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NONCAPITAL PROJECT PAPER (PROP)

22p

COUNTRY: Office of Science and Technology, Technical Assistance Bureau

PROJECT NO: _____

SUBMISSION DATE: 5/26/71 ORIGINAL: X REVISION NO: _____

PROJECT TITLE: Methodology for Relating Science and Technology Opportunities to Economic and Social Development in a Small Developing Country (Guatemala)

U.S. OBLIGATION SPAN: FY 1971

PHYSICAL IMPLEMENTATION SPAN: FY 1971

GROSS LIFE-OF-PROJECT FINANCIAL REQUIREMENTS: FY 71 - \$50,000

RS/PS

PROJECT AUTHORIZATION

1. PROJECT NUMBER 931-11-995-969	3. COUNTRY Technical Assistance Bureau	4. AUTHORIZATION NUMBER 0143
2. PROJECT TITLE Methodology for Relating Science and Technology Opportunities to Economic and Social Development in a Small Developing Country (Guatemala)		5. AUTHORIZATION DATE 10/24/71
7. LIFE OF PROJECT		6. PROP DATED 5/26/71

a. Number of Years of Funding: _____
Starting FY 19 _____; Terminal FY 19 _____

b. Estimated Duration of Physical Work
After Last Year of Funding (in Months): _____

8. FUNDING BY FISCAL YEAR (in U.S. \$ or \$ equivalent)	DOLLARS		P.L. 480 CCC + FREIGHT	LOCAL CURRENCY Exchange Rate: \$1 =			
	GRANT	LOAN		U.S. OWNED		HOST COUNTRY	
				GRANT	LOAN	JOINTLY PROGRAMMED	OTHER
Prior through Actual FY							
Operational FY 71	50,000						
Budget FY							
B + 1 FY							
B + 2 FY							
B + 3 FY							
All Subsequent FY's							
TOTAL	50,000						

9. DESCRIBE SPECIAL FUNDING CONDITIONS OR RECOMMENDATIONS FOR IMPLEMENTATION, AND LIST KINDS AND QUANTITIES OF ANY P.L. 480 COMMODITIES

10. CONDITIONS OF APPROVAL OF PROJECT

(Use continuation sheet if necessary)

11. Approved in substance for the life of the project as described in the PROP, subject to the conditions cited in Block 10 above, and the availability of funds. Detailed planning with cooperating country and drafting of implementation documents is authorized.

This authorization is contingent upon timely completion of the self-help and other conditions listed in the PROP or attached thereto.

This authorization will be reviewed at such time as the objectives, scope and nature of the project and/or the magnitudes and scheduling of any inputs or outputs deviate so significantly from the project as originally authorized as to warrant submission of a new or revised PROP.

A.I.D. APPROVAL	CLEARANCES	DATE
Signature: <i>Joel Bernstein</i> AA/ Technical Assistance Bureau TITLE: _____ DATE: _____	LA/CEN: JLockard <i>JM</i>	3/13/71
	ARA/LA/DR: LSleeper <i>LS</i>	3/13/71
	USAID Guatemala: Culbertson <i>CS</i>	4/21/71
	A/CONT	

**METHODOLOGY FOR RELATING SCIENCE AND TECHNOLOGY
OPPORTUNITIES TO ECONOMIC AND SOCIAL DEVELOPMENT IN
A SMALL DEVELOPING COUNTRY (GUATEMALA)**

1. Project Description

A. Objective

This project will develop and demonstrate a methodology or alternative methodologies, for clarifying the potential role of science and technology in a developing country characterized by a relatively small population (and having limited domestic markets and technical manpower pools), an embryonic but growing indigenous industrial sector, and a very modest GNP per capita. Particular attention will be given to techniques for (a) identifying those development sectors, problems, and weaknesses that could benefit within the next decade from technological innovations, (b) assessing the existing scientific and technological assets within the country in reference to their current and potential effectiveness in contributing to economic development, and (c) devising a strategy for strengthening critical elements in the scientific and technological infrastructure that will maximize the economic return from investments in that area within a decade.

Since the project will involve testing and refining of the methodology through a detailed analysis of a specific country -- in this case Guatemala -- the study should assist in the further development of the scientific and technological capabilities of that country. More importantly, the methodology that is developed should have a wider applicability to a number of other countries of similar characteristics at a comparable stage of development. Other AID countries where the methodology should have applicability include several other Central American countries, Ecuador, Tunisia, Kenya, Ceylon and possibly Jordan, and Cambodia.

The study will be carried out by a U.S. university with extensive experience in the field of science policy, and particularly in the planning, organization, and management of research and development activities at the national level and in the application of science and technology to rural development, enhancement of urban conditions, and development of natural resources. The university will deepen its competence in the field of science policy from the experience provided by this study, and at the same time through its collaborative efforts in Guatemala will help strengthen the institutional capability of Guatemalan organizations to deal with this policy area. The study will also clarify the advantages and disadvantages of having a U.S. university, rather than the National Academy of Sciences or an international organization, undertake this type of analysis.

B. Project Summary

1. The U.S. contractor will review the methodologies adopted in the previous studies of OECD, UNESCO, the National Academy of Sciences, and the OAS directed to science policy and infrastructure development in developing countries. The experimental nature of this type of study is well illustrated by the different methods followed by each of these organizations in carrying out such a task.

The OECD staff drew on the extensive experience gained by the elaborate science policy reviews to which each of the members of the OECD has been exposed. The contrast between the experience of the technologically advanced countries of the OECD and of those that were less advanced -- for example, Greece and Turkey -- suggested an approach that might be relevant to the LDC's in other parts of the world. A methodology for such an approach was designed and tested in a preliminary way but was then laid aside on the ground that science policy in developing countries was too far removed from the interests of the organization.

The UNESCO approach capitalizes on the broad membership of the organization and seeks to present the government of the developing country involved with a broad set of options. Its team usually includes an expert from an Eastern European country balanced by one from a Western country. Since UNESCO is concerned with rapidly building up a picture of science policy on a worldwide scale, the country studies have been handled on a broad brush. Often UNESCO efforts have emphasized matching pre-packaged organizational solutions to local conditions.

The most elaborate studies have been those conducted by the National Academy of Sciences. These have usually been based upon careful staff studies, prepared in large measure by the host country, that are brought into focus by a group of high-level scientists and administrators from both countries who meet together for a week at a plenary session, with more frequent meetings by subgroups in some cases. The NAS has conducted or is conducting such studies in Argentina, Brazil, Chile, Colombia and Peru, in Latin America, as well as in other areas. These have worked out extremely well. However, the NAS efforts have been concentrated in the larger developing countries and have placed very little emphasis on rural development and development of natural resources. They have not given much attention to an overall strategy for relating science and technology to

economic and social goals. Also, the fact that the high level personnel involved on the U.S. side contribute only a limited amount of time without charge necessarily affects the design of the project which usually relies heavily on intuitive judgement of experts rather than detailed, documented analyses.

The OAS approach has been largely to rely on studies conducted by the country itself with minimal outside involvement. These have been characterized by a plethora of data and heavy reliance on statistical indicators of progress and as a basis for promising new directions.

Building on this body of experience and other relevant studies, the U.S. contractor will develop a conceptual framework and related methodologies for relating science and technology to development in a country-specific situation -- one in which a relatively small country with modest, but not negligible, resources is seeking to accelerate its rate of economic development. Among the areas of particular concern will be

- agricultural, industrial, and natural resource development trends and the opportunities to apply science and technology to increase productivity and increase the value of products in these areas;
- potential contribution of science and technology to rural development, employment opportunities, income distribution, desirable forms of urbanization, and exports of products
- establishment of conditions favoring effective utilization of the scientific and technological potential for solving bottleneck problems in the development process, and in particular current and projected research and development capabilities -- institutional and laboratory -- in this regard;
- professional training of scientists and technicians including current and projected needs in priority development sectors.

2. The U.S. contractor will establish a field investigation team headed by two well qualified U.S. experts, experienced in both science policy and economic development problems. With the assistance of the AID Mission, the contractor will select the institution or institutions in Guatemala which are appropriate for and interested in collaboration in the project. The proposed approach will be reviewed by the Guatemalan participants and will be adjusted in the light of their views. It is expected that the overall project will last 15 months with three on-site investigations of four weeks each taking place over a period of nine months and involving a number of Guatemalan collaborators.

3. The results of the investigations will be made available to the Guatemalan Government. A separate and detailed report on the development of the methodologies that were involved in the study, with particular reference to applicability to other countries, will be prepared and published by the contractor.

C. Justification

There is a strong basis for looking at science policy from the point of view of the smaller country. In a number of respects larger countries enjoy an advantage in respect to the formulation and implementation of a science policy. A large country has more physical and human resources at its disposal and can therefore consider a broader set of options. A smaller country must be highly selective. Regional programs are attractive to smaller countries as offering a feasible means of participating in activities that would be too costly to be supported on a national basis. However, regional programs are a drain on scarce national resources, and compete with national programs essential to the successful participation in multilateral programs. It is clear that large countries such as India, even though poor in resources, can establish scientific and technical enterprises beyond the reach of smaller countries with higher per capita GNP.

There has been a growing awareness on the part of the developing countries that the problems that face countries that are just about to shift from traditional to modern technologies are different from those that are well along that path. In examining the role of science and technology in development, two separate categories appear useful: first, a

division by level of technology attainment; second, by size and scale of effort. The latter category is usually associated with the size of the territory of a country and of its population.

Guatemala would appear to have many of the characteristics of countries of less than 10 million in population which are in the early stages of technological development. Although the population of Guatemala, with its Mayan antecedents, and its geographic location, fronting on two oceans, are in some respects unique, there are a number of features of Guatemala which are shared by other small developing countries.

1. Guatemala occupies 42,000 square miles (about equivalent to Tennessee) and has a population of 5.2 million with a growth rate of 3.1 per cent annually. Per capita GNP (1969) was \$314.00.

2. A sizeable proportion of the population, Indian in origin, particularly in the rural areas, is outside the market economy and is remote from modern technology.

3. Foreign exchange earnings are heavily dependent on a single agricultural commodity (coffee) but efforts are being made with some success to diversify exports and to broaden the base of foreign exchange income (through promoting production of cotton, bananas, cattle, forestry products, minerals, and through industrialization).

4. Inspired by the "Green Revolution," the government is supporting efforts to modernize the agricultural sector, to increase agricultural productivity, and to raise the incomes of the rural Indian subsistence farmers.

5. The country has a single large urban center which is suffering from over-expansion, with the familiar attendant ills of inadequate services, shortage of housing, unemployment, and urban terrorism.

6. An effort to expand natural resource development and to promote industry is in progress with reasonable prospects for success. There is a modest resource base which includes some excellent agricultural land and valuable mineral deposits.

7. Guatemala has been an active partner in regional and subregional political and economic groupings.

This project will consider the strategy to be followed by a country on the scale of Guatemala seeking to accelerate its rate of economic growth through the application of science and technology to its developmental problems. The study will be country specific but should illuminate a number of problems confronting other countries of a comparable size and level of technological development.

D. Life of Project Costs

The project will involve about three man years of effort on the part of the U.S. contractor. In addition to two full-time specialists, several more senior experts will provide shorter term consulting services. The anticipated funding for the project is \$50,000 in addition to services rendered under the 211d contract.

II. Science and Technology Interests in Guatemala

Apart from the factors listed above which identify Guatemala as representative of smaller developing countries seeking to accelerate development through the application of science and technology, there are additional reasons which militate in favor of a project of this nature in Guatemala at this time.

The Guatemalan Government is seriously concerned with upgrading the level of the technological competence, its economy and in particular with creating a research capability which can bring the techniques and knowledge generated by modern science to bear on the solutions of the urgent developmental problems with which it is confronted. The situation is therefore ripe for a collaborative effort along the lines proposed, with excellent prospects for full cooperation by the Guatemalan Government at a high level and for the implementation and testing of methodologies and mechanisms that may result from the project as it moves ahead. In this respect, Guatemala is a good country in which to undertake the proposed study. There are other countries of a comparable size and at a comparable level of development that have a better institutional base for scientific and technological progress but where a similar degree of commitment at the top government level is lacking. Progress in building up a technological infrastructure involves cooperative actions by government, educational institutions and industrial leaders. In the absence of a high level commitment by the government little progress can be made.

Another important asset of Guatemala is the small cadre of highly trained executives in key positions in government and in the private sector. This situation is greatly improved from the early days of technical assistance two decades ago. The chances for success for a project of this character have improved correspondingly. The United States has provided aid to Guatemala in one form or another in the amount of \$314 million, in addition to assistance provided by the World Bank and the Central American Bank for Economic Integration. During this period a number of Guatemalans were provided with training abroad in colleges and graduate schools, in large part financed by fellowships under the foreign assistance programs. Some of these with education and skills matching the graduates of the best universities in the United States have risen to positions of high responsibility within Guatemala. The presence of this quality of leadership within Guatemala adds credibility to the effort of that country to initiate and manage a strategy for science and technology in support of development. A similar situation is to be found in many other smaller countries, even those that have only recently gained independence. The colonial powers normally provided higher education for an elite group trained for administrative tasks. In any event, the educational process in the developing countries funded by foreign aid is proceeding, and with the passage of the situation elsewhere in this respect should be sufficiently similar to that of Guatemala to make the results of the study relevant. The important point is that this condition does exist in Guatemala at this time.

Another favorable factor is the example offered by the role of high yield grains developed through research in powering the "Green Revolution" in Asia. The fact that the dwarf wheat developed by research in Mexico was the source of the breakthrough in agricultural productivity in Pakistan and in India has also had a powerful impact on Latin America, and especially on Guatemala which follows with close attention developments within its large and powerful northern neighbor. The "Green Revolution" did much to dispel the belief that the fruits of modern science could be available only after the cultural patterns of a country had been completely altered or only after the educational level of the

peasants had been raised to university standards. It was apparent that the farmer in India or Pakistan was ready and able to shift to the new techniques once it was clear to him that it was in his interest to do so. What was important was the determination of the Government to support the different elements of the system needed to get the proper inputs under control of the farmer at the right time and to assure him a market for his product at an attractive price. Once committed to the new high yield grains of foreign origin, India and Pakistan raced to build up their indigenous agricultural research capabilities to guard against a disaster of local diseases or pests attacking the foreign seeds and to develop other varieties better adapted to local conditions.

All this was not lost on the Latin American Governments whose Presidents assembled in 1967 at Punta del Este where they adopted a Regional Scientific and Technological Program. At that meeting Sr. Julio Cesar Mendez Montenegro, then President of Guatemala, said:

"Latin America must abandon any position of resignation that scientific and technological advance is the privilege solely of the highly developed countries. It must, on the contrary take pains to close the gap that separates it from them, and incorporate the fruits of science and technology in the economic and social progress of our countries."

These were brave words, but they proved easier said than done. The O.A.S. Regional Program was designed by the finest scientific talent in the hemisphere and has moved soundly ahead. The smaller countries, however, have thus far found it extremely difficult to benefit from it. It has gradually become apparent that to interact with the regional science and technology program, a larger and better structured national effort is required. This was, to be sure, spelled out clearly in the Declaration of the Presidents of America, which states:

"Science and technology offer genuine instruments for Latin American progress and must be given unprecedented impetus at this time. This effort calls for inter-American cooperation, in view of the magnitude of the investments required and the level attained in such knowledge. In the same way, their organization and implementation in each country cannot be effected without a properly planned scientific and technological policy within the general framework of development."

The Guatemalan Government has now recognized the need for developing a properly planned scientific and technological policy within the general framework of development. It has made a beginning by designing an ambitious agricultural program. The agricultural sector is characterized by the

contrast, typical of developing countries, between large commercial operations devoted to the production of cash crops, such as cotton, using machinery and modern agricultural technology practices, and small agricultural holdings farmed under traditional methods by subsistence farmers. At the same time, surplus population unable to live off the land drifts into the capital center and adds to the complications of urban development. The current plans of the Government call for a coordinated and systematic effort, modeled after the lessons of the Green Revolution, to increase agricultural productivity through the introduction of new high yield seeds and to raise the incomes of the small farmers by promoting the production of market fruits and vegetables. Among other elements of the program is the plan for a large extension service to work with the farmers to demonstrate new seeds and the related farming techniques required in their use. A research organization which will feed the proper technology to the extension service and solve problems encountered in the field will be modeled after the successful operation set up by the Rockefeller Foundation in Mexico. The Rockefeller Foundation has agreed to assist in setting up the Guatemalan research unit with details still to be worked out.

The Guatemalan Government is exploring other possibilities for building up a research capability in other areas, in the field of rural industry and urban development. Guidelines in these areas are difficult to find. It is clear that professional guidance of high quality will be required to upgrade the quality of Guatemalan technical skills, but the areas to be selected and the mechanisms to be adopted which would be appropriate to the task have not been worked out.

There are no readily available solutions. However, the experience gained by the United States in its investments in institutional development at home and abroad can be of invaluable assistance in identifying pitfalls and in suggesting possible avenues of approach.

This is a situation which could usefully advance the field of knowledge in the development of a methodology appropriate to countries similar to Guatemala and at the same time provide timely and valuable technical support to the Guatemalan development effort. It could furthermore serve to make Guatemala a more effective partner in the OAS Regional Science and Technology Program in the success of which the United States has a major stake.

Note

In a telegram of April 21, 1971 (Guatemala 1689) the Mission indicated its concurrence with this PROP, and noted that there would be mutually supporting role for this PROP and the proposed loan on science and technology being submitted by the Mission to establish a Guatemala Institute for Science and Technology (see Enclosure 2). For example, this project would clarify the problems and weaknesses existing today and thus suggest those priorities and emphases for the design of the proposed institute which would fill urgent development needs and strengthen critical elements of the science and technology infrastructure.

Course of Action

- 1971 Sept.-Oct. - Preliminary visits by U.S. team leaders to Guatemala and development of outline of plan of work.
- Nov.-Feb. - Development of preliminary concepts and alternative methodologies for relating science and technology development in countries with characteristics similar to situation in Guatemala.
- 1972 March-May - On-site investigations to test and refine methodologies in Guatemala context.
- June-July - Synthesis of on-site observations.
- July-August - On-site bilateral workshops to test and further refine preliminary conclusions.
- Sept.-Dec. - Preparation and distribution of final report.



Department of State

TELEGRAM

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Action
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PAGE 01 GUATEMI 01689 220005Z

91
ACTION: AID-85

INFO: OCT-01 IGA-02: 5-04 SC-00: INR-08: 7104
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FM AMEMBASSY GUATEMALA/
TO SECSTATE WASHDC 3293

UNCLAS: GUATEMALA 1689

AIDAC

SUBJ: METHODOLOGY FOR RELATING SCIENCE AND TECHNOLOGY
OPPORTUNITES TO ECONOMIC AND SOCIAL DEVELOPMENT
IN A SMALL DEVELOPING COUNTRY

REF: AIDTO CIRC A 583

USAID CONCURS PROP ATTACHED REPAIR. APPRECIATE
CONSIDERATION GUATEMALA AS LOCUS FOR THIS EXPERIMENTAL
EFFORT TO DISCOVER HOW BETTER TO EFFECT TECHNOLOGY TRANSFER.
WE HAVE NO ADDITIONAL COMMENTS, HOWEVER, URGE TA/OST REVIEW
PROP IN LIGHT OF USAID'S SCIENCE & TECHNOLOGY IRR SUBMITTED
TO AIDW ON APRIL 2. AS USAID DIRECTOR INDICATED TO
SCHWEITZER IN WASHDC, THERE WOULD BE MUTUALLY SUPPORTING
ROLES FOR THE TWO PROJECTS WHICH MIGHT BE REFLECTED IN PROP
AND WHICH USAID COULD ALSO REFLECT IN LOAN PAPER ON SCIENCE
& TECHNOLOGY. IT HOPES SOON TO PREPARE
DAVIS

UNCLASSIFIED

49

Encl 2

GUATEMALA - IRR - SCIENCE AND TECHNOLOGY INSTITUTE (\$3 Million)

I. The Borrower

The Borrower would be the Republic of Guatemala, with Project execution the responsibility of the to-be-established Science and Technology Institute.

II. The Project

The process of technological transfer in Guatemala is seriously impeded by the absence of scientific personnel with advanced training, institutions able to provide scientific instruction, and the absence of educational opportunities at all levels, and particularly in areas leading to professional technological and scientific fields.

This project proposes the establishment of a Guatemalan Institute (or Foundation) to directly attack this problem. The Institute would provide scholarships at the secondary level to increase the flow of qualified students through the school system. It would also provide scholarships for specialized vocational training; would award scholarships for university training in Guatemala, particularly in the physical and social sciences; and would also award scholarships for advanced and graduate training in the scientific fields outside of Guatemala, both in the U.S. and appropriate third countries. The Institute would also promote and encourage the advancement of science through specific research grants within Guatemala, and would undertake general promotion of scientific endeavor and rapid technological transfer through a series of workshops or seminars in which both Guatemalan scientists and those from other countries would meet to identify problems and research needs, and lay out general programs of scientific endeavor. The Institute could also facilitate professor exchanges in scientific areas and would serve in other general ways as a vehicle and catalyst for the rapid transfer of scientific and technological knowledge.

It is anticipated that the science to be stressed would be at the applied, developmental level - such as agricultural science, ecology, soils, natural resources, minerals and geology, fisheries and oceanography, economics, sociology, and anthropology and Indian studies. We do not anticipate scientific activities at the ultra-

(One Quetzal = One U.S. Dollar)

Encl. 2

advanced or specialized levels which would be somewhat removed from the country's more immediate developmental needs.

It is also anticipated that the scientific work of the Institute would be coordinated as closely as possible with the programs of ICAITI and other regional and international organizations.

The Guatemalan Government has such an institution in a planning stage. Details remain to be worked out, but in general, this institution or foundation would be government-sponsored and mainly government-financed. However, it could also receive contributions from the private sector. It would be headed by designated government officials, such as the Minister of Education, the Director of the National Planning Council, and the Director of the Guatemalan National Academy of Science, and representatives from the Guatemalan Universities. In addition, it is contemplated the Directorate would also include, possibly to be named by the above mentioned officials, two or three distinguished citizens from the private sector who would be apolitical and widely respected by all sectors of the society.

It is anticipated the long term work of the institution would evolve into a relationship with and support to all Guatemalan universities such as San Carlos, Landívar, Del Valle, Mariano Gálvez, etc. In the short run, relationships with individual universities would necessarily depend upon the conditions and receptivity in the individual universities and upon the over-all climate of university relationships in the country at any given time.

The Institution could grant funds directly, but it would also utilize and work through the administrative facilities of other agencies and organizations in Guatemala, such as the Rotarian Scholarship Fund, the Scholarship Funds of the various universities, the Instituto Indigenista, etc. Special attention would be given to strengthening the Guatemalan National Academy of Science, which might, in fact, ultimately be incorporated into the institution proposed herewith.

Annex "A", attached, illustrates the activity and funding pattern contemplated.

III. Financial Plan

Since the objective of this Project is a permanent institution receiving contributions annually from the Guatemalan Government and other sources, its ultimate cost cannot be calculated. To initiate the institution, however, an AID loan of \$3 million is proposed, to be disbursed over a three to four year period. Of this amount, \$750,000 would be dollar costs, and the balance, local costs. The anticipated Guatemalan Government contribution would be \$500,000 in FY 72, continuing annually on a gradually increasing scale, to reach an annual contribution level of \$1.2 million in 1981.

In addition, after the first three to five years, it is anticipated that the institution would receive some income from repayments of loans made to university scholarship recipients. It is not, however, anticipated that these repayments would ever reach a level sufficient to make the institution self-supporting. In addition, if the institution were established as a foundation, it would be eligible to receive contributions from the private sector. For the time being, it would be unrealistic to assume

that this source would constitute a substantial revenue source; however, it is conceivable that this could be increasingly important over the coming years, particularly if outside, private funding sources, such as U.S. foundations, become interested in participating in scientific programs in this country.

Annex "B", attached, shows in more detail the anticipated flow of revenues and expenditures.

IV. Section 611

No construction of physical installations is involved. A plan of financial and institutional arrangements will be drawn up to establish a reasonably firm estimate of the cost to the U.S. Government of this project.

V. Social, Political, and Economic Impact

Opportunities for talented students, particularly from rural Guatemala, are today essentially limited, both by lack of adequate educational facilities at the local level, and by lack of financial resources for pursuit of higher education. This flow of qualified students through the modern scientific disciplines is, therefore, seriously limited. Although increasing attention is being given to science and technology, education in Guatemala is still heavily slanted toward the traditional fields of study such as law and the specialized professions as architecture, engineering, medicine, and dentistry, most of the practitioners of which are concentrated in the nation's capital.

The most immediate needs for specialists in science and technology are in the universities themselves and in the government, although the private sector is also becoming more technically minded and will doubtless provide an increasing range of employment opportunities in the future. There is also a great deal of technology and information which could be effectively utilized in Guatemala now, if some agency were to undertake the responsibility of identifying it, arranging for its transfer, and making it available.

Within the Guatemalan Development Plan, increasing emphasis upon science and increasing educational opportunities at the secondary and higher educational scientific areas is contemplated. This institution, therefore, falls well within the priorities of the Guatemalan Development Plan, and is consistent with the present wishes and interest of the Guatemalan Government. It would also provide an opening for contributions and other participation by the private sector, which is becoming involved at a growing rate in the development process. Such a program of scholarships would also be consistent with and supplementary to other AID programs, such as the Rural Development Program for agricultural research and development, and the Primary Education program to increase educational opportunities in rural areas.

VI. Problems or Issues

A. Local-Cost Financing

USAID support to this activity is intended to have a catalytic effect. Considered only within the context of the AID \$3 million loan, substantial proportion of AID funds would be needed for local costs, although we consider it justified by the high priority needs of science and technology and by the long-range potential of the project. Considered within the total project, however, and its projected indefinite continuation, the AID investment in local costs becomes less significant. That is to say, that out of the original \$3 million AID funds, perhaps \$750,000 will be dollar costs, but over a 10 year period the project will have expended approximately \$2,500,000 in dollar costs, all but the original \$750,000 deriving from non-AID sources.

B. Project Term

Disbursement of AID funds is projected over three to four years. The actual rate of disbursement will depend in part on the rapidity with which the Institute can be established and initial awards for scholarships made.

C. Project Administration

This kind of institution will represent a new innovation in Guatemala, and there will be a period of trial and error which will require continuing administrative monitoring and possibly assistance from the USAID. However the Government is interested in this approach, and there is considerable sentiment for it in the private and university sectors. There is no fundamental reason why such an institution could not be effectively administered by Guatemalans in this country.

D. Political Interference

Such an institution, closely affiliated with the Government, could become a quasi-political instrument. In one respect this is unavoidable, but it is not considered a greater risk than in any other institution the USAID might be assisting. Realizing the problem, however, we are proposing the institutionalization of the GOG participation, that is, officials participate by virtue of their position, rather than by specific personal nomination. It is also noted that the participation of apolitical, distinguished members from the private sector and from the universities is contemplated. The political implications cannot be avoided or ignored; but we believe they can be minimized to a point where the workability of the Institute is not in serious jeopardy.

E. Coordination, Duplication

There are a number of institutions and small foundations operating in Guatemala who may wish to participate or even usurp the funding provided under this project. Since, however, we see no permanent financial support for such an institute, other than from the Guatemalan Government, we believe the establishment of a new government-sponsored organization, as proposed herein, will be essential. The Institute, once established, can provide assistance to other foundations and institutes that might like to participate in the program.

F. Legal Aspects

It is anticipated that the new Institute will be established in some form which will make it eligible to receive

contributions from private sources. The implications of Guatemalan law for such an arrangement will have to be checked carefully; however, since private foundations already exist here, no serious problem is anticipated.

II. Execution of Intensive Review

The Intensive Review will be carried out by USAID/G with legal assistance from ROCAP and the collaboration of the Guatemalan National Planning Council and the National Institute for Public Administration. No AID/W assistance will be needed. The Loan Paper will be completed during May.

USAID/Guatemala

April 1, 1971

ANNEX "A"**OPERATIONAL PLAN**

<u>Activity</u>	<u>Annual Cost</u>
1. Secondary Education Scholarships (Rural emphasis) 800 at \$400 ea.	\$ 320,000
2. Vocational & Specialized Scholarships 100 at \$500 ea.	50,000
3. In-country University Scholarships 100 at \$1,000 ea.	100,000
4. Out-of-Country University Scholarships Primarily Graduate Training 25 at \$6,200 ea.	155,000
5. Science Research Grants Approx. 4 at \$25,000 ea.	100,000
6. Professor Exchanges 4 - Guatemala to U.S. at \$20,000 ea. 4 - U.S. to Guatemala at \$20,000 ea.	80,000 80,000
7. Science & Technology Workshops/Seminars 1 or 2 per year	<u>25,000</u>
Sub-Total	\$ 910,000
8. Administration - 10%	<u>90,000</u>
TOTAL	\$1000,000

Estimated Dollar Costs: \$250,000; Local Costs: \$750,000

ANNEX "B"

FINANCIAL PLAN
(In \$ Millions)

<u>Year</u> (CY)	<u>INCOME FROM:</u>			<u>Expenditures</u>	<u>Balance</u>
	<u>AID</u>	<u>GOC</u>	<u>Loan Repayments and Private Contributions</u>		
1971	3.0 ^{1/}	---	---	---	3.0
1972	---	.5	---	1.0 ^{2/}	2.5
1973	---	.5	---	1.0	2.0
1974	---	.7	---	1.1	1.6
1975	---	.8	---	1.1	1.3
1976	---	1.0	---	1.2	1.1
1977	---	1.0	.05	1.2	.95
1978	---	1.0	.05	1.2	.8
1979	---	1.1	.06	1.2	.76
1980	---	1.1	.06	1.2	.72
1981	---	1.2	.06	1.2	.72

1/: On a commitment basis. Disbursement will be over 3-4 years.

2/: This assumes program can be fully operational at maximum level in CY 1972. Actually, it is recognized that this may not be fully feasible and that some of the funds will carry over to the following year.