needs might be met (in whole or in part) by continuing the course, modifying it substantially, putting more emphasis on in-country training programs, or by still other approaches yet to be determined.
- IEAL is assisting AID by discussing these matters with former participants, their supervisors and key energy officials in a number of countries. IEAL will report its findings to AID.

IEAL will maintain the confidentiality of the interview at any point where the interviewee wants to go off-the-record. Otherwise, the interviewee's perspectives are particularly important when they are associated with his official role in energy matters and IEAL will wish to attribute the insights and opinions to him as a key official.

When the parties are satisfied that the objectives and ground rules of the discussion are understood on both sides, the interview will proceed.

KEY ENERGY ISSUES/ROLE OF PLANNING

The purpose of this section is to get a sense of the status of maturity of energy policy development and the role (or lack of one) for energy planning in that process.

The questions below are illustrative since the emphasis will have to vary depending on the actual status of the intersection between energy planning, policy development, and implementation measures.

The interviewer will first ask the interviewee to discuss his perceptions of the key energy issues which his country faces and with which he deals.

What is the role of planning in ongoing or needed attempts to deal with these issues?

Are all of the necessary precursors to effective planning (e.g., energy data) in place to a degree adequate to address the problems? What is missing? Is it being obtained? Why (not)?

Are objectives and priorities established? At what level and by whom? Is the governmental decision making organization adequately coordinated or are there diverse and autonomous sets of decision makers? Is the approach top-down, bottom-up, or some of both?

Are the major energy policy issues identified? Under consideration or resolved? Is the current policy still in a trial period or is it considered stable? If the former, are the key indicators for success or failure identified and under scrutiny?

Is there a relaxation of concern about energy policy because of the oil glut?

Who are the "customers" for energy planning? What products do they want? Are they satisfied with the current status and timing? How many planning centers exist and how do they interrelate? How is the planning product actually used? By whom? Are the outputs controversial or accepted? What upgrading efforts are underway?

Are current results compared with prior plans to establish an effective feed-back loop? What conclusions have been drawn? Are adjustments being made? What new needs are perceived?

This section of the interview will close when the current way planning is being used is clearly understood and the basis for discussing training needs is well established.

TRAINING NEEDS

This section is directed at identifying training needs which connect to the actual or desired use of the in-country planning function.

Are the needs for:

- Individuals (how many over what time period) with specific skills (identify) which do not now exist in any significant fashion in the governmental sector?
- Increased number of people with specific skills to supplement those already there? or,
- Integration of skills which are available but which do not yet function effectively as a unit?

Is there a problem of theory vs. practice? That is, are the people with correct training who lack experience to supplement their academic knowledge?

Are there communication problems? That is, are there enough people who can translate the output of energy analysts and planners into policy choices which decision makers can understand and confidently act on?

What training approaches are being used (in addition to the EMTP)? How do these various approaches interrelate? What are their strengths and weaknesses? Specifically what is the role of in-country universities in training? What is the plan for increasing that teaching capability and simultaneously motivating or enabling students to pursue it? What is the industry role in training? (Differentiate between external consultants, international companies who do business in the country, and in-country industry). Explain the reasons for the current approach. How is it working?

Does the current approach multiply or leverage the effectiveness of key trained individuals? Is there an "each one teach one" concept? What is the stability (turnover) of trained people? How is this being handled?

Given the statement of current needs and approaches, what would be the most desirable training approach? Why? What are the barriers to implementing it? What are the specific features and benefits being sought which are not now being adequately provided? How and over what time period is the internal capability expected to grow to the point that the major training needs can be met without significant dependence on external capabilities?

Specifically discuss and intercompare:

- External, centralized, long and short programs serving a large number of countries.
- Similar programs, but restricted to regional groupings of countries.
- In-country programs provided periodically by external experts.
- In-country programs to train people to present in-country training, thus allowing a transition to in-country programs provided periodically by in-country experts.
- Work-exchange programs (e.g., a 1-year exchange where an external expert joins the in-country team and an in-country professional is assigned to work abroad for the same time period).
- Other approaches of interest.

How should AID divide its support of energy planning training between activities integrated with projects and provided through its field activities vs. those provided centrally and specifically focused on key needs which might otherwise not be met or which require a more uniform approach across a larger set of countries?

*SUPERVISORS PERCEPTIONS

This section addresses specific perceptions of the EMTP training as seen by the supervisor of a participant.

What were the motivations to send an employee to EMTP?

How was the participant selected? Did he acquire an obligation to remain in his present job or a pre-identified new job on his return?

Did he report on his training experience to you? How? What was his view? What is your view?

Did he acquire identifiable skills that have actually been used in his subsequent job assignments? Expand? Is this what you anticipated?

Would you continue to send participants? Why (not)? With what backgrounds and for what purposes? Is there a backlog of candidates?

If the course were to be modified (emphasis in the curriculum) what changes would best meet the needs you see? Why?

Discuss funding, language, family, food, and other health considerations and/or problems involved in selecting and supporting participants for the program.

Discuss the ability to retain the employee and to otherwise maximize/leverage benefits associated with his training.

APPENDIX I

Itinerary for Interviews

APPENDIX I

INTINERY FOR INTERVIEWS

<u>Interviewer</u>	<u>Country</u>	<u>Dates (1982)</u>
Ed Wonder	Dominican Republic	August 10 - 13
Roger LeGassie	Indonesia	August 2 - 6
	Egypt	August 8 - 6
	Nairobi	August 13, 16 & 17

APPENDIX J

Interviews Targeted and Accomplished

APPENDIX J

INTERVIEWS TARGETED AND ACCOMPLISHED

Country	Individual's Name and Affiliation	Accomplished
Dominican Republic	<u>Participants:</u>	
	1. Silvio Carrasco Sub-Director, Project Riego Yaque del Norte IWDHRI	X
	2. Hector Pimental Department of Education and Communications Comision Nacional de Politica Energetica	X
	3. Elba Musalem Deputy Director, Economics Department Comision Nacional de Politica Energetica	X
	4. Gumer Estevez Head, Office of Industrial Conservation Comision Nacional de la Politica Energetica	X
	5. Ramon Jose Caro Project Analyst, Industrial Division Department of the Investment Fund for Economic Development Central Bank	X

APPENDIX J (cont.)

INTERVIEWS TARGETED AND ACCOMPLISHED

Country	Individual's Name and Affiliation	Accomplished
	6. Guarionex Hernandez Central Bank of the Dominican Republic	
	<u>Others:</u>	
	7. Jose Ramon Acosta Executive Secretary Comision Nacional de Politica Energetica	X
	8. Emmanuel Silvestre Director of Training Department of Education and Communications Comision Nacional de Politica Energetica	X
	9. Gil Ml. Canario Director, Department of Saving and Conservation Comision Nacional de Politica Energetica	X
	10. Daniel Bodden Director of Planning Corporacion Dominicana de Electricidad	X
	11. Ada Florentino de Llinas Director, Department of Science and Technology Technical Secretariat of the President	X

APPENDIX J (cont.)

INTERVIEWS TARGETED AND ACCOMPLISHED

Country	Individual's Name and Affiliation	Accomplished
	12. Cesar Gomez Director, Energy Resources Division Comision Nacional de Politica Energetica	X
	13. Allan Merrill USAID Mission	X
Indonesia	<u>Participants:</u>	
	1. Eddy Darianto Direktorat Jenderal Ketenagaan	X
	2. Ketut Kontra Power Research Center	X
	3. Koeswandi Wesito Deputy to the Assistant of Planning Ministry of Research and Technology	X
	4. Widyanarso Doeriat Assistant to the Director, Planning Directorate of Technology Development Agency for the Development and Application of Technology	X

APPENDIX J (cont.)

INTERVIEWS TARGETED AND ACCOMPLISHED

Country	Individual's Name and Affiliation	Accomplished
	5. A. J. Surjadi Head, Subdirector for Development Direktorat Jenderal Ketenagaan	
	6. Tangkas Roesad Head, Subdirector for Implementation Directorate for Energy Development Ministry of Mines and Energy	X
	7. Maraudin Pandjaitan Head, Subdirector, Energy Resources Ministry of Mines and Energy	X
	8. Izzet Zincir World Bank	X
	9. Jerome Boskins USAID Mission	X
Egypt	<u>Participants:</u>	
	1. Nihad Negm Ministry of Petroleum Economic Researcher	X
	2. Mahmoud Rashad, M.R.M. Egyptian Electricity Authority Director, Planning Department	

APPENDIX J (cont.)

INTERVIEWS TARGETED AND ACCOMPLISHED

Country	Individual's Name and Affiliation	Accomplished
	3. Mohamed Rabie Ali Nuclear Power Plants Authority	
	4. Nagui Naguib El-Gawly Senior Planning Engineer Egyptian Electricity Authority	X
	5. Adel Mahmoud Mahmoud Ibrahim Economist, Ministry of Petroleum	X
	6. Mohsen El-Kasabgy Egyptian General Petroleum Corp.	
	7. Abdel Moneim Mohamed Gabr Department of Planning Ministry of Petroleum	
	<u>Others:</u>	
	8. Janice Webber USAID Mission	X
	9. Marvin Hurley USAID Mission	X
	10. Jerry Lappitus USAID Mission	X

APPENDIX J (cont.)

INTERVIEWS TARGETED AND ACCOMPLISHED

Country	Individual's Name and Affiliation	Accomplished
Kenya	<u>Participants:</u>	
	1. Patrick Nyoike Assistant Science Secretary National Council for Science and Technology	X
	2. Christopher Aleke-Dondo National Council for Science and Technology	X
	3. Aloo Ojuka Ministry of Energy	
	4. Samuel Mathenge-Mwangi Ministry of Energy	X
	5. Francis H. Mayieka Ministry of Energy	X
	6. Absolom Nyamwanda Planning Officer Planning Division, Ministry of Energy	X
7. Priscilla Senga Assistant Secretary Ministry of Energy		

APPENDIX J (cont.)

INTERVIEWS TARGETED AND ACCOMPLISHED

Country	Individual's Name and Affiliation	Accomplished
	<u>Others:</u>	
	8. Joseph Pastic USAID Mission	X

NOTE 1: A number of former participants are also supervisors of other former participants and/or current nominees. Participant's affiliation is at time of EMTP attendance. Participants not interviewed have either left employment, were now stationed in other cities, were on leave, or (in two cases) repeatedly cancelled scheduled interviews.

NOTE 2: IEAL coverage is 19 out of 27 participants targeted plus 13 other in-country officials. AID interviews covered 6 out of 7 participants in Jamaica plus 2 other in-country officials and 3 out of 4 participants in Ecuador. Hence overall coverage in six countries is 27 participants (out of 37) plus 15 other in-country officials for a total of 42 interviews.

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APPENDIX K

Dominican Republic

1.0 INTRODUCTION

International Energy Associates Limited (IEAL) visited a number of energy and energy-related institutions in the Dominican Republic (DR) as part of the field interview portion of this review. The DR has sent four participants to the Energy Management Training Program (EMTP) (IER rolls list six, two of whom did not actually go), and has sent participants to a number of other out-of-country training programs, including the AID-sponsored program in alternative energy technologies. DR institutions have also organized short, intensive in-country training programs. The Dominican Republic offered an opportunity to obtain the views of past participants, supervisors, training officers, and officials with energy planning responsibilities on the EMTP, its relation to energy needs, and the future training strategies of DR institutions, including the roles of in- and out-of-country training.

Selecting the Dominican Republic as one of the four countries to be visited by IEAL also offered the advantage of reviewing the EMTP in the context of a country that shares a number of common energy problems with its Caribbean neighbors. These include the relative newness of energy planning; an inadequate supply of energy expertise, especially that related to planning; insufficient project management skills and interagency coordination at the planning level; as well as heavy dependence on imported oil, the depressing effect of oil prices on economic growth, and the cost and scale of the effort to alleviate economic pressures stemming from energy.

During the course of one week, IEAL interviewed personnel at the following institutions:

- Comision Nacional de Politica Energetica (COENER)
- Corporacion Dominicana de Electricidad (CDE)
- Fondo de Inversiones para el Desarrollo Economico (FIDE), Banco Central
- Instituto Nacional de Recursos Hidraulicos (INDRHI)
- Departamento de Ciencia y Tecnologica, Secretariado Technico de la Presidencia
- U.S. Agency for International Development Mission, Santo Domingo

This report is structured as follows:

- Background on energy planning in the Dominican Republic
- Energy training needs
- Training strategies and EMTP
- Participant and Supervisor views of EMTP
 - Objectives and expectations
 - Selection process
 - Experience while at EMTP
 - Aftermath and evaluation of benefits
 - Alternative approaches
- Summary findings and recommendations

2.0 BACKGROUND ON ENERGY PLANNING IN THE DOMINICAN REPUBLIC

Information on the nature of energy planning in the Dominican Republic was obtained to provide a context within which the extent to which EMTP is meeting training needs related to energy management and planning could be assessed. This context is very important, as it goes far to explaining why the training needs are derived in the particular way that they are, and the role EMTP has played so far and may play in the future in meeting them.

Although there may be considerable talk of energy planning, the concept of energy planning is very new to the Dominican Republic. The importance of energy planning has received Presidential recognition only since 1978-79, when the economic pressures of higher oil prices increased considerably. The establishment of COENER, in 1979, to serve in an advisory capacity on energy policy and planning matters is regarded as being especially important. The reality of planning falls short of the classical meaning of the term, however; one cannot speak of energy planning in the DR as entailing the setting of objectives, ranking them by priority, designing appropriate strategies within the context of technical, financial, and human resource constraints, implementation, and evaluation. Rather, there is very little interagency coordination in the energy sector, resulting in a situation where the agencies go their own way, and a strong tendency to view planning in terms of discrete projects that may not be well-related to each other or to the activities of other agencies.

A number of institutional factors help account for this situation:

- The Energy Commission itself consists of the heads of major ministries with energy-related activities, industry, and universities, backed by an Executive Secretariat with technical expertise. However, the Commission's role is advisory, and the individual members need not be bound to follow any of its recommendations except under Presidential directive. Energy planning expertise in other agencies is generally very thin, if not nonexistent.
- A tradition of strong Presidential government makes the President the ultimate client for energy planning, and the source of authority to implement a plan. His personal involvement in formulating the plan is thus very important.
- The Commission depends upon other agencies for its financial resources and approval of discrete recommendations. In this regard, the move to replace the Minister of Industry with the head of the Technical Secretariat, which houses both the budget office and the planning office, as Chairman of COENER was an important step. The new President has mentioned combining COENER and the Department of Mines to form a new Energy Ministry.
- An additional handicap, and one cited by a number of interviewees, is potential instability of personnel at the top policy and management levels of the government, in that control over who fills these positions is an important means of maintaining Presidential authority. When an official is moved or dismissed, the replacement normally brings in his own team as well, so the perturbation can be felt widely in the organization. One result of this is that a trained cadre of planners can be wiped out very quickly.

The situation described above affects energy management training needs in a number of ways, as delineated in the next section.

3.0 ENERGY TRAINING NEEDS

Although it was not possible in so short a time span to inventory training needs by specific skill categories, it was possible to obtain information on general categories of training needs, and where they exist in the DR.

Outside of strictly technical skills, to which the EMTP is not relevant, several interviewees identified two broad categories of needs as being particularly pressing:

- Project management, which is meant to include project design, cost analysis, implementation, and evaluation. The large number of unfinished projects attest to this need.
- Training of university educators, which includes establishment of a graduate level university program in energy planning (engineering plus economics) as well as more extensive inclusion of energy issues in traditional curricula.

There is, in addition and perhaps more importantly, a need for greater awareness of the energy problem and of what energy planning is. As described by COENER's training director, the latter is as much a mode of thinking as it is a set of skills. Certainly in the DR, there is a pressing need to get people to accept the ideology of planning, i.e., to think in terms of a system. The proliferation of uncoordinated projects is evidence that there is very little planning in this sense.

There are other needs as well:

- Resource management (human as well as physical).
- Investment analysis.
- Transmission and distribution planning at the electric utility (this is CDE's view; in the eyes of others CDE needs a thorough reconstruction).
- Analysis of energy price-economic development links.

These needs and variations thereof surfaced during the course of the week.

The Dominican government, with COENER as the lead agency, is presently completing a national inventory of scientific and technical skills related to energy, the extent of energy-related experience, and where in the DR these skills and reservoirs of experience are located. This survey is intended to allow more precise definition of training needs in a more systematic way than simply going project-by-project, which is the general tendency. Preliminary results of the survey indicate that people with energy related skills are widely dispersed and typically have less than 5 years of experience.

As to the two categories of needs listed above, the latter -- university education -- is to be met in a number of ways. Potentially the most significant step is the planned establishment, funds permitting, of a graduate level (M.A.) curriculum in energy affairs at the Catholic University (Santo Domingo Center), combining engineering and economics, in two years' time. No such program currently exists in the Dominican Republic, and the new program may help alleviate the serious problem that new hires at COENER and elsewhere have. While they may be trained in economics or engineering, they have little or no familiarity with energy nor do they possess energy-related skills. Opening up an

indigenous flow of people with at least the basics would allow post-university training to be highly specific and related to specific job requirements. Several high-level interviewees stated that they hoped that this university program would eliminate the need to use EMTP and other general energy programs as energy primers for beginners in the field.

Use of outside consultants is envisioned in helping to establish this program. Consultants would serve as visiting faculty actually teaching courses, and would conduct faculty development seminars. Given the already skilled backgrounds of the professors active in setting up this program, EMTP would not appear relevant to meeting this need.

The officials with whom IEAL spoke all associated EMTP with needs found in the first category, and it is a discussion of that relationship to which this report now turns.

4.0 TRAINING STRATEGIES AND EMTP

The discussion of training strategies and the role played by EMTP is structured in terms of the following considerations:

- How COENER, the principal energy planning agency, has used the EMTP, and how it intends to use EMTP in the future;
- The attitudes of other agencies towards EMTP; and
- Views on the respective roles of in- and out-of-country training.

4.1 EMTP AND COENER

Two personnel from COENER have attended EMTP (a third was unable at the last minute to attend due to illness), another will attend the Fall 1982 session, while two more have attended special programs at IER for training on the al-Edis computerized energy information and assessment system to be set up by Nathans consulting firm in the DR. The latter two attended those EMTP sessions during which al-Edis was used. Exposure to al-Edis is considered by the head of COENER to be a significant benefit of the EMTP, although he observed that EMTP might be less valuable were the DR not planning to adopt al-Edis.

The principal way in which COENER has used EMTP is as a primer on energy for new hires with little or no energy background. COENER expanded very rapidly during 1979-82, and many of its recruits lacked an energy background. All four of the COENER participants

(including the one prevented by illness from going) fit this pattern. In the view of COENER's director, the general training at EMTP would lay the groundwork for the more specialized training needed later.

None of the three who actually have or will go to EMTP are employed in a planning capacity. Two are at the level of technician, while the third is Head of the Department of Industrial Conservation, where he is primarily concerned with energy audits and finding ways for industries to save energy. (COENER can act as a consultant to individual industries.) Their responsibilities, thus, are specific in nature and project-related, and their views of EMTP, discussed later, reflect this.

COENER apparently is less interested in sending additional people to the EMTP in the future. Staff growth has slowed considerably, recruiting criteria emphasize an energy background, and in-house training has reached a large share of the staff, thus reducing the need for EMTP. The Director of COENER explicitly stated that his agency will make less use of EMTP in the future, and that he will attempt to persuade other agencies with which COENER works in the energy area, and which lack the necessary energy management skills to enable them to evaluate energy projects or matters or to interact effectively with COENER, to send people to EMTO. If this occurs, one can expect a shift in origin of Dominican participants, possibly towards FIDE, which the COENER director believes is in particular need of such training.

4.2 OTHER AGENCIES AND EMTP

Shortness of time prevented a thorough canvassing of other agencies' views towards EMTP. An effort was made to talk to some of the most interested parties, however.

FIDE has sent one participant (Spring 1980), who remains that agency's principal (and perhaps sole) energy expert. According to this person, FIDE wants to send another participant in the future, and had not done so in the interim because of poor English capabilities of the staff. FIDE evaluates industrial, agricultural, and livestock projects for investment funding and includes energy conservation measures as one of its guidelines for evaluating proposals. The EMTP-trained person evaluates proposed projects from an energy consumption/conservation point of view. Language and time prevented interviews with higher-level officials at FIDE.

The electric utility theoretically could be a candidate for sending someone to EMTP, in view of its planning and management problems, and its concept of its role as building new capacity and ignoring conservation. The Director of Planning at CDE, however, was only generally aware of the EMTP (he claimed I was the first to ask him about it), and when I described it to him, concluded that it was too general for his needs. Nevertheless, a conservation official at COENER stated that CDE could indeed benefit from EMTP if the exposure to conservation in the EMTP could help convince CDE planners of the merits of giving conservation greater weight. Presumably, this would require a relatively high-level official at CDE to attend (as opposed to a technician) if this effect was to be realized, but it would be difficult to spare such a person for 2 months.

The Director of the Department of Science and Technology in the Technical Secretariat was aware of the EMTP in general terms, and did not regard it, or other overview-type courses, as effectively addressing Dominican needs. (She is a principal advisor to COENER's manpower survey.) While she believes that non-COENER personnel could use EMTP as a primer on energy, they would still need more specific training. In general, the Director dislikes

lecture-heavy courses, and prefers on-the-job, learn-by-doing type training of specialists (both at home and abroad) who can then be organized in teams. In general, she believes "awareness" needs can be met just as effectively, and for more people, on an in-country basis. Using outside consultants as needed for general overview type in-country courses is, according to her, a viable alternative to EMTP.

4.3 IN- VS. OUT-OF-COUNTRY TRAINING

Although all the interviewees stated that both types of training are necessary and play complementary roles, there was a universal preference for in-country training. This preference stems from a number of considerations:

- The cost of sending someone abroad (estimated at CDE to be in the \$6,000-\$8000/man range for a two-month course), coupled with the need to obtain outside donor funding to do so.
- An ability to reach much larger numbers of people.
- An ability to define the focus and level of intensity of the course (i.e., exercise greater control over the training).

Although there is no necessary reason for in-country training to be more specific than out-of-country programs, those interviewed tended to associate specificity with in-country programs, although relevance may be what they really intended to convey.

Out-of-country programs are seen as having two principal merits.

The particular training involved is unique or cannot be duplicated on an in-country basis using outside consultants; and

The presence of participants from other countries provides an opportunity to compare national experience, and specifically to obtain information for use in (in)validating similar Dominican projects or identify possible new approaches. As discussed later, there is a preference for regional programs.

Applying these two criteria to EMTP, most interviewees did not believe that EMTP could not be duplicated on an in-country basis, and while exposure to foreign experience and participants was frequently cited as a major benefit of EMTP, very little effort had been made to establish and maintain professional contacts with other EMTP participants.

One point that bears mentioning is the availability of donor funding. Programs with scholarships, etc., will be used even if only generally relevant to actual Dominican needs, and there is potential for the availability of money to shape a training strategy rather than needs per se.

5.0 PARTICIPANT AND SUPERVISOR VIEWS OF EMTP

5.1 OBJECTIVES AND EXPECTATIONS

As stated previously, COENER has used the EMTP as a primer on energy for beginners in the field. The Instituto Superior de Agricultura, an educational institution that sent the first Dominican participant to EMTP in 1978, wanted a faculty member trained in energy, but with no specific purpose or application in mind. This institute does not figure into Dominican plans for future use of EMTP. FIDE, upon the urging of the AID Mission and COENER, decided that it could use an "energy expert" as it moved into funding energy projects. Using EMTP to introduce additional project analysts to the energy field will be the principal FIDE motive in sending future participants to EMTP. Thus, in every case, Dominican institutions have used EMTP as a primer for people who would not be directly involved in energy planning upon their return to the DR, but whose responsibilities would be very much project related.

The personal objectives of the participants reflect a number of considerations. Two participants (one who went but decided not to go into energy work, and the one who was prevented by illness from attending) saw EMTP as an opportunity to change or alter their career paths. Energy was seen as a "hot" topic. The others (the two at COENER and the one at FIDE) saw an opportunity to pick up skills that could be used on the job upon return. Energy conservation/auditing for the industrial sector was their

principal area of interest. Every participant expected the course to be more specific and more skill acquisition-oriented than it was. There apparently was an expectation that, because their own jobs were or would be (in the case of a new hire) project specific, the EMTP would be similarly specific to their own job needs. The mismatch between this expectation and actual experience at EMTP was a source of disappointment, and this is related to COENER's lower level of interest in sending its own people to EMTP in the future.

It did not appear that personal objectives were well defined in advance of going, or that the participants had a clear notion of the actual nature of the course. Given the real need for a primer-type introduction to energy, it is not self-evident that a clearer understanding that EMTP did not teach specific skills would have dissuaded the participants from going, although no participant stated that obtaining a general introduction to the energy field was his primary motive for going.

The question of whether a "chain" of participants from a particular agency was foreseen requires some care in evaluating. The Director of COENER did tell Nathans that he intended to send several people from his industrial conservation department, and the actual COENER participants have come from this division. This approach reflects, however, a perceived scarcity of training opportunities for people in this particular area (as opposed to alternative energy sources, where there are several courses from which to choose). In-country training under a new AID-funded industrial conservation program for the DR will supplant this role for EMTP. It is not clear that other institutions think in terms of a "chain".

5.2 SELECTION PROCESS

COENER, and specifically Ing. Acosta, its Executive Secretary, screen the applicants for both EMTP and Gainesville. There are

perhaps 6 applicants for each course per year. This has created a situation in which COENER has used EMTP for upgrading its staff during a period of rapid growth, and the Mission recognizes that it will have to make greater efforts to encourage other agencies to provide applicants. The Executive Director, in consultation with Division Heads, makes the final selection.

Although a couple of applicants mentioned seeing brochures on the course, it appears that the most effective way of generating applicants, especially from agencies most in need of "energy awareness", would be direct personal contact between the AID Mission and/or COENER with division heads or the equivalent of the particular agency. This may require a somewhat more active role, in this connection, for the Mission, which appears to rely heavily on COENER, at least for screening the applicants. (The Mission does comment on the choices where necessary.)

It would be especially important that the exact nature of the training be communicated clearly to avoid misperceptions on the part of participants and their agencies as to what it entails. As noted, there has been a mismatch between expectations and actual experience.

The selection phase is also the stage at which potential problems in the form of possible discrepancies between the kind of participant actually being sent and AID-Washington's concept of the target for the course must be resolved. For example, if AID-Washington intends EMTP to reach actual energy planners, and not technicians, then there clearly is a problem with the selection process in the DR, as the course is definitely not reaching those in a planning capacity. Several high-level officials interviewed by IEAL observed that it would be very difficult to send such a person abroad for 2-3 months, since work in that person's department could be adversely affected. However, if the course

actually taught planning skills, there might be greater willingness to accept this risk. No one thought EMTP, as presently constituted, justified this.

5.3 EXPERIENCE WHILE AT EMTP

It proved difficult to obtain specific information on this area for a number of reasons:

- While participants and supervisors expressed general views on what is taught, these were seriously lacking in concreteness, and it appeared that little by way of systematic review and evaluation of the experience had taken place.
- There appeared to have been surprisingly little in-depth intra-office discussion of EMTP, even between past and prospective participants and other interested parties. The impression obtained by IEAL was that the course was something one attended and then put behind you.
- There may have been a reluctance to discuss the course in detail with an outsider.

Reported here, then, are general recollections.

No participant, except for the one who went in 1978 and who criticized the high number of guest lecturers, spoke ill of the course. There was disagreement among participants as to the length of the course, but there were no strenuous criticisms on this point. Class materials were regarded as useful, although one 1980 participant is still waiting to receive missing lectures from Stony Brook. (He has not sent a written request for them, either.) The COENER and FIDE participants said they have referred to the materials while on the job, and have shown them to others. None criticized or questioned the competence of the lecturers, although Meier is more highly and uniformly respected than Nathans.

The above recollections must be viewed with some caution. The participants interviewed did not appear to be "complainers" or prone to criticize. Rather, their principal point was that the course was too general and did not sufficiently relate to their jobs and to the skills needed for their jobs. One participant and his supervisor expected training in actually performing energy audits for industrial facilities to be provided. This is an example of a serious mismatch between expectation and experience, and this in a division which had sent someone to EMTP the previous year and should have been better aware of EMTP's nature.

While criticism of specific aspects of the course may be absent, there is an apparent lack of enthusiasm about it. The course is viewed as appropriate for beginners only. Those seeking to acquire specific skills were inevitably disappointed.

As to other aspects of the course, the Kenya case study was well-received primarily because it is based on the al-Edis computer program which is to be used in the DR. (Contrary to Nathans' claim that al-Edis is used only briefly in the course, IEAL was told the Kenya case study ran for one week, and that al-Edis was the only computer program used in the course.) The field experiences were regarded as satisfactory, although without great enthusiasm, and the principal benefit cited was the opportunity to meet people at DOE, AID, and Washington-based financial institutions. The pedagogical effects of field trips appear to have been minimal.

The participants expressed preference for a regional approach to the course, both substantively and in terms of student composition. Shared languages, problems, and traditions in Latin America were the principal reasons given for this. The participants felt that greater opportunity for making professional contacts would occur (only one of the three working in the energy

area established such contacts, and then with a Colombian), and the working groups would function much more effectively. Despite screening for language abilities, this appears to be a problem, and one past participant had great difficulty communicating in English with the interviewer, and may have been similarly handicapped while at EMTP. A regional make-up of the students would also ease some inter-cultural frictions.

It should be pointed out that one supervisor saw merit in a global approach to the course, in that he felt exposure to non-Latin problems and practices could help jar some traditional Latin ways of looking at things.

5.4 AFTERMATH AND EVALUATION OF BENEFITS

As a whole, the participants and supervisors were moderately satisfied with EMTP. The major reasons for this have already been alluded to. What follows below is information answering the questions in this section of the interview plan.

One area of interest is evaluation of the experience upon return home. The participants from COENER do submit a written report and also speak to interested staff about their experience at EMTP. This is about as systematic as the process gets, and surprisingly little informal discussion among peers appears to have taken place.

It is not easy to ascertain the effect of participation in EMTP on career advancement, given its use as a means of initiation into the energy area. However, COENER is making an effort to see that division and department heads receive intensive out-of-country training (e.g., Gainesville, Bariloche, Turin). EMTP may be too general to have a significant impact on promotion, although the Director of COENER's Conservation Division did say that EMTP would help a person's chances for promotion.

As noted earlier, few if any specific skills were acquired at EMTP. Therefore, while supervisors believe that people without an energy background must acquire it somehow, they did not believe that EMTP would materially improve how their subordinates did their jobs. The supervisor of the two people working in the conservation area stated that the course is insufficient for technicians, who need highly specific training.

While all agreed that the course was interesting and informative as to the general energy picture and the principal components of energy planning and strategy (without teaching how to do any of those components) few aspects of this general understanding were applied to the job. Even then, this was more as background knowledge. The people attending the program, at least at COENER, were not at a level of responsibility where this general knowledge might have been more relevant to their jobs. The participant from FIDE may have benefited more from this general exposure, but he also complained of not learning any techniques beyond the most basic.

This general character also has inhibited efforts to teach others what was learned at EMTP. None of the participants felt it was possible to teach others such general material, although no formal effort to do so had been made. The AID Mission concurred that EMTP has no multiplier effect.

Whether a participant recommends the course to others depends upon the latter's qualifications in energy. Some of those interviewed have recommended EMTP to people with little or no background, but have discouraged those with experience from attending.

While systematic comparison by the participants of EMTP with other courses elsewhere does not seem to have occurred, there is

greater interest in specific courses like the ones given at Turin by the International Labor Organization (ILO) (various topics) and at Bariloche (especially the Economics of Energy course). COENER's training department is trying to improve the screening of programs.

5.5 ALTERNATIVE APPROACHES

Even less thought appears to have been given to possible improvements in the EMTP or to possible alternative training approaches. No one said the program should be scrapped, as they believe it fills a niche in a training strategy. Everyone also said it should be made more specific, but they either had no clear idea of just how this should be done, or recommended changes whose substance stemmed from their own job requirements (e.g., more time on conservation, teach energy audits). What follows are recommendations drawn from or based on the interviews that appear to merit more careful consideration by AID.

A number of interviewees identified what they considered to be the major components of a more specific (e.g., useful) course. These components, clustered together as identified by the interviewee, are presented below:

1. Investment models
Project evaluation/cost analysis
Demand forecasting
2. Project design and cost analysis
Project evaluation
Project management
3. Project design, management, evaluation related to electricity transmission and distribution. (This clearly represents a special need at CDE).

In general, the interviewees wished to see more resources made available for in-country short courses and for occasional out-of-country training. However, EMTP was not mentioned in the latter context (at least at COENER). In sum, the interviewees did not appear to have given the question of alternative uses of AID's resources much thought.

As to an in-country version of EMTP, some thought an outside consultant(s) could be brought in, but how this would be done is rather important.

- Although more people could be reached this way, work vs. training conflicts could be serious if people had to be freed from their jobs. While 1-2 people per year can be so released, freeing 20-40 could easily remove an entire cadre of energy experts, in a country having few of them, from the operations of their respective agencies.
- The course could be taught at a university as a regular semester-long course, but care must be taken to ascertain the receptiveness of the university to this, as energy planning is interdisciplinary by nature, which is probably quite unorthodox at many universities. In the DR, the Catholic University is eager to begin a degree program, and will house it at its Santo Domingo Center. (This university is actually based in Santiago). The local university has shown very little interest in the energy field. Moreover, attending a university course on one's own time could be difficult for some.
- It may be difficult to draw a large audience for a lengthy general course. People want job-related training. A true energy planning course would still be of interest to only a few high-level people.
- An in-country version would trade-off potentially greater numbers vs. exposure to foreign counterparts and experience. This exposure was cited as one of the major benefits of EMTP. (Although it is really a benefit of out-of-country training, not EMTP per se.)

Other than to say that EMTP should be made more specific, there were few concrete suggestions as to how it could be improved.

When asked what modules they would include, the participants invariably listed those that already comprised the course. Supervisors wanted more job-specific training.

6.0 SUMMARY FINDINGS AND RECOMMENDATIONS

The EMTP is filling a niche in the DR for introductory training in energy problems and planning. Whether this is the role intended for it by AID-Washington, or the most effective use of the resources, is questionable.

- It is doubtful that sending technicians to EMTP either really meets their needs (which are for job-related skills) or, given this level of person, improves the functioning of their agencies in the planning area.
- Even if introductory training is an acceptable role for EMTP, only a handful of people in each country can be reached on an out-of-country basis, with little apparent multiplier effect upon their return home.
- Persons at a level of greater responsibility may need such primer-type training as well, but the absence of any transfer of specific skills may minimize the impact on job performance. It is also more difficult to ascertain the impact of more generalized understandings, and this particular point should not be decided hastily.
- As an introductory course, EMTP plays a role normally filled by graduate education in developed countries. As university programs develop in LDCs, the need for EMTP becomes more time-limited. Developing relevant local university resources, which could train more people per country than could EMTP, may be a worthy claimant on AID financial resources.

If AID continues a modified EMTP, or if it establishes a new planning course elsewhere, several recommendations merit attention.

- The course should not try to cover the universe of energy. Economic and technical skills related to project design and evaluation might be the principal focus.
- There must be greater effort to convey clearly and accurately to prospective client agencies just what the course entails and is intended to accomplish, and what kinds of participants (level), responsibility, background, and experience are appropriate to the course. This may require a more active role on the part of the local AID mission; as brochures, etc., are inadequate for this task. Greater communication might help avoid the mismatches between expectations and experience found in the DR.
- There should be an understanding with the sending agency that the person being sent will be used in a planning capacity on return home. This would help ensure that the right people are being sent. AID/the course-giver should follow up after 2 years to reestablish contact with the participant to see what that person is doing, how course materials are being used, etc. (Stony Brook has not done this.)
- Greater attention should be given to training the occupants of certain job categories or key positions as a way of providing more effective support to an energy agency. High mobility among personnel (due to political changes or better offers elsewhere) can mean an agency can quickly lose a well-trained individual. The local AID Mission would play an important role in such "targeting".
- "Tourism" type field trips are of little use, as most students want to do something more than look at a generating plant. A particular agency's or company's planning procedures may be of greater interest and value.
- A regional approach to out-of-country training may be preferable. At least where Latin America is concerned, the course should be given in Spanish. There is simply a limit to the depth of understanding for many students if the course is in English.

APPENDIX L

Energy Prices in Egypt

memorandum

ENERGY PRICES IN EGYPT ^{/1}INTRODUCTION

For budget, balance of payments and allocative efficiency reasons, USAID and other organizations have made the adjustment of Egyptian energy prices towards their international price equivalents a primary focus of efforts at policy reform. Currently these prices range between 7 percent and 77 percent of their international market price equivalents. As these figures suggest, the problem is sector-wide in coverage, the gaps are wide, they differ across products and adjustment simply can't be expected to take place without phasing and flexibility. Moreover, all of the donors agree that broad movement on energy prices as a whole is far more important than movement on a particular price associated with a particular project, e.g., electricity and natural gas projects.

A QUANTIFIABLE PERFORMANCE MEASURE

The issue is how to devise an operationally useful, quantitative standard against which performance can be measured and targets defined. Such a measure should satisfy a number of properties. In particular, it should be:

- 1) simple to calculate;
- 2) encompass all energy products consumed, appropriately weighted by the magnitude of the price gap for each product;
- 3) useful both as a basis for setting targets and measuring performance for programming purposes;
- 4) flexible in the sense that it would allow some discretion on the part of the GOE with respect to the choice of energy prices to be increased.



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OPTIONAL FORM NO. 10
(REV. 7-76)
GSA FPMR (41 CFR) 101-11.6
5010-112

The Energy Price Criterion (EPC) set forth below is one likely candidate:

$$(1) \text{ EPC}_{\text{EF}} = 1 - \frac{\sum (PE_{\text{EF}} - PE_{\text{ET}}) \text{VOL}_{\text{EF}}}{\sum PE_{\text{ET}} \text{VOL}_{\text{ET}}}$$

The formula is simple to explain. Take the difference between financial and economic prices for each energy product, multiply by the volume consumed and sum over all energy products. This is the numerator in (1) above. The denominator is simply the volume of each energy product consumed multiplied by its efficiency price and summed over all energy product.

Obviously, EPC is between 0 and 1. When it is 1, energy products on average are being sold at efficiency prices. It is "on average" because it is not necessary for each individual energy product to be priced at its international price equivalent; it is only necessary that "below" efficiency prices on one product be offset by "above" efficiency prices on another product in a manner such that the total value of energy products consumed are being sold at the equivalent of what would be efficiency prices. This is where flexibility enters the picture. Full coverage is obtained through incorporating in the formula all energy products. Note also how each energy product is weighted. The price gap between financial and economic prices multiplied by the volume of consumption gives a figure which represents the value of resources being misallocated. (On a technical point, it would probably be better to choose a common unit of volume such as BTU equivalent than to use kilowatt hours for electricity and tons for mazout).

The calculation of EPC at a particular time gives a figure for the existing situation. Right now EPC is probably on the order of 20 percent. An appropriate target that might be discussed with the GOE could be annual increases by 10 percentage points. Assuming some technical problems -- not discussed here -- can be worked out, EPC would at least establish a firmer foundation for discussion between the GOE and USAID on where the situation stands on a sectoral basis, a product basis and how fast to move. It would also give content to the meaning of gradualism.

Energy Price Distortions

EPC was calculated for four years to demonstrate the level and recent trend in the ratio (table 1). Consumption (given in Appendix Tables 1 and 2) was measured by BTU equivalent energy values for each energy source. Energy sources included in the ratio are butane gas, gasoline and naphtha, kerosene and jet fuel, diesel fuel, mazout, natural gas, and electricity.

TABLE 1
Energy Price Criterion Estimates

	<u>YEAR</u> ^{1/}	<u>EPC</u> ^{2/}
A	CY 1978	.185
B	CY 1979	.173
C	FY 1981	.172
D	FY 1982	.200

^{1/}Calendar years are used for 1978 and 1979 and fiscal years for 1981 (July 1980 - June 1981) and 1982 because the reporting period was changed.

^{2/}Energy consumption is included whether the energy is employed in its final use or as an input in production of another energy source, as mazout is used to produce electricity. In one sense this double counts energy sources but this procedure is used because the price distortions arise both in input use and final use.

International and domestic prices are reported in Appendix Table 3. Electricity and natural gas are more difficult than the petroleum products to include in the analysis because the international prices are not directly obtainable. The international shadow price for electricity is calculated by finding the expected average cost of producing electricity in the nearly completed Ismailia Thermal Power Plant Units 1 and 2. The international price of mazout is used in the calculation leading to an average cost of 58.8 millims per KWH for 1982^{2/}. The World Bank approximated the international price of natural gas by using the international price for the exportable good for which it substitutes, mazout. That assumption is adopted here.

The EPC fails to rise above 0.20 for any of the four years meaning that domestic payment for energy consumed is about one-fifth of its international value (opportunity cost). Domestic energy payments during FY 1982, for example, were approximately L.E. 700 million. The international value of the the same energy was over LE 3,500 million meaning the implicit subsidy to energy was more than LE 2,800 million.

APPENDIX M

AID Interviews in Jamaica

/1 Excerpt from AID Letter Report (1982)

Interviews with past participants of EMTP

The intent of the interviews now to determine to what extent the EMTP had been useful to past participants in their opinion and in the opinion of their supervisors. I spoke with six of the seven past participants of the program (some of whom were in managerial positions); and with the minister of energy and the program manager for the USAID program. The intent of my questions was to determine which parts of the training program had had the largest utility, what concrete techniques from the programs had been used, how well the program met the perceived needs and expectations of the country, if there are still people who would benefit from such a program, what impact the program had had on the way planning is done in the country, and what are the most important training needs in the country. Because I spoke only with individuals from the Ministry of Mining and Energy, the information I obtained is limited to the ministry's role in energy.

Obtaining information was not done by direct questioning but by having people explain how they felt the Ministry functioned and what they saw as their individual role. With this background, it was easy to frame questions concerning the utility of various aspects of the course and to obtain opinions on future training needs.

To place the information in context, there are several details concerning the

ministry which must be explained. The ministry is severely short of staff, particularly experienced upper management. There are few people who have experience performing the functions with which the ministry is charged, or that an addition to these not being people to carry out tasks, there are few people who can supervise specific activities to see that they are properly directed and executed, and there are few people to teach junior staff or to assist them with problems. The staff shortages force existing staff to spend considerable effort responding to crises and little time moving the program forward. There is an associated feeling of frustration. Everyone attributed the difficulties in obtaining staff, particularly experienced staff, to the low salaries paid to government employees.

The energy division has three units, the alternative energy unit, the energy conservation unit, and the economic planning unit. None of the units are fully staffed. Activities range from energy audits to demand surveys to resource surveys to technology testing to development of energy balances for the country and for individual sectors to project development to monitoring and coordinating activities for each sector, particularly the petroleum sector which now dominates Jamaican energy consumption, and the electricity sector.

Although each participant with whom I spoke had a different reaction to the program, different skills, and a different educational background, there were several thoughts about the program that were common. In general, participants felt that the course provided an overview that was most valuable for the orientation of those people with little previous experience in the field of

energy. Most felt the course would be of greatest benefit to recent graduates although there was a general feeling that it also benefitted middle-level managers new to energy. The utility of various topics and techniques presented in the course depended on individual responsibilities however even when directly applicable, the material in the course served mainly as an introduction and exposure.

In this regard, the modeling section of the course was often cited as the key ingredient to overall understanding even though past participants felt the particular models presented were not relevant to Jamaica's situation, most often because they required large amounts of accurate data which were available in the short term and unobtainable in the long term with expected resources. All of the individuals with whom I spoke were concerned about realistic, practical ways of carrying out the tasks of their jobs and in general saw how their activities fit into the long range goals of the country for energy. Their answers, when asked what type of training would be most useful to them now, were specific. No one responded by stating a need for general academic training. Requests included project implementation, project design, project evaluation, energy accounting techniques, and data selection and use. Many of the training requests reflected the need for experienced senior management.

Participants found the exposure to people from other nations invaluable to their experience in the program because of the opportunity to hear about the problems of other countries and the attempts at solutions. Several suggested

expanding the time allocated to individual country presentations, or to group projects where participants worked together on problems. At the same time, the disparity in position and responsibility among participants was criticized. No one spoke of close interaction or benefits from speaking with people trained in different disciplines. I was told of close interaction that did occur between participants from similar disciplines and from within regions. Not all participants were in decision-making positions and several advocated more careful screening.

APPENDIX N

AID Interviews in Ecuador

APPENDIX N
AID INTERVIEWS IN ECUADOR
August 24, 1982

MEMORANDUM

TO : ST/EY, Pat Koshel
FROM : LAC/DR, Carl Duisberg
SUBJECT: Comments from Ecuador participants in EMPT

First I apologize for the necessarily rushed nature of this memo ~
it backed up to the last minute...

I had a chance to meet with 3 of the 4 Ecuadorian participants in EMPT;
the fourth was in France on a one year training course concerned with
planning/managing hydrocarbon resources.

The responses from the three interviewees were entirely distinct and only
vaguely corroborative. Each came with very different expectations and left
with very diverse reactions. It seems the impressions of the course were
directly dependent upon the participants previous experience, current
position, and future aspirations (that is almost a tautology).

The extremes can be summarized as follows:

1. Course was superficial, Economists and Engineers communicated poorly,
library wasn't open after hours, much too general (except Brookhaven
model which wasn't applicable and no discussion of other models), not
really much access to professors (those specialists who came in from
out of town), many participants really there for tourism and goofing off,
overall a waste of time, should be retitled "Analysis of the Brookhaven
Model" so it doesn't give false hopes!
2. Course generally good, but not really an "energy management course".
Should focus on more analytical, resource evaluation, projection and
planning tools. Class size, course content and professors were reasonable.
Various backgrounds tend to slow course pace -- except for those who are
just "on holiday". Subsequently, attended the ADL petroleum course and
found this much more useful to people just out of school.
3. Basically a worthwhile experience, appreciated the exposure to a
variety of people, in various disciplines and from other continents. These
contacts were the most valuable aspect although course material was of
good quality as were professors. Learned a lot about what was happening
elsewhere and what other countries were thinking and doing. Reinforced
his preconcepts about the small role for renewables. Overall was happy
with the course and suggested that people in planning departments of the
National Oil Company (COPE) and National Utility (INCEEL) new to broader
energy concepts be exposed to this kind of thing.

Only on one point did all three strongly agree -- that the EMPT was more of a sales program for the Brookhaven model than a training course. All recognized that it had some utility but not for the same reasons on the same type of people. Younger participants seem to want more hard data and (whether economists or engineers) more tools they can use to directly apply to their problems whereas more senior individuals seem to appreciate the broad brush strokes of some aspects of EMPT.

I have a lot more details on selection process, what the individuals do, what their offices do, etc. but I think the above should give you enough of the flavor to reinforce whatever statements you have received from elsewhere. Paragraph 5 in Kay Szewski's memo on EMPT dealing with "common thoughts" is applicable despite the extreme reactions highlighted above.

Conducting the interviews was very worthwhile to me. Thanks for the opportunity.

APPENDIX O

IEAL Letter and Questionnaire

INTERNATIONAL
ENERGY
ASSOCIATES
LIMITED

August 6, 1982

Dear Participant:

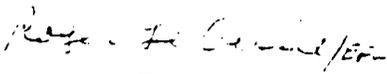
The United States Agency for International Development (AID) is currently evaluating the Energy Management Training Program (EMTP) which you attended under the auspices of the Institute of Energy Research at the State University of New York at Stony Brook. International Energy Associates Limited of Washington, D.C. is assisting AID in carrying out this evaluation.

As a participant in the Energy Management Training Program, you can help us evaluate the program's strengths and weaknesses. Now that some time has passed since your attendance, and now that you have had an opportunity to relate the training to the actual needs of your country and your job, we believe that you can offer useful ideas as to how to improve or modify the program for the future. We have tried to make it easy for you to do this by providing space for you to respond directly to the questions we have in mind. Your replies will be held in confidence.

A few minutes of your time now can help many others in the future. Please do not put off answering. We look forward to hearing from you, and would appreciate receiving your replies no later than August 24.

Thank you very much for your ideas and your assistance.

Very truly yours,


Roger LeGassie

/phd

Enclosure

600 NEW HAMPSHIRE AVENUE, N.W.
WASHINGTON, D.C. 20037
202 - 342 - 6700
Telex 89-2680 Cable IEAL WASHDC

II. Selection Process

In view of the large number and diversity of participating countries we would like to know the principal ways by which individual participants come to attend the program.

1. How did you hear about the course? (Please check one.)

- brochure
- colleagues
- past participants
- supervisor
- other (please specify)

2. How were you nominated? (Please check one.)

- direct selection by supervisor
- competition
- personal initiative
- other (specify)

3. Should there be more, fewer, or about the same number of field trips? What field trips do you think would be most valuable?

4. Have you had continuing contact with EMTP since returning to your country? How do you think a training course of this nature could assist you after returning home?

5. Other comments:

IV. Impact Of The Program

Whether participation in the EMTP has materially improved your abilities in energy management and planning and helped meet your organization's training needs is of crucial importance to our evaluation of the program. Please be as specific as possible in answering these questions.

1. Did the course provide new skills that were of direct and immediate relevance and benefit to you, or did the course offer mainly a broad overview of the energy management field, with little direct and immediate relevance and benefit?

2. What elements in the curriculum were of the most use to you?

- Introduction to Energy Planning
- Information Systems
- Modelling
- Assessing Present Energy Situation
- Demand Forecasting
- Renewable Energy
- Conventional Resource Expansion
- Project Evaluation
- Pricing Policy
- Industrial Conservation
- Investment Models

Why?

3. Did you learn specific analytical skills (e.g. demand modelling, investment analysis, pricing analysis, etc.) that you have actually applied in your job? What were they? How did you handle those tasks before attending?

4. Did you make new and useful professional or institutional contacts at the program? How have these subsequently been used?

5. Have you sought, on your own or through a formal institutionally-supported effort, to teach others the key elements of what you learned at the program? Describe your approach and comment on the value of doing this.

6. Would you say that your experience in the course has changed the way in which your office operates? If so, how?

3. If the program were cancelled, how might one better use the time and money resources previously spent on the program? What would be gained by this alternative use? Please be as specific as possible in describing your proposed alternative.

4. How do you see the feasibility and value of conducting this type of program on a regional basis, rather than continuing the course in its present format in the United States?

5. Based on the above, would you suggest continuing the program in its present form, modifying it substantially, or cancelling it in favor of your proposed alternative?

CONCLUSION

Please state the name of the agency where you work, and your position there.

You may sign your name, if you wish

Thank you.