

PD-AAI-159

515-0175

UNCLASSIFIED

UNITED STATES INTERNATIONAL DEVELOPMENT COOPERATION AGENCY
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D. C. 20523

COSTA RICA

PROJECT PAPER

ENERGY POLICY DEVELOPMENT

LAC/DR:81-13

Project Number:515-0175

UNCLASSIFIED

AGENCY FOR INTERNATIONAL DEVELOPMENT PROJECT PAPER FACESHEET	1. TRANSACTION CODE <div style="border: 1px solid black; display: inline-block; padding: 2px;">A</div> A ADD C CHANGE D DELETE	PP 2. DOCUMENT CODE 3
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3. COUNTRY/ENTITY Costa Rica	4. DOCUMENT REVISION NUMBER <div style="border: 1px solid black; width: 20px; height: 20px; display: inline-block;"></div>
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5. PROJECT NUMBER (7 digits) <div style="border: 1px solid black; padding: 2px;">515-0175</div>	6. BUREAU/OFFICE A. SYMBOL LA	B. CODE <div style="border: 1px solid black; padding: 2px;">05</div>	7. PROJECT TITLE (Maximum 40 characters) <div style="border: 1px solid black; padding: 2px;">ENERGY POLICY DEVELOPMENT</div>
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8. ESTIMATED FY OF PROJECT COMPLETION FY <div style="border: 1px solid black; padding: 2px;">83</div>	9. ESTIMATED DATE OF OBLIGATION A. INITIAL FY <div style="border: 1px solid black; padding: 2px;">81</div> B. QUARTER <div style="border: 1px solid black; padding: 2px;">4</div> C. FINAL FY <div style="border: 1px solid black; padding: 2px;">82</div> (Enter 1, 2, 3, or 4)
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10. ESTIMATED COSTS (\$000 OR EQUIVALENT \$1 - Ø15)						
A. FUNDING SOURCE	FIRST FY			LIFE OF PROJECT		
	B. FX	C. L/C	D. TOTAL	E. FX	F. L/C	G. TOTAL
AID APPROPRIATED TOTAL						
(GRANT)	(260)	(40)	(300)	(850)	(150)	(1,000)
(LOAN)	()	()	()	()	()	()
OTHER U.S.	1.					
	2.					
HOST COUNTRY					350	350
OTHER DONOR(S)						
TOTALS	260	40	300	850	500	1,350

11. PROPOSED BUDGET APPROPRIATED FUNDS (\$000)									
A. APPROPRIATION	B. PRIMARY PURPOSE CODE	PRIMARY TECH. CODE		E. 1ST FY <u>81</u>		H. 2ND FY <u>82</u>		K. 3RD FY <u>83</u>	
		C. GRANT	D. LOAN	F. GRANT	G. LOAN	I. GRANT	J. LOAN	L. GRANT	M. LOAN
(1) SDA	740	710		300		500		200	
(2)									
(3)									
(4)									
TOTALS									

A. APPROPRIATION	N. 4TH FY		Q. 5TH FY		LIFE OF PROJECT		12. IN-DEPTH EVALUATION SCHEDULED MM YY 09 83
	O. GRANT	P. LOAN	R. GRANT	S. LOAN	T. GRANT	U. LOAN	
(1)					1,000		
(2)							
(3)							
(4)							
TOTALS							

13. DATA CHANGE INDICATOR. WERE CHANGES MADE IN THE PID FACESHEET DATA, BLOCKS 12, 13, 14, OR 15 OR IN P/P FACESHEET DATA, BLOCK 12? IF YES, ATTACH CHANGED PID FACESHEET.

2 1 = NO
 2 = YES

14. ORIGINATING OFFICE CLEARANCE SIGNATURE:	15. DATE DOCUMENT RECEIVED IN A/D/W, OR FOR AID W/ DOCUMENTS, DATE OF DISTRIBUTION MM DD YY
TITLE: Stephen P. Knobel Mission Director	DATE SIGNED MM DD YY 09 28 81

AGENCY FOR INTERNATIONAL DEVELOPMENT
**PROJECT IDENTIFICATION DOCUMENT
 FACESHEET (PID)**

1. TRANSACTION CODE
 A = Add
 C = Change
 D = Delete
 Revision No. 1

DOCUMENT
 CODE 1

2. COUNTRY/ENTITY
 Costa Rica

3. PROJECT NUMBER
 515-0175

4. BUREAU/OFFICE
 A. Symbol LA B. Code 05

5. PROJECT TITLE (maximum 40 characters)
 ENERGY POLICY DEVELOPMENT

6. ESTIMATED FY OF AUTHORIZATION/OBLIGATION/COMPLETION
 A. Initial FY 8 1
 B. Final FY 8 2
 C. PACD 8 3

7. ESTIMATED COSTS (\$000 OR EQUIVALENT, \$1 =)

FUNDING SOURCE	LIFE OF PROJECT
A. AID	1,000
B. Other U.S.	
1.	
2.	
C. Host Country	350
D. Other Donor(s)	
TOTAL	1,350

8. PROPOSED BUDGET AID FUNDS (\$000)

A. APPROPRIATION	B. PRIMARY PURPOSE CODE	C. PRIMARY TECH. CODE		D. 1ST FY		E. LIFE OF PROJECT	
		1. Grant	2. Loan	1. Grant	2. Loan	1. Grant	2. Loan
(1) SDA	740	710		300		1,000	
(2)							
(3)							
(4)							
TOTALS				300		1,000	

9. SECONDARY TECHNICAL CODES (maximum 6 codes of 3 positions each)
 978

10. SECONDARY PURPOSE CODE

11. SPECIAL CONCERNS CODES (maximum 7 codes of 4 positions each)

A. Code	RGEN	TNG				
B. Amount	1,000	150				

12. PROJECT PURPOSE (maximum 480 characters)

Strengthen the Government of Costa Rica's capacity for energy sector planning.

13. RESOURCES REQUIRED FOR PROJECT DEVELOPMENT

Staff: 2 p.w. (Personal Services Contract)
 3 p.m. (Mission Staff)
 1 p.m. (LAC/DR Energy Officer)

Funds Personal Services Contract - \$3,100

14. ORIGINATING OFFICE CLEARANCE	Signature Stephen P. Knaebel	15. DATE DOCUMENT RECEIVED IN AID/W, OR FOR AID/W DOCUMENTS, DATE OF DISTRIBUTION MM DD YY
	Title Mission Director	

16. PROJECT DOCUMENT ACTION TAKEN
 S = Suspended CA = Conditionally Approved
 A = Approved DD = Decision Deferred
 D = Disapproved

17. COMMENTS

18. ACTION APPROVED BY	Signature	19. ACTION REFERENCE	20. ACTION DATE MM DD YY
	Title		

AGENCIA PARA EL DESARROLLO INTERNACIONAL

MISION ECONOMICA DE LOS ESTADOS UNIDOS EN COSTA RICA

U.S.A.I.D.

UNITED STATES EMBASSY

SAN JOSE, COSTA RICA

PROJECT AUTHORIZATION

Name of Country: Costa Rica
Name of Project Energy Policy Development
Number of Project: 515-0175

1. Pursuant to Part I, Chapter 1, Section 106 of the Foreign Assistance Act of 1961, as amended, and to the applicable Redelelegation of Authority I hereby authorize the Energy Policy Development Project for The Republic of Costa Rica, (the "Cooperating Country"), involving planned obligations of not to exceed One Million United States Dollars (\$1,000,000), in grant funds ("Grant") over a three-year period from the date of authorization, subject to the availability of funds in accordance with the A.I.D. OYB/allotment process to help in financing foreign currency and local currency costs for the project.

2. The project ("Project") consists of various activities designed to strengthen the Government of Costa Rica's capacity in national energy sector planning, including technical assistance in project analysis and energy planning, p:efeasibility and other studies in selected energy areas, planning in energy information, and various short-term training activities.

3. The Project Agreement, which may be negotiated by the officer to whom such authority is delegated in accordance with AID regulations and Delegations of Authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as AID may deem appropriate:

a. Source and Origin of Goods and Services

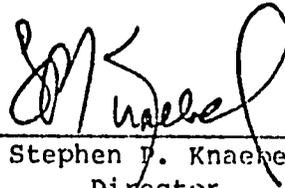
Goods and services, except for ocean shipping, financed by A.I.D. under the Grant shall have their source and origin in the United States, or in the Central American Common Market, except as A.I.D. may otherwise agree in writing. Ocean shipping financed by A.I.D. under the Grant, shall, except as A.I.D. may otherwise agree in writing, be financed only on flag vessels of the United States.

b. Conditions Precedent to Disbursement of More Than \$50,000

Prior to any disbursement, or the issuance of any commitment documents under the Grant Agreement for more than \$50,000 the Grantee will, except as A.I.D. may otherwise agree in writing, furnish to A.I.D. in form and substance satisfactory to A.I.D., evidence that at least three additional highly qualified counterpart technicians have been added to the SEPSE staff.

c. Special Covenant

The Parties agree that the Plan for Energy Studies and amendments thereof will require prior AID approval in writing.



Stephen P. Knaebel
Director
USAID Mission to Costa Rica

28 Sept 1981

Date

LIST OF ACRONYMS AND ABBREVIATIONS

CABEI	Central American Bank for Economic Integration
CATIE	Tropical Agriculture Research and Teaching Center
CATSA	Tempisque Agricultural Center
CDSS	Country Development Strategy Statement
CEPAL	Economic Council for Latin America
CODESA	National Development Company of Costa Rica
CONICIT	National Council of Scientific and Technological Research
CIDA	Canadian International Development Agency
CTSE	Technical Energy Sector Committee
DS/EY	Development Support Bureau/Office of Energy
EEC	European Economic Community
ICE	Costa Rican Electrical Institute
ICAITI	Central American Institute for Technological Research
IDB	Interamerican Development Bank
IBRD	International Bank for Reconstruction and Development (World Bank)
ITCR	Technological Institute of Costa Rica
MCJD	Ministry of Culture, Youth and Sports
MEIC	Ministry of Economy, Industry and Commerce
MOE	Ministry of Energy
MOPT	Ministry of Public Works and Transportation
NAS	National Academy of Sciences
OFIPLAN	National Planning Office
OLADE	Office of Energy Development for Latin America
PEIC	Energy Program for the Central America Isthmus
RECOPE	Costa Rican Petroleum Refinery
SEPSE	Executive Secretariat of Energy Sectorial Planning
UCR	University of Costa Rica
UNDP	United Nations Development Program

ENERGY POLICY DEVELOPMENT

PROJECT PAPER

TABLE OF CONTENTS

	<u>Page No.</u>
Project Authorization	
List of Acronyms and Abbreviations	
I. SUMMARY AND RECOMMENDATIONS	1
A. Recommendations	1
B. Summary Project Description	1
C. Project Development Issues	3
D. Participants in Project Development	5
II. BACKGROUND	6
A. The Costa Rican Economy and the Financing of Petroleum Imports	6
B. Energy Consumption and Economic Growth	9
C. Energy Balance	12
1. Sources	12
2. Applications	12
3. Costa Rican Energy Resources	13
D. GOCR Response to the Energy Problem	15
1. GOCR Energy Objectives	15
2. Energy Sector Organization	15
3. Energy Sector Projects	16
4. Progress to Date	16
E. National Energy Planning	17
1. Costa Rican Priority to Energy	17
2. USAID Energy Assistance Strategy	18
3. Other Donor Activities	19

	<u>Page No.</u>
III. DETAILED PROJECT DESCRIPTION	21
A. Goal, Sub-Goal and Purpose	21
B. Project Components	21
1. Energy Sector Management	21
2. Energy Research and Studies	24
a. Survey of Energy Sector Data	24
b. Plan for Energy Studies	24
3. Energy Planning Information	29
a. Documentation Center	29
b. Energy Research Center Study	29
4. Training and Exchange Programs	29
a. Short-term Training	30
b. Seminars and Workshops	30
c. Exchange Programs	30
IV. PROJECT ANALYSES	31
A. Economic Analysis	31
B. Social Soundness Analysis	33
C. Technical Analysis	34
1. Need for Energy Policy Planning Assistance	34
2. Costa Rican Capacity to Plan and Carry out a National Energy Program	35
D. Administrative Analysis	36
E. Financial Plan	36
1. Budget and Cost analysis	36
2. Recurring Costs	36

	<u>Page No.</u>
V. IMPLEMENTATION PLAN	39
A. Schedule of Major Events	39
B. Roles of GOCR and USAID	30
C. Procurement	40
VI. EVALUATION PLAN	40
VII. CONDITIONS AND COVENANTS	41
VIII. ANNEXES	
A. GOCR Letter of Application	
B. Statutory Checklist	
C. DAEC Review Cable	
D. Draft Project Authorization	
E. Logical Framework	
F. Initial Environmental Examination (IEE)	
G. Complementary AID-Financed Activities	
H. Energy Sector Organization	
I. National Alcohol Production Program	
J. Draft Scope of Work for Technical Assistance	
K. Draft Scopes of Work for Energy Studies	

I. SUMMARY AND RECOMMENDATION

A. Recommendation

The Project Committee recommends that AID make a Grant to the Government of Costa Rica for Energy Policy Development, as follows:

Grant:	\$1,000,000
GOCR Contribution:	<u>350,000</u>
Total Project Cost	\$1,350,000
Implementation Period:	Three years

B. Summary Project Description

Costa Rica is facing its gravest economic crisis in the past half-century. One element in this crisis is the country's dependence on imported petroleum fuels for meeting its energy needs; in 1979 almost one-half of all energy consumed in Costa Rica was petroleum-based. The country's oil needs are expected to grow for the remainder of the century if economic growth and development are to be maintained. Even at present levels of consumption, the cost of oil imports is having serious negative effects on the country's balance of payments. In the past decade, the value of oil imports as a proportion of exports tripled, contributing importantly to a serious weakening of the country's terms of trade.

Costa Rica has undertaken various energy initiatives to counter the trend towards ever-increasing dependence on foreign energy supplies, and which could serve as the basis for a national energy plan. Such a plan was called for in the 1979-1982 National Development Plan in order to develop the country's existing and potential energy resources. It would identify specific programs, projects and activities for meeting Costa Rica's energy goals. A formal Energy Sector has been established by the GOCR to systematically manage the review and discussion of energy policy issues; a Ministry of Energy and Mines was created and its technical Secretariat (SEPSE) has put together a series of background reports concerning Costa Rica's historical, current and projected energy balance as well as possible future options. A UNDP-sponsored Energy Planning Advisor has played a key role in gathering this background information, and will continue to advise Costa Rica's energy sector agencies under an approved IBRD project which will build on the work already accomplished.

Despite these important beginnings, two gaps stand out in the national energy planning process. First, although the Energy Sector has been established formally, important entities in it are understaffed and in certain instances coordination bodies have never even met. The sector's entities need to be strengthened if energy planning in Costa Rica is to consider the variables which it must. Secondly, although the background data put together to date give a good idea of the overall energy situation in the country, and are useful for making general policy decisions, there is not enough information about the specific energy projects, activities, and options which are required for an overall energy program. More detailed information concerning the design and technical/economic feasibility issues of specific projects is crucial. Prefeasibility studies of specific energy project options are the missing link between the global, "macro" level work which has been started and a national energy plan which would recommend specific energy sector investments.

This project will 1) strengthen Costa Rica's existing energy planning institutions and 2) complement the energy planning work already underway through more detailed study of the country's concrete energy options.

This project will provide assistance in the following areas:

- a. Energy Sector Management (\$425,000): The project will fund a long-term energy specialist who will act as project advisor and short-term technical assistance to develop terms of reference and evaluate research and study results.
- b. Energy Research and Studies (\$595,000): Prefeasibility and other energy planning studies selected by SEPSE will be carried out in areas which have been given top priority by the GOCR. Short-term technical assistance will be provided for these studies, as well as to help develop and evaluate the sector's annual operating plans.
- c. Energy Planning Information (\$170,000): A Documentation Center will be established in SEPSE, and the project will fund library materials, documents and equipment. In coordination with CONICIT, a study will also be carried out to determine the feasibility of establishing an Energy Research Center, or, alternatively, better mechanisms for coordinating existing research efforts.

- d. Training and Exchange Programs (\$160,000): In order to improve the capabilities of Costa Rican energy planners, participation in short-term overseas training courses in the US and elsewhere will be funded by the project. Local seminars and workshops will draw on expertise which exists in the University of Costa Rica and other local institutions. Finally, exchange programs between GOCCR planners and their counterparts from similar institutions in the US and Latin American countries will be sponsored to sharpen specific skills and promote the exchange of information and experience.

C. Project Development Issues

The issues raised in the DAEC PID Review Cable are dealt with in various sections of this paper. In summary, these issues have been addressed as follows:

1. Project Focus and Application: Through consultation with the GOCCR, the project has been modified to concentrate on strengthening energy policy development capabilities. A series of prefeasibility and planning studies of specific options has been agreed with GOCCR officials; the importance of these option assures that those that are feasible will be included in an energy action program.
2. Institutional Capability: The main administrative responsibility for the project rests with SEPSE, which will be supported by the national planning office, OFIPLAN.
3. Donor Coordination: The Mission has been in direct contact with SEPSE and the World Bank regarding the proposed petroleum sector energy project funded by the IBRD, the only other major donor activity to touch on the area of energy planning. IBRD, OFIPLAN, SEPSE and USAID agree that the AID and IBRD projects address different aspects of energy sector planning, but that they are complementary and will both profit from close coordination.
4. Waiver Justification: A waiver for procurement from a Code 899 country is no longer being requested
5. Project Management: The project provides for a full-time, energy specialist who will be directly contracted by the Mission and assist in Project monitoring.

6. Project Development: The Mission has utilized a variety of expertise in project development, both AID in-house and contracted. Just as importantly, GOCR officials and other Costa Ricans have played a considerable role in project design. Future exchange programs with the US and other Latin American countries have been included in the Training and Exchange Programs component of the project.

D. Participants in Project Development

USAID

Russell Frisbie, CDO
Mary June, CDO
Heriberto Rodríguez, CDO
Beverly Roper, CDO
Bastiaan Schouten, ADO
Mercedes Sciamarelli, CDO

AID/W

Carl Duisberg, LAC/DR

Consultants

William Ramsay, Resources for the Future

GOCR

Mario Barboza, OFIPLAN
José Ramón Chavarría, Coordinator of External Projects,
OFIPLAN
Cesar Díaz, OFIPLAN
Carlos Manuel Echeverría, Vice Minister of OFIPLAN
Elio Fallas, Director of Sectorial Coordination,
OFIPLAN
Oscar Solera, SEPSE
Rogelio Sotela, Director of SEPSE
Claudio Soto, OFIPLAN
Gloria Villa, ICE/SEPSE

II. BACKGROUND

A. The Costa Rican Economy and the Financing of Petroleum Imports

In petroleum equivalents, in 1979 Costa Rica produced almost 54% of the energy it consumed, all of it from renewable resources. Hydroelectric power contributed about 20% of the energy used, bagasse and other plant waste about 8%, and firewood (mostly from the prunings of coffee and its shade) almost 26%. Costa Rica imported the rest of the energy it consumed in the form of petroleum products, the bulk of which are used for transportation. Since 1973, the financing of petroleum imports at increasingly higher prices has become perhaps the single most important economic problem that Costa Rica faces. This factor has contributed greatly to what is no doubt Costa Rica's most serious economic crisis since the 1930's. Today the problem of distributing equitably the benefits of economic growth is moot given the lack of growth. Real national income (gross), which declined by 2.2% on a per capita basis in 1978 and by 4.6% in 1979, is estimated to have declined by a further 1.4% in 1980, and will probably decline by 15 to 20% during 1981. By the end of July 1981, the value of Costa Rica's colon had fallen to about \$0.038, compared to \$0.116 in September, 1980 (a devaluation of some 200% in 10 months!); the annualized rate of inflation has passed 50% and is increasing, and unemployment has gone up significantly.

The current CDSS points out that Costa Rica's present economic crunch is not just a passing phenomenon, but rather the logical outcome of several long-term tendencies precipitated by an abrupt shift in the terms of trade which began in 1978. Among the underlying long-term tendencies are a rapidly growing public sector which is increasingly living beyond its means, and a widening current account deficit which, in turn, is in no small part due to a higher and higher petroleum import bill. In 1978 and 1979 the GOCR was able to put off paying the piper by incurring new external debt, increasingly on harder terms, and by drawing down its reserves. However, by September of 1980, there were no reserves, commercial bank credit had dried up, and a drastic readjustment process began.

It is tempting for both politicians and defenders of energy projects to blame the current economic situation on petroleum price increases and low coffee prices. Clearly, other factors are also important, such as excess aggregate demand fueled by a deficit-financed public sector. In addition, an inefficient, protected, and import-intensive industrial sector has a limited supply-response capacity, and its import-intensiveness makes the reestablishment of equilibrium a more painful and drawn-out process because of the difficulty of reducing imports without reducing domestic production as well.

Still, the terms of trade phenomenon is a very real one. For example, between 1977 and 1979, the volume of coffee exported increased by 34.5% while the revenues from coffee exports dropped by 10.3%. Similarly, between 1977 and 1979 the amount Costa Rica paid for petroleum more than doubled even though consumption only increased by 28.6%. Thus, coffee bought much less petroleum in 1979 than it did in 1977. In 1979 the terms of trade index with respect to 1966 had fallen to 89. Had the price of oil stayed at its 1966 level, the terms of trade index for 1979 would have stood at 105.5, a better relationship for Costa Rica than in 1966.

For Costa Rica, financing petroleum imports is a long-run problem. During the last decade annual oil imports doubled from three million to almost six million barrels. The cost of those oil imports rose from \$11 million in 1970 to \$240 million in 1980, a more than twenty-fold increase. The prices of petroleum imports from 1966 to 1980 increased by a factor of ten, while the prices of Costa Rica's exports only doubled. In 1970 a 60 lb. bag of coffee could buy 30 barrels of oil; today, it buys less than three. More generally, in order for Costa Rica to import in 1980 the same amount of oil that it imported in 1966, it would have had to sell 4.8 times the exportable products. In 1973, prior to the oil embargo, the country imported \$29.8 million in oil, which was equal to 8.7% of exports; in 1974 14.3% of its export earnings went for oil and by 1979 fully 22.6% of its exports were required to pay for its current oil consumption.

How has the Costa Rican economy adjusted to the new world oil price picture? The partial adjustment made in the wake of the 1974 price increase, through devaluation and a temporary slowing in the growth of consumption, was insufficient. Prior to 1980, oil consumption was not reduced, nor did the economy find a way to pay for higher oil imports through the reduced consumption of other imports or through increased exports. The effects of the price increases on the trade balance have been substantial -- a recent analysis performed for the Mission indicates that from 1974 on, almost 53% Costa Rica's of trade deficit is accounted for by oil price increases.

The basic adjustment in the economy was not enough, and as a result new indebtedness was needed to finance greater oil imports, deferring payment of these imports. The fact that the volume of oil imported grew at an annual rate of 11.0% from 1973 to 1978 and that only in 1974 was there significant conservation (consumption that year increased at only 2.6%) supports the idea that the adjustment was insufficient, as do the data in Table 1, below. These data show that new external public debt disbursements less debt service exceeded the cost of petroleum imports in every year from 1975 to 1978 and that the total net external public debt disbursements for the 1974-79 period (\$679 million) exceeded the cost of oil imports

(\$637 million). Even in 1977, a year in which exports grew by almost 40%, net external public debt disbursements were greater than the amount of oil imports. The consequence of this new indebtedness was that debt service increased from 12.5% of exports in 1973 to 28.6% of exports in 1979. Therefore, in addition to the 21.7% of exports required to pay for current oil imports in 1979, a large component of the external public debt service can also be considered as payment for past petroleum consumption.

TABLE 1

<u>Year</u>	<u>Oil Imports</u> (US Millions)	<u>Exports</u> (US Millions)	<u>Oil Imports as</u> <u>% of Exports</u>	<u>External Public Debt</u> <u>Disbursements</u> <u>Less Service</u> (US Millions)
1973	29.8	344.5	8.7	28.1
1974	63.0	440.3	14.3	35.9
1975	71.3	493.0	14.5	89.0
1976	71.6	592.4	12.1	89.8
1977	98.5	827.8	11.9	152.0
1978	132.3	863.6	15.3	150.4
1979	201.0	924.5	21.7	161.8

Although the price of petroleum imported by Costa Rica rose 2.77 times during 1973 and 1974, it only rose by 17.5% between 1974 and 1978. Large price increases have occurred from January of 1979 to the end of 1980, however. Venezuelan crude prices increased from \$14/barrel in January 1979, to \$24 in December 1979^{1/}, and \$28 in February 1980. Prices of both Venezuelan and Mexican crude increased again in May and July of 1980, with July prices being approximately \$33.50/bbl. for that from Venezuela and \$34.50 bbl. for Mexican. The oil prices paid by Costa Rica increased by 83.9% in 1979 and by another 30% to December of 1980. Another price increase took place in early 1981 but prices are now, at least temporarily, easing. In December of 1979, Costa Rica was able to assure its oil supplies (freeing itself from the vagaries of the spot market) when Mexico promised to supply 1/3 of its needs and Venezuela the balance.

^{1/} It should be noted that during most of 1979, Costa Rica was buying petroleum on the spot market and was paying higher prices than those indicated.

B. Energy Consumption and Economic Growth

Table No. 2 relates the rate of growth of Costa Rica's GDP to the rate of growth of differing types of energy consumption for three intervals in the 1965-1979 period, and presents calculations of their elasticities with respect to GDP. The data indicates that during the 1970-75 period the Costa Rican economy became more energy intensive than it was during the previous period and that in the 1975-79 period it became somewhat less so. It should be noted that in Costa Rica the elasticity estimate for the consumption of commercial energy, and especially petroleum, is much higher than that for all energy. Although the Mission does not have similar elasticity figures for other developing countries to compare with, the Costa Rican elasticities seem very high. Elasticities for the U.S. for the 1960-70 period were .71 for oil consumption with respect to GNP and .83 for total energy consumption. The Costa Rican elasticity figure of 1.94 for petroleum consumption means that each one per cent increase in GDP was associated with a 1.94 per cent increase in petroleum consumption^{1/}. In view of the long term trend in imported petroleum prices, the implications of such a high elasticity estimate for the Costa Rican economy are staggering. Unless Costa Rica can find oil, substitute for it, or use less of it, the country will have to export more and more to maintain even moderate levels of economic growth.

^{1/} The elasticities in the text are average, not partial elasticities. Dr. Claudio Gonzalez Vega of the University of Costa Rica, in work recently done for Mission, estimated the partial elasticity of oil consumption with respect to GDP for 1966-1979, holding price constant, at 2.40. He found the price elasticity of demand to be -0.375, highly inelastic, meaning that the quantity consumed is not highly responsive to price changes. Dr. Gonzalez's regression coefficient was $R^2 = .985$.

TABLE 2

<u>Period</u>	<u>Average Annual Rate of Growth (%)</u>			
	<u>GDP</u>	<u>TOTAL</u>	<u>COMMERCIAL</u> ^{1/}	<u>PETROLEUM</u>
1965-70	7.0	3.9	7.5	7.2
1970-75	6.0	6.4	11.1	11.7
1975-79	6.2	5.0	10.0	12.0

ELASTICITY OF ENERGY CONSUMPTION WITH RESPECT TO GDP^{2/}

	<u>TOTAL</u>	<u>COMMERCIAL</u> ^{1/}	<u>PETROLEUM</u>
1965-70	.56	1.07	1.03
1970-75	1.07	1.85	1.95
1975-79	.81	1.61	1.94

^{1/} Hydroelectric and petroleum.

^{2/} % growth in tons petroleum equivalent/% growth GDP at constant 1966 prices.

SOURCE: Developed from National Energy Balance, 1965-1979, GOCR publication, June, 1980.

TABLE 3

COSTA RICA

USE OF PRIMARY ENERGY

(In thousands of TPE^{1/})

	<u>1965</u>		<u>1970</u>		<u>1975</u>		<u>1979</u>		<u>Annual Rate of Growth</u>			
	<u>TPE</u>	<u>%</u>	<u>TPE</u>	<u>%</u>	<u>TPE</u>	<u>%</u>	<u>TPE</u>	<u>%</u>	<u>1965-70</u>	<u>1970-75</u>	<u>1975-79</u>	<u>1970-1979</u>
Hydroelectric	120	13.7	178	16.8	286	19.8	354	19.1	8.2	9.9	5.5	7.9
Petroleum	236	27.0	334	31.6	580	40.2	912	49.3	7.2	11.7	12.0	11.8
Firewood	459	52.5	462	43.7	465	32.2	449	24.3	0.2	0.1	-0.9	-0.3
Plant Waste	60	6.8	83	7.9	111	7.8	136	7.3	6.7	6.0	5.2	5.7
TOTAL	875	100.0	1,057	100.0	1,442	100.0	1,851	100.0	3.9	6.4	6.4	6.4

^{1/} TPE = tons petroleum equivalent. As point of reference, a petroleum having 10,212 calories/kilogram (caloric-power) and 849 kg/cubic meter (specific mass) is used.

-SOURCE: National Energy Balance - 1965-1979, GOCR publication, June, 1980

C. Energy Balance

1. Sources

The evolution of Costa Rica's use of primary energy over the 1965-79 period is shown in Table 3. Over that period both hydroelectric energy and petroleum have become more important in the country's energy picture and firewood less (the consumption of firewood has remained almost unchanged). Plant waste, principally bagasse has, over time, maintained its relative importance. During the 1965-79 period, Costa Rica's production of energy increased by 47%, but its overall energy use increased by 100%. This was made possible by a greater dependence on imported, non-renewable petroleum, the use of which almost quadrupled during the period. It is of interest to note, especially given Costa Rica's tremendous hydroelectric potential (which is discussed below) that a drop occurred in the rate of growth of hydroelectricity production during the 1975-79 period, with hydroelectricity production increasing at an annual rate of only 5.5%, compared to rates of 8.2% and 9.9% in previous periods. This dip is no doubt due to the unanticipated delay in 1979 in getting ICE's 156 MW Arenal project on line. Given that electricity sales have grown at an 8.8% annual rate in the 1970-79 period, the dip in the growth of hydroelectric production resulted in higher petroleum use than would have occurred had Arenal been on-line sooner. This underscores the importance of timely hydroelectric development in Costa Rica. In 1970 ICE consumed 41,000 barrels of diesel for electricity generation, accounting for only 5% of the country's diesel consumption; by 1975 ICE's electricity generation consumed 343,000 barrels of diesel which accounted for 17% of diesel consumption; and by 1979 1.1 million barrels of diesel were burned to generate electricity, some 30% of diesel consumption. To put the foregoing into perspective, gasoline consumption in 1979 was between 1.2 and 1.3 million barrels and the diesel consumed by ICE for electricity generation constituted about 20% of Costa Rica's petroleum use. Furthermore, the delay in Arenal caused costly electricity rationing in 1979. With Arenal connected to the ICE grid in 1980, the use of petroleum to generate electricity is now limited to the negligible amount required for its still isolated systems.

2. Applications

According to the latest studies, the primary energy sources are applied as follows: ground and air transportation, 19%; residential use for electric lighting and cooking, 29%; industry 23%; construction and agriculture, 21%; and commerce, 8%. For petroleum, the most important use, by far, is for transport (67.3%).

3. Costa Rican Energy Resources

Costa Rica is relatively well endowed with renewable energy resources. In addition, it also has significant potential for non-renewable energy resources as indicated below.

a. New and Renewable Resources

The most abundant and widely known Costa Rican energy resource is hydroelectric power, the potential of which is estimated to be 9,000 MW at 75 prospective sites. At present only 619 MW (6.9% of the potential) are installed capacity (including the 174 MW Corobicí plant, downstream from Arenal, which is now under construction). Hydroelectricity has three major problems associated with it: (1) the initial capital costs are high, especially at today's high interest rates; (2) given present technology, its role in transport --a high petroleum user-- is limited; and (3) the on-going degradation of watersheds and competing land uses (especially in potential reservoir areas) may sharply reduce hydroelectric potential to well below 9,000 MW.

Although Costa Rica's volcanic areas are in many ways an ever present threat, they also represent a major geothermal energy asset. Results to date indicate that the IDB-financed efforts to use the Miravalles geothermal field for electricity generation is a very feasible operation which will yield 55 MW with costs significantly lower than hydroelectricity (in addition to being seasonally "firm"). Most of the drawbacks to hydroelectricity development (except the watershed and alternative land use questions) also apply to geothermal energy. Although no reliable estimate of feasible Costa Rican geothermal potential exists, the potential is thought to be large.

Factors which provide Costa Rica with its very large hydroelectric potential --heavy rainfall and a short dry season-- also limit its solar energy potential as the frequent cloud cover limits ground-level capture of solar radiation. The period of highest solar insolation values generally occurs around March and ICE's solar radiation stations measure from .53 to .38 KW/m² for the month. During much of the rest of the year solar insolation may be only one half the dry season value.

Although Costa Rica's rainy season in most places is long and wet (its Guanacaste "desert" gets more rain than Portland, Oregon), the dry season, frequently quite short, is also very dry. While small-scale hydroelectric potential is limited by this situation, many areas may still support year round flows sufficient to justify this technology. The exception to this generalization may be in the Atlantic Region which because of a short and rainy "dry" season may well be able to utilize this type of technology.

Little is known about Costa Rica's wind-related (aeolic) energy potential, although in some areas of the country there are winds during most of the year. In these areas there are also no winds during parts of the year. Some of the areas which have aeolic potential are not serviced by ICE national electricity grid and winds (and storage batteries) could provide them with electricity, but at high cost^{1/}.

In sum, except for biomass-based ethanol production, geothermal electricity (which in Costa Rica should now be classed as a conventional electricity source, given its proven feasibility), and limited solar drying and water heating applications, non-conventional (non-nuclear) energy sources offer little opportunity for improved energy efficiency or large scale, efficient energy production^{2/}.

b. Non-renewable Energy Resources

Petroleum exists in Costa Rica. In 1955-57 a US oil company found oil in two wells in Limon Province. One well had little oil in it at low pressure. The other initially produced high quantities of petroleum at high pressure, but as time passed production declined to 4,050 barrels a day (containing 90% salt water) and all pressure was lost. The wells thus were not commercial. The GOCR and the Mexican State oil company, PEMEX, are presently undertaking an exploration program in the Limon areas. Several of the wells drilled in the Limon area produced methane and the area also has oil shale and tar sands. Scattered surface shows of methane have also been reported. Still, the existence of commercial quantities of oil or gas has yet to be demonstrated.

^{1/} During the preparation of the Science & Technology Project, the Mission reviewed an "integrated energy project for isolated areas" which consisted of an aeolic, "low-head" hydro-solar mix for electricity supply in isolated (non-interconnected) areas. The theory being that when there was no rain run-off (and streams were dry), then either the sun would shine or the wind would blow. Unfortunately, because of high capital costs per KWH the integrated system could not compete with small diesel generating plants.

^{2/} Although at first glance many of these "light capital" technologies appear attractive, usually they are expensive per KWH. For example, it is unlikely that significant improvements can be made in aeolic technology--it has been around for at least a thousand years and even Dutch windmills are mainly tourist attractions.

On the other hand, coal deposits have been found in several parts of the country. One high quality deposit was discovered by ICE in the Talamanca Valley in 1978, and preliminary assessments indicate that coal outcrops exists over an area of 40 sq. km. A preliminary assessment is that there exists some 26 million tons (and maybe as much as 100 million tons) of highly volatile bituminous coal (average heating value 6,555 K cal/kg.). This amount of coal, depending on quality, is equivalent in energy terms to some 75-100 million barrels of oil (or much more if there are 100 million tons). In relation to Costa Rica's annual oil consumption of some 5-6 million barrels per year, the deposit could, if proven to be of commercial size and quality, become a very significant resource. Little is known about the nature of other deposits, but lignite is found in Venado and Upala, Alajuela; a bituminous deposit exists in Rio San Carlos and a sub-bituminous deposit near Esparza. Several other outcroppings exist about which little is known. None of these deposits have been developed and in general not enough is known about them.

D. GOCR Response to the Energy Problem

1. GOCR Energy Objectives

The structure and dynamics of present day energy use, Costa Rica's energy potential, and the negative long-term impact of increasing petroleum prices on the economy have led Costa Rica to adopt energy policy objectives which when taken together attempt to maximize the use of domestic energy resources.

2. Energy Sector Organization

In order to implement the overall policy, the GOCR Executive in February of 1980 by Decree 11145-E-OP created the Energy Sector (see Annex H), chaired by a Minister without portfolio. The Energy Sector, part of the GOCR's sectorial planning subsystem, consists, according to the decree, of the Ministry of Energy and Mining, OFIPLAN, the Ministry of Culture, the Ministry of Public Works and Transport, the Ministry of Economy, Industry and Commerce, ICE, the National Electric Service (a regulatory entity), RECOPE (the GOCR's oil refinery), CODESA (the public industrial holding company) and representatives of the Chambers of Commerce and Industry. The entities making up the Energy Sector are represented on the National Energy Council, a consultative group presided over by the Minister of Energy. The sector also has a sectorial planning office, SEPSE, and a Technical Committee, made up of the planning heads of the entities on the National Energy Council and chaired by the Chief of SEPSE.

The Ministry of Energy was created pursuant to a recommendation of the Second National Energy Commission, the last of several interinstitutional commissions created to deal with energy

questions since 1974. The basic idea behind the Energy Sector is that the Ministry of Energy will utilize, to the maximum extent possible, the resources of sectorial institutions to carry out its responsibilities.

3. Energy Sector Projects

The National Alcohol Program described in greater detail in Annex I, has as its eventual objective the substitution of alcohol for virtually all petroleum motor fuel. This program has been assigned a high priority by the GOCR. In its first stage, both anhydrous alcohol (98.5%) for gasohol and hydrous alcohol (95%) will be produced, the latter with an eye to the eventual complete substitution of petroleum. The program's first stage goal is the production of 38 million liters per year of hydrous alcohol in three different geographic locations and the production by 1982 of 1.25 million liters of anhydrous alcohol using the \$13 million, 240,000 liters per day CATSA facility. In addition, three potential suppliers have responded to a public tender for proposals to supply the CNP with 50 million liters of hydrous fuel alcohol. The planned 1982 CATSA production could replace about 30% of the nation's gasoline consumption with gasohol containing 20% alcohol. The 88 million liters per year from the hydrous alcohol projects could replace another 46% of gasoline consumption with pure 95% alcohol. However, this alcohol program still faces many unknowns, as will be discussed below.

Oil exploration in the Talamanca area, continued hydroelectric capacity expansion, refinery expansion, coal exploration, and the creation of geo-thermal generation capacity are also high priority activities in the sector.

4. Progress to Date

In spite of the fact that, until very recently, the share of imported petroleum in the total energy supply increased constantly and rapidly, the country has made substantial efforts in the energy area, many of which have met with considerable success.

ICE's electrical development program is probably the best in Central America. Costa Rica is now self-sufficient in electricity and has a solid, forward looking hydroelectric and geo-thermal development program. Largely because of successful hydroelectricity development, Costa Rica is less dependent on petroleum for its energy needs than its Central America neighbors.

The CATSA distillery, although not an economic success, has given Costa Rica experience producing anhydrous alcohol; some 1,100 ICE, RECOPE and police cars are running on gasohol in a test program. Sales of gasohol to the public began in April of this year.

Aggressive fuel price increases moved the price of gasoline from Q8.40 in January, 1979 to Q24.30 per gallon in May, 1980 (a 189% increase), and the price of diesel from Q3.90 per gallon to Q10.50 over roughly the same period (a 164% increase). As a result of these increases, diesel consumption declined by 18.5% in the first six months of 1980 compared to the previous year, and the consumption of gasoline declined by 16.6%. Preliminary data indicate that fuel consumption remained at these lower levels through the end of the year. Three fuel price increases have been announced by RECOPE in recent months, as depicted by the following table:

Fuel Prices Increases since May, 1980 (per gallon)

	<u>Gasoline</u>	<u>(% Incr.)</u>	<u>Diesel</u>	<u>(% Incr.)</u>
12/26/80	Q28.50	(+17%)	Q18,81	(+79%)
3/26/81	36.10	(+27%)	23,56	(+25%)
5/2/81	43.70	(+21%)	26,22	(+11%)

It should be pointed out that this recent series of price increases has resulted primarily from the continued devaluation of the colon vis-á-vis the US dollar which has been occurring over the last several months. Indeed, fuel prices have remained virtually stable in dollar terms over the past few months, and have in fact declined with respect to the May, 1980 price of gasoline. Diesel prices are higher now in dollar terms than they were in May, 1980 due to an attempt to rationalize the price differential between diesel and gasoline fuels, as shown by the 79% increase effected last December. This rationalization policy has been considerably tempered since then, as the two subsequent price increase percentages clearly show. Nonetheless, the domestic impact of these price changes is starkly visible in the fact that fuel prices at the pump have risen 53% for gasoline and 39% for diesel since the New Year for the Costa Rican consumer; since January, 1979, these price increases are 418% and 569%, respectively. It is worthwhile noting that part of the high price paid for gasoline has been used to subsidize public transportation.

Finally, in terms of administering the country's institutional activities, the Energy Sector has been organized and a start has been made on building a GOCR institutional structure to develop and implement a coherent energy policy.

E. National Energy Planning

1. Costa Rican Priority to Energy

The Plan Nacional de Desarrollo, 1979-82 in its Energy Program stated that the availability of energy is a basic factor in

Costa Rica's economic development and that the rising cost of imported energy has directly affected its rate of growth as well as its ability to distribute equitably the benefits from economic growth throughout the population. Due to the country's growing dependence on petroleum and its increasing cost, the Plan advocates the creation of a technical infrastructure that would permit development and exploration of petroleum and other traditional energy resources as well as renewable energy sources. In February, 1980, the GOCR created the Ministry of Energy with the expressed objectives of promoting the integration and rationalization of Costa Rica's energy future; and organized the Energy Sector. On May 8, 1980, the President's Office released a document entitled "The National Program for the Production of Fuel Alcohol from Renewable Products". This presidential statement proposes planting 100,100 hectares, on which sugar cane is not now being grown, with cane for the production of alcohol ("canol") to produce hydrous (95%) ethanol to substitute for 590 million liters of liquid fuels annually. In order to make the alcohol program more feasible and minimize petroleum imports, importing cars with engines having a capacity larger than 1,250 cc was banned.

The proposed project will help the GOCR to identify both the constraints to and possibilities for pursuing its energy development and conservation.

2. USAID Energy Assistance Strategy

The 1982 CDSS places special emphasis on alternative energy development as an important vehicle for improving the critical economic situation in the coming decade. The continuation of the negative impact of higher petroleum prices in the economy underscores the importance of undertaking energy related projects to reverse the long-term trend. Reducing dependence on imported petroleum and the search for alternative sources of energy are identified as priority areas for research and development. The proposed project addresses these concerns and is thus consistent with the CDSS in attacking the underlying causes of the economic crisis.

This project also reflects the goals of AID energy policy, which are to ease the energy constraints to development in Third World countries and to help these countries make the difficult transition to a mix of energy sources that will sustain their economies in the future. The experience and product of these proposed research efforts in Costa Rica could generate information that would be valuable in other countries where AID works.

The project complements the on-going Science & Technology Project in which applied research in energy matters is a main objective, along with research in industrial technology and the

rational use of natural resources. The emphasis in the Science & Technology Project is on technological development. In this project the emphasis will be on increasing the knowledge of existing energy options and capacity for rational energy planning; and although the project will be concerned with technological developments and options, it will not develop new technologies.

3. Other Donor Activities

The prospects of world energy shortages and soaring prices have drawn the attention of all the major donors. While the IBRD is discussing a \$25 million oil financing facility, the IDB is promoting a program to insure investments in energy and minerals development in Latin America. OLADE is focussing attention on geothermal, biogas and energy planning, and CEPAL is studying the impacts of oil increases. In Central America, CABEI is promoting the interconnection of the electrical network, ICAITI is attempting to adapt renewable energy technologies, CATIE is studying woodfuel problems, and the UNDP has been assisting the construction of energy balances as planning tools.

Costa Rica is also receiving a range of specialized assistance in energy. The IDB is currently approving a \$100 million loan to ICE for the Ventanas-Garita hydroelectric project and the third stage of the Miravalles geothermal project. There are proposals from Costa Rica to IDB for 1981 including \$2 million for seismologic studies and \$20 million for "energy resources" (alcohol) subject to the preparation of technical surveys to justify these activities. IDB is also considering a loan to ICE for \$1.5 million to further study the coal resources in the Palamanca Valley. CIDA is discussing with MOE the possibility of studying sugar cane in the Atlantic Zone and the introduction of the Tilby Separation Scale into cane processing. Costa Rica is using concessional funds from the Mexico-Venezuela oil facility to search for potential oil reserves, to expand refining capability, and to build new oil ports and pipelines. The UNDP, as part of its Energy Program for the Central America Isthmus (PEIC), has worked with OFIPLAN in completing a historical summary of the physical balances for primary energy use in Costa Rica. Neither OLADE nor the EEC is currently active in the Costa Rican energy sector. ICE, through its office of Special Studies with funding from the IBRD, has completed a preliminary report on four renewable energy resources--solar, wind, biomass, and small hydro. However, the results of these reports are insufficient to make reasonable decisions as to practical applications in Costa Rica. A more thorough evaluation of these possibilities is now underway with IBRD financing. The US National Academy of Sciences (NAS) funded a workshop through CONICIT in March 1980 on Energy and Development in Costa Rica, where some approaches to non-conventional energy were treated. From the ICE study, the NAS workshop and other meetings comes the conclusion that more basic

data are needed before Costa Rica can reliably define its renewable energy options or make further investments in large scale non-conventional energy hardware (such as the \$70 million C.A.T.S.A. distillery).

IBRD has recently approved a \$3 million Petroleum Sector Technical Assistance Loan Project with RECOPE, the national petroleum refinery. The project, not yet signed, would assist the Government of Costa Rica in its efforts to assess and develop the country's petroleum potential, prepare specialized energy sector studies, and address issues in the refining subsector. It would complement ongoing exploration efforts being carried out with the assistance of Petroleos Mexicanos (PEMEX). The Project includes: (i) complementary survey work, including marine seismic and airborne magnetometer (airmag) surveys, required for a complete review of the country's petroleum potential; (ii) about 10 man-months of exploration consultant services, to help review and interpret data and prepare an exploration strategy; (iii) about 15 man-months of short term consultancies to undertake specialized geological studies; (iv) about 30 man-months of consultant services to help develop a national energy data base and prepare a national energy plan; (v) about 20 man-months of consultant services to help prepare a study of options in the refining subsector; and (vi) staff training and purchase of library materials and specialized office equipment. The Mission has reviewed the World Bank project with SEPSE, and both agree that the two projects focus on different areas of energy development. The IBRD project is oriented toward petroleum development and planning while the AID project deals with identifying non-petroleum energy alternatives, conservation methodologies, and the development of the various skills and tools necessary for general energy sector management and policy making. Further, because the IBRD project is a loan, it will require approval by the Costa Rican legislature--a process which is typically lengthy and will probably require more than a year to complete. The AID project, however, is entirely grant-funded and does not require legislative approval. It may begin as soon as the Grant Agreement is signed and will therefore address more immediate GOCR needs in the energy sector. The two projects will, however, serve to reinforce each other, and because both will touch on the area of planning, it has been agreed that close coordination will be carried out between the individuals or units responsible for carrying out project activities.

III. DETAILED PROJECT DESCRIPTION

A. Goals and Purpose

The goal of the project is help Costa Rica reestablish the dynamic growth of its economy. Finding effective means for decreasing the ever-rising dependence on foreign oil imports, which has seriously weakened the country's terms of trade, is seen as a key element in this process. In order to achieve this goal and augment the effectively available domestic energy supply, a comprehensive national energy plan is needed to provide for more efficient energy use and the development of alternative supplies in ways that are economically feasible. The purpose of this project, then, is to strengthen the Government of Costa Rica's capacity for energy sector planning.

B. Project Components

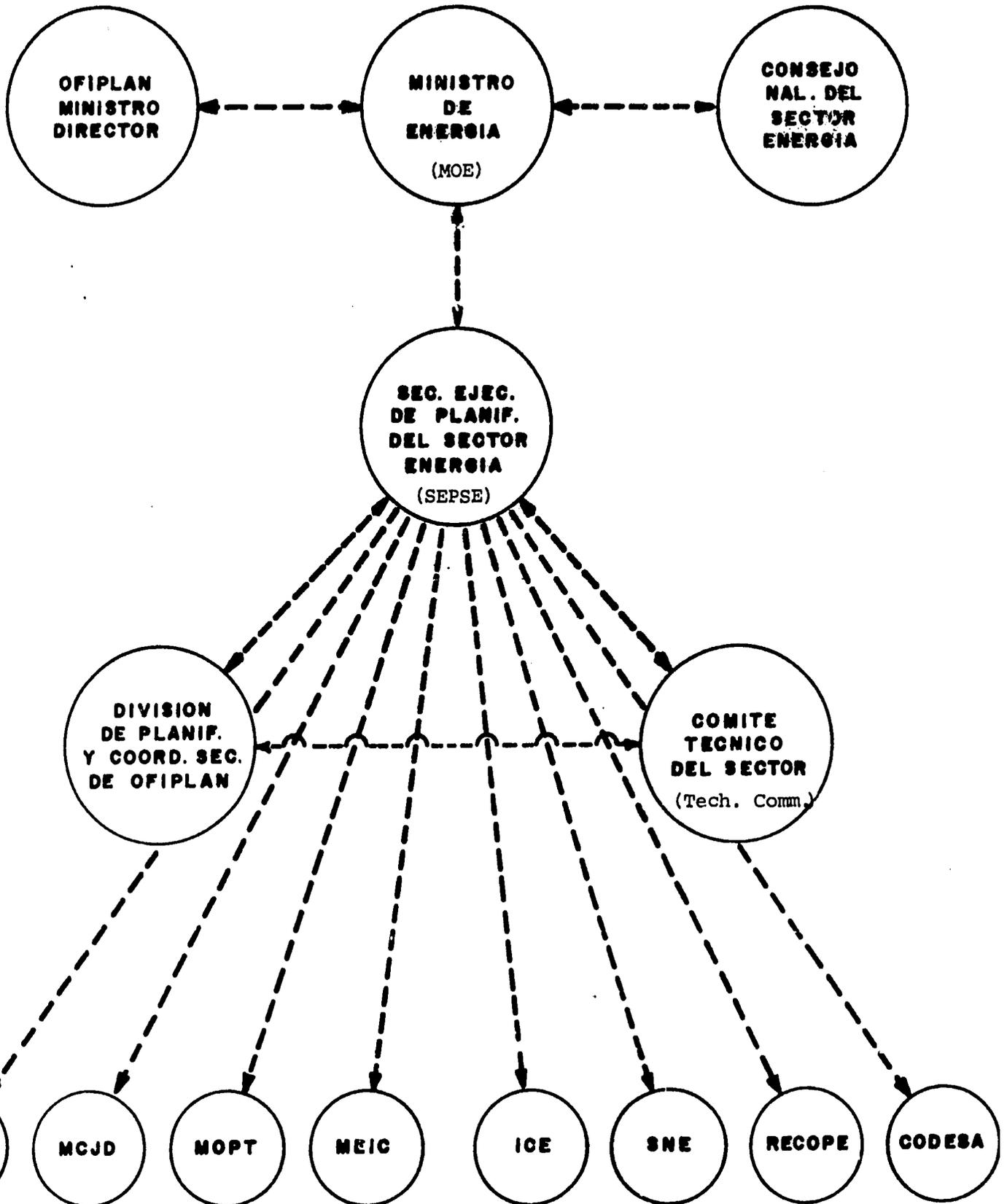
The project contains four components: energy sector management, energy research and studies, energy planning information and training and exchange.

1. Energy Sector Management

The Government of Costa Rica recognizes the importance of managing the energy sector in carrying out its national development program and in reestablishing dynamic economic growth in Costa Rica. In February of 1980, the executive branch issued a decree to integrate the various governmental and public entities which make up the energy sector under the umbrella of the newly created Ministry of Energy. While the organization of energy sector institutions is clear (see page 22), and the functions of the MOE, SEPSE, National Energy Sectorial Council, and the Technical Energy Sectorial Committee are well defined, actual operations are only now beginning. The MOE has no budget other than contributions from OFIPLAN and other GOCR entities, and is headed by a Minister-without-portfolio. SEPSE has been severely limited in its activities by a lack of staff (it has a total of four people, including two borrowed from ICE and one from RECOPE), and the Technical Committee has met only once, and determined that further action was not necessary until the energy sector was mobilized. In large part this has been due to the lack of funds for energy activities, and a government austerity program which precludes the hiring of new personnel. One of the objectives of this project will be to strengthen these GOCR institutions and assist them in mobilizing their resources to carry out their policy and planning functions. Additional people will be assigned to SEPSE from other energy sector institutions, including an electrical engineer, an economist and other staff to be determined later. A full-time energy specialist will be provided under the project, and will be

SECTOR ENERGIA

DECRETO N° 11145-E-OP



physically located at SEPSE where he can provide technical support to the SEPSE Director and staff. The Project Advisor will also be able to provide technical assistance to the sectoral Technical Committee as needed. The role of the Project Advisor is seen as complimentary to, and supportive of, the function of the Planning Advisor, previously hired under the UNDP program and who now will be financed under the proposed IBRD project. The IBRD Planning Advisor will assist SEPSE in identifying and evaluating long range energy policies. The Project Advisor will monitor project activities and provide technical support to the entities involved in selecting and evaluating energy studies and in identifying short-term technical assistance for these studies.

The project will also support and strengthen the role of the Energy Sector Technical Committee, which is chaired by the Director of SEPSE. It includes the OFIPLAN Director of Sectorial Planning and the planning chiefs of each institution represented on the National Energy Sector Council. The Technical Committee will coordinate with CONICIT, UCR, ITCR and other public or research facilities active in the energy sector. SEPSE will receive and review proposals for the various prefeasibility studies and energy planning research activities described below, and submit the proposals selected to the Technical Committee for review. The results of these studies will provide SEPSE with information, analyses, and recommendations regarding various energy options as part of the development of rational energy strategies and a long range national energy program. At the same time SEPSE will have access to technical assistance and support from the Technical Committee as well as more limited assistance from the National Energy Sectorial Council. SEPSE, as the planning organ of the Ministry of Energy, will have the primary responsibility for preparing the National Energy Development Plan, which will be done in accordance with the National Development Plan and coordinated with OFIPLAN. The focus of this component will be to promote active and responsible participation on the part of GOCR entities in their respective roles as members of the energy sector, and coordinating their contributions to energy planning while at the same time strengthening SEPSE's capacity to carry out its sectoral planning function.

The energy sector will be strengthened as a result of the various energy surveys, prefeasibility studies and other research activities which are described below. As these activities are completed, they will provide the Technical Committee, SEPSE, and the National Energy Council with the types of information needed to identify concrete and feasible energy project alternatives and to make informed policy level decisions.

2. Energy Research and Studies

Institutionalizing the planning process in the sector has been difficult because of the limited staff and resources available to SEPSE due to general GOCR austerity. Critical gaps in energy data and analyses exist which require the undertaking of special studies on topics related to energy demand, supply, and conservation. Further, the design of a national program aimed at increasing net energy supplies will also require detailed prefeasibility studies of specific project options.

The studies to be performed will be reviewed by SEPSE and the Technical Committee. The Project Advisor will also be available for consultation on technical aspects of proposed and completed studies. This internal review and evaluation will help ensure that the final studies represent cost-effective approaches to specific problems and contribute to an integrated energy planning process.

a. Survey of Energy Sector Data

As a first step in providing the data, information and analyses necessary to complement existing energy planning efforts, a survey will be undertaken to determine where information gaps exist, what areas of energy development have been explored in some detail and where further research is needed. The GOCR already has access to considerable analysis on energy supply and demand for Costa Rica, including both historical data and some projections (Balance Energético and Alternativas de Desarrollo Energético) produced under the UNDP sponsored RLA/76/012 project. These documents and all others providing information on the technical, economic, social and cultural aspects of the development of the energy sector in Costa Rica, including completed, on-going and planned energy projects and research, will be collected and reviewed. The resulting survey will define more specifically areas where further analytical efforts are needed (e.g. hydropower, energy training) and the type of analyses required (e.g. prefeasibility study, resource assessment). The result of this process will be an organized information base which will be useful in assigning priorities to future efforts.

b. Plan for Energy Studies

Using the results of this survey, SEPSE, in consultation with the Sector Technical Committee, will determine priority areas for further energy planning studies. In addition to considering information gaps, other factors will be weighed including probable costs; the existence of supporting projects and infrastructure; environmental, social or institutional constraints; site-specific problems; proportion of national energy needs affected; and the form of energy and whether it can be used as a substitute for imported petroleum. Specific project research proposals that address

the identified areas will be reviewed and selected by SEPSE, taking into account energy technology research activities supported by CONICIT. After consultation with the Technical Committee, these proposals will be included in the Plan for Energy Studies. This plan and modifications thereof will be approved by the National Energy Sector Council and AID.

Several probable, initial studies in priority energy areas likely be included in the plan have been identified as a result of discussions with GOCR energy planning officials. These studies will be in the following areas:

i. Non-Conventional Fuels

This area is very broad one, ranging from solar energy to ocean thermal energy conversion. The likely emphasis in this project will be biomass energy resources.

The growing or collection of biomass materials for energy has significant agro-economic implications in a country such as Costa Rica, which depends on agriculture for domestic food supplies and for most of its export earnings. Prudent resource management requires that thorough studies be done prior to changing existing land use from food and export crops to energy crops.

The potential for utilizing biomass-based energy alternatives can only be fully assessed on the basis of better information about sources--fuelwood, agriculture residues, urban wastes, etc. Many data on climatological, geographic and soil mapping characteristics are already available. However, a review of this data in light of current land use practices and possible alternative land uses could lead to optimizing agricultural production and allow planting larger areas in both energy crops and valuable food and fiber crops.

Furthermore, the existing forest biomass resource in Costa Rica, while large, has suffered from poor management and is increasingly being converted to agricultural uses. Although planting of new secondary forests is an energy option, in practice great difficulties of both an economic and a technical nature have arisen in stimulating the planting, maintenance, harvesting and processing of trees, even for non-energy uses.

Both the future potential of biomass energy for Costa Rica and the present importance of fuelwood for many rural people have been recognized in GOCR planning documents. Further, the general outlook for biomass resources has a strong bearing on the GOCR fuel alcohol program and the various forestry and natural resources programs undertaken by Costa Rican entities, and with AID support. Therefore, it is of some importance to assess the overall Costa Rican biomass potential to ensure that adequate information will exist for

future energy planning. The proposed study would evaluate the problems and opportunities for a more thorough and rational development of Costa Rican biomass energy resources. Any assessment of bio-mass potential would be coordinated with any AID-financed natural resources activities of a similar kind.

Included within the general area of biomass energy sources would be an assessment of the country's existing alcohol fuels program (see Annex I), the goal of which is to reduce the country's dependence on petroleum-based transportation fuels. The GOCR is currently seeking a \$20 million loan from IDB to help finance an alcohol program. Both MOE and OFIPLAN have agreed that a serious need exists to collect the basic data necessary to rationalize and guide such a program. Essentially the government is proposing to plant sugarcane in areas not currently used for sugar production (northern, Atlantic and portions of the southern Pacific zones). The government has released a public bid for offers to produce alcohol and has considered moving the 26,000 liter/day or 30,000 liter/day beverage distilleries which are being shut down to one of these new zones proposed for alcohol production. Another option being considered is to use the excess capacity (30,000 liter/day) in the new 60,000 liter/day beverage distillery for producing some fuel alcohol. These and other options raise a series of critical questions.

The importance of this topic, involving as it does a commitment of major amounts of agricultural land and industrial capital, has been recognized in the recommendations section of the GOCR document "Alternativas de Desarrollo Energético: Período 1981-2000" and in conversations between AID and GOCR planners. Economic issues such as alternative land uses and agronomic issues such as the feasibility of harvesting sugar and starch crops in high rainfall areas, and possible alternative or additional feedstock crops would be examined in the assessment. Fuel distribution and use issues would also be addressed.

ii. Energy Conservation

Significant reductions in energy consumption could be achieved through improvements in energy use in Costa Rican industry and agriculture. Because fuel prices to several sectors are already high it might be assumed that the market is stimulating improved energy efficiency; however, the subsidized price of fuel oil to industries diminishes possible price effects. In addition, the information and expertise needed to improve the efficiency of industrial energy use are often lacking.

Furthermore, since Costa Rica presently has a significant amount of hydroelectric power available (especially "non-firm" power), and is projected to have surpluses of hydroelectric power over the next decade, there is great motivation to encourage

fuel switching in industries from petroleum to electricity. While market forces can be expected to encourage these shifts, industries often are short of the engineering and planning skills needed to carry out fuel switching in a cost-effective way.

Therefore, as recognized in the recommendations section of the "Alternativas de Desarrollo Energético: Período 1981-2000" and from discussions with GOCR officials, a study of more rational use of industrial and agricultural energy and the substitution of electricity for oil in industry would be a high priority subproject. In addition to some pilot efforts to identify the technological possibilities and economic feasibility of conservation and fuel switching, the effect of fuel pricing policies merits special attention (e.g. subsidized bunker prices, switching to domestic or imported coal, etc.).

iii. Hydroelectric Power

As discussed earlier, Costa Rica's most abundant energy resource is hydroelectric power, with a potential some ten times greater than current installed capacity. However, neither enough suitable end uses to justify the addition of new capacity, nor potential interruptible loads that could utilize off-peak capacity have been identified.

One proposed study would take an overall look at the possibilities for the expanded use of electric power in Costa Rica. New or expanded end uses would be discussed, showing the advantages and disadvantages of each, in the light of potential economic and balance of payments effects. Consideration would be made of the sale of electric power, the manufacture of hydrogen and ammonia, the use of electric vehicles, electrification of urban mass transport, etc. Reference would be made to the proposed study as industrial fuel conservation and switching outlined above. Again pricing policies for off-peak capacity utilization would receive special attention as would the options and economics of thermal "firming" vis-a-vis the costs of new hydro-electric construction to satisfy peak needs at differing capital costs.

Another topic in this area concerns small scale rural hydroelectric power generation. ICE does not currently study small hydro sites, nor does ICE envision being able to extend the electrical grid to all rural areas of the country. Provision of electricity to rural areas which do not have access the country's electrical grid could improve access to water; increase productivity; power irrigation; make new activities possible (e.g., sewing, milling, wood-working); provide lighting for education and recreation.

The object of such a study would be to survey the small hydropower resources available to isolated rural communities and develop a methodology for site selection and specific project development. The costs of such an approach would obviously be compared to that of grid extension and the continued use of petroleum or other fossil fuels or even retro-fitting for bio-mass fuels.

iv. Conventional Fuels

The GOCR is currently sponsoring exploratory drillings for petroleum, and an assessment of the extent and exploitability of Costa Rica's coal deposits is also being carried out. The GOCR is receiving assistance from the Government of Mexico (PEMEX) in oil exploration, limited assistance from Japan in coal exploration, and is seeking World Bank support for petroleum exploration. Nonetheless, energy planning officials of the GOCR have expressed concern about certain gaps in the conventional fuels area which this project could help to fill. For example, the World Bank Petroleum Sector Technical Assistance Project is not yet a reality; it could be a year or more before the Costa Rican Legislative Assembly ratifies it. In the meantime, USAID support of a petroleum exploration expert already identified by the office of the Ministry of Energy could allow important preliminary work to be accomplished pending final approval of the World Bank project. In addition, the USAID project will focus on basic issues in coal and gas exploration and development.

v. Energy Sector Management

To further the general objective of improving energy sector management, the project will support the development and evaluation of annual operating plans for the sector. This need has been identified as a key one by GOCR energy planning officials, and would entail the services of a specialist in systems analysis. Similarly, assistance in developing a system for evaluation and control of the longer term planning process is important. Given the fundamental nature of these efforts they will be carried out early on in the project's execution phase.

3. Energy Planning Information

SEPSE has a critical need for better information on energy technologies and other planning parameters. At present, SEPSE has neither the space, the staff nor the budget to establish a documentation facility. The project will address these needs with the following activities:

a. Documentation Center

The most immediate information need is to collect and organize the various periodicals, books, studies and other documents necessary to set up a basic energy library, or Documentation Center. Successful energy library efforts in other countries will be examined and the short-term technical assistance of a documentation specialist will be provided to help plan, select, and organize materials which will be located in SEPSE. The particular informational needs of the energy sector will also be examined, including documentation necessary for comprehensive energy planning, sector management and research; alternative technologies; general economic data related to energy; and, of course, all documentation relating to Costa Rican energy efforts.

Documents and references needed for specific studies in this project will be obtained as a part of the studies themselves. However, a process will be established to organize and integrate study-related documentation into the energy information system. In addition, to the extent practicable, other documents already available to OFIPLAN, MOE, A.I.D., and other relevant agencies will be integrated into this information system.

The utility of a computerized information retrieval system will be examined, as will the costs and benefits of hardware and software options. The possibility of link-ups with existing systems, such as that at ITCR, will be studied.

b. Energy Research Study Center

A second activity of the information component will be a study to determine the feasibility of creating an Energy Research Center. This will be carried out in consultation with CONICIT, which sponsors energy technology research and makes recommendations to the GOCR on science and technology policy.

4. Training and Exchange Programs

The project will finance various types of short-term training, both for GOCR personnel and for personnel of other energy sector institutions such as ICE and RECOPE. Several of these institutions have already expressed interest in training opportunities, and some candidates have recently been chosen to participate in AID's centrally-funded energy training program. This project will continue to utilize these training resources in conjunction with, and as part of, the training component. The central AID Energy Management Training Program and Training in Alternative Energy Technology project (see Annex G), will provide short-term training opportunities for both energy planners and technicians. Also offered by the centrally-funded project is a long-term Master's level

program in conventional energy, for which a candidate may later be identified.

Because of time and budget limitations however, this project will provide only short term training activities. Various courses will be selected or developed to help energy sector personnel improve both technical skills as well as planning and management capabilities. The training component, which will also serve to further information exchange between the GOCR energy sector and other sources of energy expertise, includes the following activities:

a. Short-Term Training

There is a need for short-term energy training courses for staff of SEPSE, OFIPLAN and the various participating energy institutions. To the extent possible existing A.I.D. energy training programs in the United States and elsewhere will be utilized. AID staff and the Project Advisor will provide assistance in identifying specific training programs appropriate to the needs of mid-to-senior level energy planners as well as for more specialized technicians working in various energy activities.

b. Seminars and Workshops

A series of local seminars and/or workshops will be planned and implemented under this project. In general, the seminars will involve participation by GOCR planners at all levels. In the main, seminar leaders will be drawn from among experts at Costa Rican universities and other institutions. Outside consultants and experts may also be contracted to help develop curriculum and to present material, or both..

c. Exchange Programs

Exchange programs of GOCR planners with energy planners and other experts from institutions in the United States and Latin America will be carried out. The conditions of these exchanges and the lengths of time involved will be determined during the course of the project; however, it is anticipated that exchanges normally will be six weeks to three months in duration.

IV. PROJECT ANALYSES

A. Economic Analysis

The purpose of the project is to strengthen energy policy development efforts in Costa Rica through improvements in analysis, research, energy documentation and training in the energy sector. The economic benefits to be gained from an "institution building" project of this nature are indirect but nonetheless real. Traditional cost-benefit analysis is not appropriate due to the difficulty of quantifying the value of even the direct outputs of the project. Although the project will disburse over a three year period, the long planning horizon associated with energy policy, and the long lead time for projects (and thus benefits) which may result from the anticipated studies further complicate the picture. Despite these difficulties, the project will result in benefits which can be analyzed in terms of energy cost savings, foreign exchange savings and reduced indebtedness, effects on other sectors, and environmental and other externalities.

Energy Cost Savings

In exchange for the resources invested by USAID and the GOCR in this project, certain benefits --and perhaps costs-- can be anticipated. The benefits should come in the form of less expensive future energy supplies for Costa Rica. But even at present and likely near-future petroleum prices, there are few supply alternatives that replace petroleum and result in significant cost savings. A notable exception to the foregoing is in the field of energy conservation. It is not unreasonable to expect that simple housekeeping measures can yield savings of some 10-20% of petroleum use by the year 2000, or 100-200 thousand TPE a year^{1/}. If conservation measures cost the equivalent of say, \$100/TPE, as compared with the current petroleum cost of \$250/TPE, cost savings to the Costa Rican economy would still be some \$15-30 million a year. That Costa Rican industry can and will adopt energy conservation measures has recently been demonstrated by a pilot project sponsored by the Ministry of Agriculture which analyzed energy use in some thirty-five coffee-processing beneficios across the country. These sophisticated computer analyses have resulted in operational and fuel switching changes in several of the beneficios which have yielded energy cost savings of up to forty percent. For an industry as energy-intensive as coffee processing, such savings are very important to productivity.

^{1/} TPE = Tons petroleum equivalent, see Table 3.

Foreign Exchange and Lowered Indebtedness

Projected project benefits which result in foreign exchange savings and lower public sector indebtedness also provide a central economic rationale for improving energy planning. Regardless of future price tendencies for imported oil, at current prices imports of oil are having a ruinous effect on Costa Rican foreign exchange reserves and indebtedness. As discussed at greater length in Section II, the oil price increases have played a key role in the increase of public sector external debt. From 1974 on, 53% of Costa Rica's trade deficit is accounted for by oil price increases.

All the components of this project, from information and training, to direct assistance to planners and financing of prefeasibility studies, will have as a major focus lessening of imports of petroleum and other energy-related debt service. If oil imports (\$201 million in 1979), can be decreased in future years by \$20, \$30, or \$50 million yearly, the effects on foreign exchange and debt service ratios could be immense. The opportunity cost of foreign exchange is very great, as the current exchange crisis emphasizes. Project costs appear small when compared to the potentially large savings of foreign exchange.

Effects on Other Sectors

Foreign exchange shortages caused mainly by oil price increases have ripple effects in other sectors. Industry and agriculture suffer from devaluations, import restrictions, lack of credit and inflation. Improved energy planning could lessen these secondary effects.

In addition, specific energy projects could provide indirect benefits to other sectors. For example, more efficient energy use in transport could lower cost structures in both industry and agriculture. Well designed biomass energy projects could benefit agriculture through better land use and increased on farm use of cheaper biomass fuels. More rational development of hydroelectric capacity could lead to significant capital cost savings.

Environmental and Other Externalities

Replacement of petroleum by electricity in many uses can lead to a decrease in air pollution and other positive environmental impacts. Costing of environmental external is difficult, but typically pollution control equipment can be 10% or more of capital costs in the transport and utilities sectors. Such costs could be avoided by using hydroelectric power. Other environmental benefits could come about through reforestation. Benefits to watersheds from biomass planning help not only the environment in general but also

protect the productivity of both hydroelectric power complexes and agricultural lands.

Perhaps the most important cost savings which are likely to result from better energy planning and coordination will be the directing research and investment away from less cost-effective projects to more rational efforts and choices. Avoiding even a small "white elephant" could justify the project's costs.

Conclusion

Although benefits in each of the areas cited above are difficult to quantify, they could be very significant and will most probably far outweigh project costs.

B. Social Soundness Analysis

The poor of Costa Rica feel the effects of the country's current economic crisis disproportionately through the indirect impact of higher oil prices on the prices of virtually all goods and services in the country. But the economic effects of oil price increases do not stop there. Since the required oil is an imported good, the increase in its price has helped inflict a severe foreign exchange crisis on the country. As a result, decisions that would be unsound economically on a purely domestic basis have had to be taken to assure international solvency. In particular, both industrial and agricultural production have been adversely affected by foreign exchange shortages. Improved energy planning can help alleviate this situation both by conserving energy and by developing new domestic sources of supply.

Some of the results of the project therefore will affect the welfare of Costa Rica's poor only indirectly: improvement in energy planning in general, increased efficiency of industrial energy use, and cheaper sources of energy supply. Other results of this project will touch more directly on the rural poor. The Alcohol Fuels Assessment, for example, will analyze the feasibility of planting sugarcane in areas not currently used for sugar production, and hence potentially influence the use to which large areas of agricultural land will be put. Studies of the energy aspects of biomass resource will attack the problem of deforestation, treating both its effects on erosion and hence on agricultural productivity, and also its impact on supplies of fuelwood used extensively for cooking in rural households. Studies undertaken on agricultural energy efficiency should have direct positive impacts on the lives of rural farmers and farm laborers. The study and possible future implementation of a small decentralized hydroelectric power program would provide direct benefits to rural communities.

There is no special relation of this project to the role of women although it is probable that some of the alternative energy sources explored, such as fuelwood, will have a greater impact on women than the general population. To be sure, all aspects of the program bear on making further economic development possible by resolving problems of energy supply and demand and as such will benefit Costa Ricans of both sexes.

In summary, the project will indirectly benefit Costa Rica's poor; it may also produce some direct effects in promoting their welfare. The improved ability of Costa Rica to manage its energy related financial disequilibriums should eventually allow a return to increased investment in projects that promote equitable development.

C. Technical Analysis

The technical analysis treats two topics: the need for energy policy planning systems in Costa Rica, and the capacity of GOCR agencies to develop effective national energy policies.

1. Need for Energy Policy Planning Assistance

As indicated in the project background description, oil price increases have had a severe effect on the Costa Rican economy. Higher priced imported oil has contributed to the current foreign exchange crisis. The GOCR has undertaken a number of initiatives during the past few years to alleviate this situation. In particular, the speed-up in the development in hydroelectric power, the intensified exploration for oil and coal, and the ambitious national alcohol program have been prominent features of the recent Costa Rican energy picture. However, there has been as yet no comprehensive overall national energy planning, which could take into account the rational matching up of supply and demand in future years and the careful planning of a program of supply, conservation, and demand management projects to fulfill long-term energy goals. Although large sums have already been spent on new types of energy projects - notably, but not exclusively on fuel alcohol programs - prospects for a successful resolution of the national energy supply problem are at present quite clouded. In view of the need for energy project rationalization, the proposed assistance in energy policy development could be an effective step in making possible the restoration of economic growth and development for Costa Rica.

The more rational energy planning that the project pursues depends not only on specific energy studies but seeks to reinforce the planning process. In turn, the strengthened planning process can promote the constructive use of the information developed by studies.

2. Costa Rican Capacity to Develop Effective National Energy Policies

It is evident that Costa Rican government agencies possess a certain amount of planning expertise and experience which could result in the development of more rational energy policies and better conceived projects. This strength, which the project attempts to reinforce, is reflected not only in the energy projects that have already been planned or carried out during the past decade in Costa Rica, but also in recent energy-related reorganizations carried out by the government. A Ministry of Energy has been created by decree--- but without permanent funding or authorization--- and is now attempting, even with extremely limited staff and resources, to systematically attack the crucial energy problems facing the country. Furthermore, several bodies concerned with coordinating energy planning and with management of the energy sector have been established by decree. In particular, a National Energy Sector Council, an Executive Secretariat of Energy Sector Planning, and a Technical Sectorial Energy Committee have been established (see Annex H). This present project would aid these by giving direct assistance in the form of a long-term advisor, by funding both improved data for planning and priority energy planning studies, and by providing training and improved documentation.

Consultations already carried out with OFIPLAN and SEPSE indicate both a capacity and enthusiasm for implementing the present project and a realization of the need for strengthening the energy planning process in Costa Rica.

D. Administrative Analysis

The potential administrative problems involved in implementing the project through the present energy sector institutional structure have been fully considered. As described in the Background section, the assignment of responsibilities within the energy sector was in a state of flux prior to the MOE's creation but even its legal status has not been ratified by the National Assembly. The creation of the MOE and the Energy Sector has resulted in the establishment of three bodies: Consejo Nacional Sectorial de Energía, at the policy formulation level, and the Comité Técnico Sectorial de Energía at the working level. In addition, an administrative secretariat, the Secretaría Ejecutiva de Planificación Sectorial de Energía, has been created as a focal point for energy planning in Costa Rica.

These bodies are relatively new, have very limited resources, and some are not yet fully operative. The Executive Secretariat of Energy Planning is treated administratively as part of the official planning ministry, OFIPLAN. Therefore, the grantee under this project will be OFIPLAN.

Project administration and implementation will rest, however, with SEPSE. The project will also seek to strengthen the Comité Técnico Sectorial de Energía, SEPSE's consultative organ. The Director of SEPSE will coordinate the contributions of all participating entities. The Project Advisor will in turn assist SEPSE in coordinating project activities and will act as the principal liaison with USAID.

E. Financial Plan

1. Budget and Cost Analysis

The life-of-project budget is estimated at \$1,350,000; and three years will be needed to fully implement it. The Government of Costa Rica will provide \$350,000 (26% of the total project cost) and AID will contribute a \$1.0 million grant.

2. Recurring Costs

The principal recurring costs for the GOCR will be the contribution of three additional persons. Since the thrust of this project is to improve the quality of energy sector planning,, much of the contribution of staff time should be compensated by greater efficiencies introduced into the energy planning process. Therefore, these recurring costs should be negligible. Specifically, new recurring cash costs can be seen to be limited to \$20,000 or less. This sum of money should not cause budgetary problems for the GOCR and in any case increased SEPSE staff will result from the redeployment of existing GOCR personnel.

Disbursement Schedule by Fiscal Year

(\$000)

	<u>1981</u>		<u>1982</u>		<u>1983</u>		<u>TOTAL</u>	
	<u>AID</u>	<u>GOCR</u>	<u>AID</u>	<u>GOCR</u>	<u>AID</u>	<u>GOCR</u>	<u>AID</u>	<u>GOCR</u>
1. Energy Sector Management	30	20	125	150	70	30	225	200
2. Energy Research and Studies	30	10	350	15	85	10	465	35
3. Energy Planning Information	5	10	75	30	20	10	100	50
4. Training and Exchange Programs	<u>0</u>	<u>5</u>	<u>40</u>	<u>20</u>	<u>15</u>	<u>5</u>	<u>55</u>	<u>30</u>
Project Evaluation	0	0	10	0	10	0	20	0
Sub-Total	65	45	600	215	200	55	865	315
Contingencies & Inflation							<u>135</u>	<u>35</u>
Total							1000	350

Note: GOCR costs (and all LC costs) are based on an exchange rate of 15 colones to \$1, but it should be noted that this rate is subject to further change.

SUMMARY COST ESTIMATE
(\$000)

	<u>AID</u>	<u>GOCR</u>	<u>TOTAL</u>
1. Energy Sector Management			
-Project Advisor, 2 years	175	-	175
-Equipment and office supplies	13	20	33
-Local rent	15	-	15
-Vehicle	12	-	12
-Personnel and Miscellaneous	<u>10</u>	<u>180</u>	<u>190</u>
Sub-Total	225	200	425
2. Energy Research and Studies			
-Short term technical assistance	425	-	425
-Information survey	20	-	20
-Computer time and software	20	-	20
-Personnel and Miscellaneous	<u>-</u>	<u>35</u>	<u>35</u>
Sub-Total	465	35	500
3. Energy Planning Information			
-Short-term technical assistance	15	-	15
-Local rent, Documentation Center	15	-	15
-Documents, library equipment	60	10	70
-Energy Research Center Study	10	10	20
-Personnel and Miscellaneous	<u>-</u>	<u>30</u>	<u>60</u>
Sub-Total	100	50	150
4. Training and Exchange Program			
-Seminars & workshops	25	10	35
-Exchange Program, overseas courses	30	-	50
-Personnel and Miscellaneous	<u>-</u>	<u>20</u>	<u>20</u>
Sub-Total	55	30	85
Project Evaluation	20	-	20
Contingencies & Inflation	<u>135</u>	<u>35</u>	<u>170</u>
TOTAL	<u>1000</u>	<u>350</u>	<u>1350</u>

V. IMPLEMENTATION PLAN

A. Schedule of Major Events

It is anticipated that the Energy Policy Development Project will be implemented according to the following schedule:

September, 1981 - Project agreement signed.

October, 1981 - Conditions precedent met.

November, 1981 - Project Advisor contracted.

December, 1981 - Selection of contractors for studies begins.

January, 1982 - Training and Exchange Program Activities begin.

December, 1982 - First Evaluation performed.

July, 1983 - Procurement completed.

December, 1983 - In-depth evaluation performed.

January, 1984 - Project completed; Project Advisor submits final report.

B. Roles of GOCR and USAID

1. GOCR

As Representative of the Grantee, OFIPLAN will provide general oversight of the project and assist in providing the necessary staff and support for project implementation. SEPSE, as the planning office of MOE and the project's principal implementing agency, will provide leadership in achieving project objectives, coordinate and administer project activities and assign GOCR personnel to the project. Project implementation and administration will be exercised on a day-to-day basis by the SEPSE Director. He will receive staff assistance and office facilities from SEPSE and OFIPLAN, and technical support from the Project Advisor. The SEPSE Director will also be responsible for liaison with OFIPLAN and other GOCR entities, and attend meetings of the Technical Committee to inform them of all important project actions, major obstacles to project implementation, etc. The inputs of other GOCR entities will normally be made through the Technical Committee.

2. Project Advisor

The Project Advisor will have a background and expertise in the field of energy and will assist the Mission in monitoring project activities (see Annex J). He will also provide technical assistance to the Technical Committee, the Director of SEPSE and other GOCR entities as appropriate. He will help carry out liaison with GOCR agencies and assist with writing terms of reference for contract studies, the design of training and information programs, and the identification of appropriate sources of short term technical assistance and training. This position will be full-time, and provided by the contractor in consultation with SEPSE and USAID.

C. Procurement

AID will, with the approval of OFIPLAN and SEPSE, contract for all of the project's goods and services by means of a single technical assistance contract. The technical assistance contractor will be selected on the basis of technical competition. Both OFIPLAN and SEPSE will assist AID in the selection process. The technical assistance contractor will be responsible for the bulk of project procurement. With regard to the latter AID will assist in customs clearance but will not provide other services to the technical assistance contractor, except perhaps furniture to the Principal Advisor. The foregoing arrangement will permit keeping grant funds out of the cumbersome GOCR budgetary and procurement processes and will also minimize AID servicing of the TA team.

As a condition precedent for disbursement of more than \$50,000 of grant funds, the GOCR will add three high quality technical counterparts to the SEPSE staff. These preferably will be detailed from other GOCR entities in the energy sector.

Contracts for services both with individuals as well as with firms or educational institutions will be made based on where the greatest skills and expertise are available. AID will help the GOCR obtain appropriate expertise by providing information and advice as to likely sources for the types of technical assistance required to carry out the program .

VI. EVALUATION PLAN

There will be two project evaluations. The first will be carried out in December, 1982 and will include the following:

-General progress toward strengthening of GOCR energy sector administration and management;

- Progress toward selection and completion of prefeasibility and energy research studies;
- Effectiveness of the training program;
- Progress toward completion of the Documentation Center;
- Progress toward completion of the Energy Research Center feasibility study; and
- Effectiveness of short term technical assistance.

The final in-depth evaluation, scheduled for December, 1983, will address the above issues as well as examine overall achievement of established project objectives in relationship to increasing the GOCR's capacity to carry out national planning in the energy sector.

It is anticipated that outside consultants in conjunction with AID/W or regional personnel will participate in the two evaluations.

VII. CONDITIONS AND COVENANTS

A. Source and Origin of Goods and Services

Project financed goods and services will, except as AID may otherwise agree in writing, have their source and origin in countries included in AID Geographic Code 000 and the Central American Common Market.

B. Local Cost Financing

Local cost financing may be authorized under any form of project assistance.

C. Subsequent Condition Precedent to Disbursement

Prior to the disbursement of more than \$50,000 under the Grant or the issuance by AID of documentation pursuant to which disbursement will be made, the Grantee will, except as the Parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID evidence that at least three additional high quality counterpart technicians have been added to the SEPSE staff.

D. Special Covenant

The parties agree that the Plan for Energy Studies and amendments thereof will require prior AID approval in writing.



REPUBLICA DE COSTA RICA
MINISTERIO DE RELACIONES EXTERIORES Y CULTO

ANNEX A

OK 9/22
Recd. 9-21-81
ACTION: LO
Due: 10-5-81
cc: CHRON

PE/SDA-No. 1464-81

CAPITAL DEVELOPMENT
OFFICE
USAID/COSTA RICA

San José, 18 de setiembre de 1981

SEP 21 2 40 PM '81

Señor Steve Knaebel
Director de la Misión
Agencia para el Desarrollo
Internacional
SAN JOSE

Señor Director:

Me permito referirme al proyecto "Desarrollo Local de la Energía", que se ha venido negociando entre autoridades del Gobierno de Costa Rica y de la Agencia para el Desarrollo Internacional, a fin de manifestarle, con instrucciones del señor Ministro, la complacencia de esta Cancillería a tan importante gestión ya que va en pro del desarrollo energético de nuestro país.

Aprovecho esta oportunidad para reiterarle las seguridades de mi más distinguida consideración.

Javier Sancho Bonilla
Subdirector General de Política Exterior

EA

5C(1) COUNTRY CHECKLIST

Listed below are, first, statutory criteria applicable generally to FAA funds, and then criteria applicable to individual fund sources: Development Assistance and Economic Support Fund.

A. GENERAL CRITERIA FOR COUNTRY ELIGIBILITY

1. FAA Sec. 116. Has the Department of State determined that this government has engaged in a consistent pattern of gross violations of internationally recognized human rights? If so, can it be demonstrated that contemplated assistance will directly benefit the needy?
The Department of State has not so determined.
2. FAA SEC. 113. Has particular attention been given those programs, projects, and activities which tend to integrate women into the national economies of developing countries, thus improving their status and assisting the total development effort?
While project activities do not directly focus on women, they will receive indirect benefits from the general impact of improved economic growth and more efficient use of local energy resources.
3. FAA Sec. 481. Has it been determined that the government of the recipient country has failed to take adequate steps to prevent narcotics drugs and other controlled substances (as defined by the Comprehensive Drug Abuse Prevention and Control Act of 1970) produced or processed, in whole or in part, in such country, or transported through such country, from being sold illegally within the jurisdiction of such country to U.S. Government personnel or their dependents, or from entering the U.S. unlawfully?
No.
4. FAA Sec. 620(b). If assistance is to a government, has the Secretary of State determined that it is not dominated or controlled by the international Communist movement?
Yes.
5. FAA Sec. 620(c). If assistance is to the government, is the government liable as debtor or unconditional guarantor on any
No.

debt to a U.S. citizen for goods or services furnished or ordered where (a) such citizen has exhausted available legal remedies and (b) the debt is not denied or contested by such government?

6. FAA Sec. 620(e)(1). If assistance is to a government, has it (including government agencies or subdivisions) taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U.S. citizens or entities beneficially owned by them without taking steps to discharge its obligations toward such citizens or entities? No.
7. FAA Sec. 620(f); 620D; Continuing Resolution Sec. 511, 512 and 513; ISDCA of 1980 Secs. 717 and 721. Is recipient country a Communist country? Will assistance be provided to Angola, Cambodia, Laos or Vietnam? (Food and humanitarian assistance distributed directly to the people of Cambodia are excepted). Will assistance be provided to Afghanistan or Mozambique without a waiver? Are funds for El Salvador to be used for planning for compensation, or for the purpose of compensation, for the confiscation, nationalization, acquisition or expropriation of any agricultural or banking enterprise, or property or stock thereof? No.
8. FAA Sec. 620(i). Is recipient country in any way involved in (a) subversion of, or military aggression against, the United States or any country receiving U.S. assistance, or (b) the planning of such subversion or aggression? No.
9. FAA Sec. 620(j). Has the country permitted, or failed to take adequate measures to prevent, the damage or destruction, by mob action, of U.S. property? No.
10. FAA Sec. 620(k). Does the program furnish assistance in excess of \$100,000,000 for the construction of a productive enterprise, except for productive enterprises in Egypt, that were described in the Congressional Presentation materials for FY 1977, FY 1980 or FY 1981? No.
11. FAA Sec. 620(l). If the country has failed to institute the investment guaranty The Administrator has not considered such an action.

program for the specific risks of expropriation, inconvertibility or confiscation, has the AID Administrator within the past year considered denying assistance to such government for this reason?

12. FAA Sec. 620(m). Is the country an economically developed national capable of sustaining its own defense burden and economic growth and, if so, does it meet any of the exceptions to FAA Section 620(m)? No.

13. FAA Sec. 620(o); Fishermen's Protective Act of 1967, as amended, Sec. 5. If country has seized, or imposed any penalty or sanction against, any U.S. fishing activities in international waters,

a. has any deduction required by the Fishermen's Protective Act been made? No.

b. has complete denial of assistance been considered by AID Administrator? No.

14. FAA Sec. 620(q); Continuing Resolution Sec. 518. (a) Is the government of the recipient country in default for more than six months on interest or principal of any AID loan to the country? (b) Is the country in default exceeding one year on interest or principal on any U.S. loan under a program for which the Continuing Resolution appropriates funds? No.

15. FAA Sec. 620(s). If contemplated assistance is development loan or from Economic Support Fund, has the Administrator taken into account the percentage of the country's budget which is for military expenditures, the amount of foreign exchange spent on military equipment and the amount spent for the purchase of sophisticated weapons systems? (An affirmative answer may refer to the record of the annual "Taking into Consideration" memo: "Yes, taken into account by the Administrator at time of approval of Agency OYB." This approval by the Administrator of the Operational Year Budget can be the basis for an affirmative answer during the fiscal year unless significant changes in circumstance occur). N/A

16. FAA Sec. 620(t). Has the country severed diplomatic relations with the United States? Costa Rica has not severed relations with U.S.

States? If so, have they been resumed and have new bilateral assistance agreements been negotiated and entered into since such resumption?

17. FAA Sec. 620(u). What is the payment status of the country's U.N. obligations? If the country is in arrears, were such arrearages taken into account by the AID Administrator in determining the current AID Operational Year Budget?

Costa Rica is meeting its U.N. obligations.

18. FAA Sec. 620A; Continuing Resolution Sec. 521. Has the country aided or abetted, by granting sanctuary from prosecution to, any individual or group which has committed an act of international terrorism? Has the country aided or abetted, by granting sanctuary from prosecution to, any individual or group which has committed a war crime?

No.

19. FAA Sec. 666. Does the country object, on basis of race, religion, national origin or sex, to the presence of any officer or employee of the U.S. who is present in such country to carry out economic development programs under the FAA?

No.

20. FAA Sec. 669, 670. Has the country, after August 3, 1977, delivered or received nuclear enrichment or reprocessing equipment, materials, or technology, without specified arrangements or safeguards? Has it detonated a nuclear device after August 3, 1977, although not a "nuclear-weapon State" under the nonproliferation treaty?

No.

B. FUNDING SOURCE CRITERIA FOR COUNTRY ELIGIBILITY

1. Development Assistance Country Criteria

a. FAA Sec. 102(b)(4). Have criteria been established and taken into account to assess commitment progress of the country in effectively involving the poor in development, on such indexes as: (1) increase in agricultural productivity through small-farm labor intensive agriculture, (2) reduced infant mortality, (3) control of population growth, (4) equality of income distribution, (5) reduction of unemployment and (6) increased literacy.

Yes.

b. FAA Sec. 104(d)(1). If appropriate, is this development (including Sahel) activity designed to build motivation for smaller families through modification of economic and social conditions supportive of the desire for large families in programs such as education in and out of school, nutrition, disease control, maternal and child health services, agricultural production, rural development, assistance to urban poor and through community-based development programs which give recognition to people motivated to limit the size of their families? N/A

1. Economic Support Fund Country Criteria:

a. FAA Sec. 502B. Has the country (a) engaged in a consistent pattern of gross violations of internationally recognized human rights or (b) made such significant improvements in its human rights record that furnishing such assistance is in the national interest? N/A

b. FAA Sec. 532(f). Will ISF assistance be provided to Syria? N/A

c. FAA Sec. 609. If commodities are to be granted so that sale proceeds will accrue to the recipient country, have Special Account (counterpart) arrangements been made? N/A

d. FAA Sec. 620B. Will ESF be furnished to Argentina? N/A

5C(2) - PROJECT CHECKLIST

Listed below are statutory criteria applicable generally to projects with FAA funds and project criteria applicable to individual funding sources: Development Assistance (with a subcategory for criteria applicable only to loans); and Economic Support Fund.

CROSS REFERENCES: IS COUNTRY CHECKLIST UP TO DATE?
HAS STANDARD ITEM CHECKLIST BEEN
REVIEWED FOR THIS PROJECT?

A. GENERAL CRITERIA FOR PROJECT

1. Continuing Resolution Unnumbered; FAA Sec. 634A; Sec. 653(b).

(a) Describe how authorizing and appropriations Committees of Senate and House have been or will be notified concerning the project; (b) is assistance within (Operational Year Budget) country or international organization allocation reported to Congress (or not more than \$1 million over that figure)?

The project was included in the FY 81 Congressional Presentation which notified the respective Congressional Appropriation Committees. The project is within the OYB.

2. FAA Sec. 611(a)(1). Prior to obligation in excess of \$100,000, will there be (a) engineering, financial other plans necessary to carry out the assistance and (b) a reasonably firm estimate of the cost to the U.S. of the assistance?

Yes.

3. FAA Sec. 611(a)(2). If further legislative action is required within recipient country, what is basis for reasonable expectation that such action will be completed in time to permit orderly accomplishment of purpose of the assistance?

No further Legislative action will be required.

4. FAA Sec. 611(b); Continuing Resolution Sec. 501. If for water or water-related land resource construction, has project met the standards and criteria as set forth in the Principles and Standards for Planning Water and Related Land Resources, dated October 25, 1973?

N/A

5. FAA Sec. 611(e). If project is capital assistance (e.g., construction), and all U.S. assistance for it will exceed \$1 million, has Mission Director certified and Regional Assistant Administrator taken into

N/A

consideration the country's capability effectively to maintain and utilize the project?

6. FAA Sec. 209. Is project susceptible of execution as part of regional or multi-lateral project? If so why is project not so executed? Information and conclusion whether assistance will encourage regional development programs.

Project is being designed and will be implemented in conjunction with an IBRD project providing technical assistance in petroleum exploration and planning.

7. FAA Sec. 601(a). Information and conclusions whether project will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; and (c) encourage development and use of cooperatives, and credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture and commerce; and (f) strengthen free labor unions.

As project is directed at energy policy development, direct impact in these areas is not easily demonstrated. Indirect impact is likely, however, in (a), (b) and (c).

8. FAA Sec. 601(b). Information and conclusion on how project will encourage U.S. private trade and investment abroad and encourage private U.S. participation in foreign assistance programs (including use of private trade channels and the services of U.S. private enterprise).

Both U.S. commodities and technical assistance will be supplied through this project.

9. FAA Sec. 612(b), 636(h); Continuing Resolution Sc. 508. Describe steps taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services, and foreign currencies owned by the U.S. are utilized in lieu of dollars.

Local counterpart contributions will be assured through normal disbursement procedures.

10. FAA Sec. 612(d). Does the U.S. own excess foreign currency of the country and, if so, what arrangements have been made for its release?

The U.S. does not own excess Costa Rican currency.

11. FAA Sec. 601(e). Will the project utilize competitive selection procedures for the awarding of contracts, except where applicable procurement rules allow otherwise?

Yes.

12. Continuing Resolution Sec. 522. If assistance is for the production of any commodity for export, is the commodity likely to be in surplus on world markets at the time the resulting productive capacity be-

Project will not produce any commodities.

comes operative, and is such assistance likely to cause substantial injury to U.S. producers of the same, similar or competing commodity?

B. FUNDING CRITERIA FOR PROJECT

1. Development Assistance Project Criteria

a. FAA Sec. 102(b), 111, 113, 281(a): Extent to which activity will (a) effectively involve the poor in development, by extending access to economy at local level, increasing labor-intensive production and the use of appropriate technology, spreading investment out from cities to small towns and rural areas, and insuring wide participation of the poor in the benefits of development on a sustained basis, using the appropriate U.S. institutions; (b) help develop cooperatives, especially by technical assistance, to assist rural and urban poor to help themselves toward better life, and otherwise encourage democratic private and local governmental institutions; (c) support the self-help efforts of developing countries; (d) promote the participation of women in the national economies of developing countries and the improvement of women's status; and (e) utilize and encourage regional cooperation by developing countries?

b. FAA Sec. 103, 103A, 104, 105, 106, 107. Is assistance being made available: (include only applicable paragraph which corresponds to source of funds used. If more than one fund source is used for project, include relevant paragraph for each fund source.)

(1) (103) for agriculture, rural development or nutrition; if so (a) extent to which activity is specifically designed to increase productivity and income of rural poor; 103A if for agricultural research, full account shall be taken of the needs of small farmers, and extensive use of field testing to adapt basic re-

Costa Rica's economic growth prospects will be enhanced by the development of the comprehensive energy policy with which this project is concerned. Costa Rica has historically adhered to distributive growth policies. Thus while not directly focussed on the areas contemplated by these sections of the FAA, it can be reasonably anticipated that an indirect impact will be felt in areas (a) and (c), and possibly (e).

N/A

search to local conditions shall be made; (b) extent to which assistance is used in coordination with programs carried out under Sec. 104 to help improve nutrition of the people of developing countries through encouragement of increased production of crops with greater nutritional value, improvement of planning, research, and education with respect to nutrition, particularly with reference to improvement and expanded use of indigenously produced foodstuffs; and the undertaking of pilot or demonstration of programs explicitly addressing the problem of malnutrition of poor and vulnerable people; and (c) extent to which activity increases national food security by improving food policies and management and by strengthening national food reserves, with particular concern for the needs of the poor, through measures encouraging domestic production, building national food reserves, expanding available storage facilities, reducing post harvest food losses, and improving food distribution.

(2) (104) for population planning under sec. 104(b) or health under sec. 104(c); if so, (i) extent to which activity emphasizes low-cost, integrated delivery systems, for health, nutrition and family planning for the poorest people, with particular attention to the needs of mothers and young children, using paramedical and auxiliary medical personnel, clinics and health posts, commercial distribution systems and other modes of community research.

N/A

(4) (105) for education, public administration, or human resources development; if so, extent to which activity strengthens non-formal education, makes formal education more relevant, especially for rural families and urban

N/A

poor, or strengthens management capability of institutions enabling the poor to participate in development; and (ii) extent to which assistance provides advanced education and training of people in developing countries in such disciplines as are required for planning and implementation of public and private development activities.

(5) (106; ISDCA of 1980, Sec. 304) for energy, private voluntary organizations, and selected development activities; if so, extent to which activity is: (i) (a) concerned with data collection and analysis, the training of skilled personnel, research on and development of suitable energy sources, and pilot projects to test new methods of energy production; (b) facilitative of geological and geophysical survey work to locate potential oil, natural gas, and coal reserves and to encourage exploration for potential oil, natural gas, and coal reserves; and (c) a cooperative program in energy production and conservation through research and development and use of small scale, decentralized, renewable energy sources for rural areas;

(ii) technical cooperation and development, especially with U.S. private and voluntary or regional and international development organizations;

(iii) research into, and evaluation of, economic development process and techniques;

(iv) reconstruction after natural or manmade disaster;

The project is designed to assist Costa Rica in the development of a comprehensive energy policy and as such will provide assistance in the collection and organization of energy information; training of energy sector personnel; and implementation of a wide range of energy studies and research activities which will include energy conservation as well the use of small scale, renewable energy resources for rural areas.

The project will foster technical cooperation and development with U.S. private consulting firms and universities, and will coordinate closely with the IBRD Petroleum Sector Technical Assistance Project.

The project will finance research and evaluation of energy related economic development data as part of the energy planning activities.

N/A

- (v) for special development problems, and to enable proper utilization of earlier U.S. infrastructure, etc., assistance; N/A
- (vi) for programs of urban development, especially small labor-intensive enterprises, marketing systems, and financial or other institutions to help urban poor participate in economic and social development. N/A
- c. (107) is appropriate effort placed on use of appropriate technology? (relatively smaller, cost-saving, labor using technologies that are generally most appropriate for the small farms, small businesses, and small incomes of the poor.) Yes.
- d. FAA Sec. 110(a). Will the recipient country provide at least 25% of the costs of the program, project, or activity with respect to which the assistance is to be furnished (or has the latter cost-sharing requirement been waived for a "relatively least developed" country)? Yes.
- e. FAA Sec. 110(b). Will grant capital assistance be disbursed for project over more than 3 years? If so, has justification satisfactory to Congress been made, and efforts for other financing, or is the recipient country "relatively least developed"? Grant capital assistance will be disbursed within three years.
- f. FAA Sec. 281(b). Describe extent to which program recognizes the particular needs, desires, and capacities of the people of the country; utilizes the country's intellectual resources to encourage institutional development; and support civil education and training in skills required for effective participation in governmental processes essential to self-government. Project will draw on a wide variety of local skills and expertise, both private and governmental. Project will foster interinstitutional cooperation in the development and execution of a comprehensive energy policy.
- g. FAA Sec. 122(b). Does the activity give reasonable promise of contributing to the development of eco- The project should contribute in both these areas.

conomic resources, or to the increase of productive capacities and self-sustaining economic growth?

2. Development Assistance Project Criteria (Loans Only)

a. FAA Sec. 122(b): Information and conclusion on capacity of the country to repay the loan, at a reasonable rate of interest. N/A

b. FAA Sec. 620(d). If assistance is for any productive enterprise which will compete with U.S. enterprises, is there an agreement by the recipient country to prevent export to the U.S. of more than 20% of the enterprise's annual production during the life of the loan? N/A

3. Project Criteria Solely for Economic Support Fund

a. FAA Sec. 531(a): Will this assistance promote economic or political stability? To the extent possible, does it reflect the policy directions of FAA Section 102? N/A

b. FAA Sec. 531(c): Will assistance under this chapter be used for military, or paramilitary activities? N/A

5C(3) -- STANDARD ITEM CHECKLIST

Listed below are the statutory items which normally be covered routinely in those provisions of an assistance agreement dealing with its implementation, or covered in the agreement by imposing limits on certain uses of funds.

These items are arranged under the general headings of (A) Procurement, (B) Construction, and (C) Other Restrictions.

A. Procurement

1. FAA Sec. 602: Are there arrangements to permit U.S. small business to participate equitably in the furnishing of commodities and services financed? Yes.
2. FAA Sec. 604(a). Will all procurement be from the U.S. except as otherwise determined by the President or under delegation from him? Yes.
3. FAA Sec. 604(d). If the cooperating country discriminates against U.S. marine insurance companies, will commodities be insured in the United States against marine risk with a company or companies authorized to do a marine insurance business in the U.S.? Yes.
4. FAA Sec. 604(e); ISDCA of 1980 Sec. 705(a): If offshore procurement of agricultural commodity or product is to be financed, is there provision against such procurement when the domestic price of such commodity is less than parity? (Exception where commodity financed could not reasonably be procured in U.S.) N/A
5. FAA Sec. 603: Is the shipping excluded from compliance with requirement in section 901(b) of the Merchant Marine Act of 1936, as amended, that at least 50 per centum of the gross tonnage of commodities (computed separately for bulk carriers, dry cargo liners, and tankers) financed shall be transported on privately owned U.S.-flag commercial vessels to the extent that such vessels are available at fair and reasonable rates? Project will comply with Section 901(b) requirements.
7. FAA Sec. 621: If technical assistance is financed, to the fullest extent practi- Yes.

cable will such assistance, goods and professional and other services be furnished from private enterprise on a contract basis? If the facilities of other Federal agencies will be utilized, are they particularly suitable, not competitive with private enterprise, and made available without undue interference with domestic programs?

8. International Air Transport Fair Competitive Practices Act, 1974: If air transportation of persons or property is financed on grant basis, will provision be made that U.S. carriers will be utilized to the extent such service is available?

Yes.

9. Continuing Resolution Sec. 505: If the U.S. Government is a party to a contract for procurement, does the contract contain a provision authorizing termination of such contract for the convenience of the United States?

Procurement contracts will contain such provision.

B. Construction

1. FAA Sec. 601(d): If a capital (e.g., construction) project, are engineering and professional services of U.S. firms and their affiliates to be used to the maximum extent consistent with the national interests?

N/A

2. FAA Sec. 611(c): If contracts for construction are to be financed, will they be let on a competitive basis to maximum extent practicable?

N/A

3. FAA Sec. 620(k): If for construction of productive enterprise, will aggregate value of assistance to be furnished by the U.S. not exceed \$100 million?

N/A

C. Other Restrictions

1. FAA Sec. 122(b): If development loan, is interest rate at least 2% per annum during grace period and at least 3% per annum thereafter?

N/A

2. FAA Sec. 301(d): If fund is established solely by U.S. contributions and administered by an international organization, does Comptroller General have audit rights?

N/A

3. FAA Sec. 620(h): Do arrangements exist to insure that United States foreign aid is not used in a manner which, contrary to the best interests of the United States, promotes or assists the foreign aid projects or activities of the Communist-bloc countries? **Yes.**

4. Continuing Resolution Sec. 514: If participants will be trained in the United States with funds obligated in FY 1981, has it been determined either (a) that such participants will be selected otherwise than by their home governments, or (b) that at least 20% of the FY 1981 fiscal year's funds appropriated for participant training will be for participants selected otherwise than by their home governments? **Yes.**

5. Will arrangements preclude use of financing:

a. FAA Sec. 104(f). To pay for performance of abortions as a method of family planning or to, motivate or coerce persons to practice abortions; to pay for performance of involuntary sterilization as a method of family planning, or to coerce or provide financial incentive to any person to undergo sterilization? **Yes.**

b. FAA Sec. 620(q). To compensate owners for expropriated nationalized property? **Yes.**

c. FAA Sec. 660. To provide training or advice or provide any financial support for police, prisons, or other law enforcement forces, except for narcotics programs? **Yes.**

d. FAA Sec. 662. For CIA activities? **Yes.**

e. FAA Sec. 636(i): For purchase, sale, long-term lease, exchange or guaranty of the sale of motor vehicles manufactured outside U.S., unless a waiver is obtained. **Yes.**

f. Continuing Resolution Sec. 504: To pay pensions, annuities retirement pay, or adjusted service compensation for military personnel? **Yes.**

- g. Continuing Resolution - Sec. 506: Yes.
To pay U.N. assessments, arrearages or dues.
- h. Continuing Resolution - Sec. 507: Yes.
To carry out provisions of FAA section 209(d) (Transfer of FAA funds to multilateral organizations for lending.)
- i. Continuing Resolution - Sec. 509: Yes.
To finance the export of nuclear equipment fuel, or technology or to train foreign nationals in nuclear fields?
- j. Continuing Resolution - Sec. 510: No.
Will assistance be provided for the purpose of aiding the efforts of the government of such country to repress the legitimate rights of the population of such country contrary to the Universal Declaration of Human Rights?
- k. Continuing Resolution - Sec. 516: Yes.
To be used for publicity or propaganda purposes within U.S. not authorized by Congress?

AMERICAN EMBASSY SAN JOSE

Bastian

TELEGRAM

-3 FEB 1981

UNCLASSIFIED ACTION

Classification

ANNEX C

Page 1 of 2

3 FEB 01 14 06z

P 030446Z FEB 81
FM SECSTATE WASHDC
TO AMEMBASSY SAN JOSE PRIORITY 3971
BT
UNCLAS STATE 027019

AIDAC

E.O. 12065: N/A

TAGS:

SUBJECT: DAEC REVIEW OF LOCAL ENERGY DEVELOPMENT PID

1. SUMMARY. SUBJECT PID WAS REVIEWED AND APPROVED ON JANUARY 15, 1981. THE PRINCIPAL ISSUES DISCUSSED WERE (A) THE NEED TO NARROW THE SCOPE OF THE PROJECT, (B) WHETHER INFORMATION GENERATED FROM PRE-FEASIBILITY STUDIES AND OTHER RESEARCH WOULD BE APPLIED, AND (C) WHETHER THE MOE WOULD HAVE THE CAPABILITY TO SERVE AS A MAJOR IMPLEMENTING AGENCY. BECAUSE OF THE INNOVATIVE NATURE OF THE PROJECT AND THE NEWNESS OF AID'S INVOLVEMENT IN THE ENERGY SECTOR, AS WELL AS OUR DESIRE TO ENSURE MAXIMUM COORDINATION AMONG SEVERAL ENERGY INITIATIVES BEING PLANNED IN CENTRAL AMERICA REGION, IT WAS DECIDED THAT THE PROJECT SHOULD BE REVIEWED AND AUTHORIZED IN WASHINGTON. THE FOLLOWING COMMENTS AND GUIDANCE ARE PROVIDED TO ASSIST MISSION IN FINAL PROJECT DEVELOPMENT AND PREPARATION OF THE PROJECT PAPER (PP):

2. PROJECT FOCUS. DURING THE REVIEW, SEVERAL QUESTIONS AROSE CONCERNING PROJECT FOCUS, ESPECIALLY THE WIDE RANGE OF PROPOSED ACTIVITIES AND BROAD SCOPE OF THE PROJECT. IDENTIFYING PRIORITY CONCERNS THROUGH CONSULTATION WITH THE GOCR AND A REVIEW OF CURRENT RESEARCH SHOULD BE DONE DURING

PROJECT DEVELOPMENT IN ORDER TO SHARPEN THE FOCUS OF THE PROJECT. FURTHERMORE, DUE TO THE SHORTAGE OF GRANT FUNDS FOR THE LAC BUREAU, THERE SHOULD BE CAREFUL SCRUTINY OF HOW FUNDS WILL BE USED, WITH THE HOPE THAT THE PROJECT COULD BE SCALED DOWN AT LEAST SLIGHTLY. IN ADDITION, SUGGEST THAT MISSION INCLUDE A SEQUENCING OF SELECTED PROBLEMS SHOWING THOSE CONCERNS WHICH ARE MOST IMPORTANT AND WHICH WILL BE DEALT WITH EARLY IN THE PROJECT.

Route to	Act	Info
MD		/
AD		/
LO	X	
URD		
PO		
TO		
HRO		
CONT		
RDO		
ADM		
GSO		
PER		
MR		
CPU		
ROCAP		
Action taken/date		

UNCLASSIFIED

3. PROJECT APPLICATION. CONCERN WAS EXPRESSED AS TO WHETHER THE INFORMATION GENERATED FROM THE STUDIES WOULD BE APPLIED AND HOW THE PLANNING PROJECT COULD BE MADE MOST EFFECTIVE. A PRELIMINARY ACTION PLAN SHOULD BE PART OF THE PP. IN ORDER TO DEMONSTRATE THE POTENTIAL EFFECTIVENESS OF SUCH A PROJECT, SUGGEST THAT THE MISSION REVIEW ITS EARLIER AGRICULTURAL PLANNING ACTIVITIES WITH OPSA AS A GOOD EXAMPLE OF HOW A PLANNING PROJECT CAN BE MADE EFFICACIOUS AND HOW INFORMATION CAN BE TRANSLATED INTO AN ACTION PROGRAM.

4. INSTITUTIONAL CAPABILITY. DOUBTS WERE EXPRESSED CONCERNING MOE'S MANAGERIAL CAPABILITY TO BE THE MAJOR IMPLEMENTING AGENCY. IT WAS ALSO POINTED OUT THAT AS RESEARCH PROJECTS UNFOLD, QUESTIONS WILL UNDOUBTEDLY COME UP WHICH ARE BEYOND THE SCOPE OF AN AGENCY WHICH IS SOLELY CONCERNED WITH ENERGY MATTERS. GIVEN THESE TWO FACTORS, SUGGEST THAT MISSION EXPLORE POSSIBILITY THAT GREATER EMPHASIS BE GIVEN TO THE NATIONAL PLANNING OFFICE, OFIPLAN, AS THE MAJOR IMPLEMENTING AGENCY FOR THE PROJECT.

5. DONOR COORDINATION. UNDP IS PRESENTLY WORKING ON THE DEVELOPMENT OF A NATIONAL ENERGY PLAN AND IDB HAS PROPOSED A QUDPE ENERGY RESOURCE UNQUOTE ALCOHOL PROJECT FOR COSTA RICA. THE PP SHOULD DISCUSS WHAT THESE AND OTHER DONOR AGENCIES ARE DOING AND DEMONSTRATE HOW THIS PROJECT DOES NOT DUPLICATE THESE EFFORTS.

6. WAIVER JUSTIFICATION. MORE SPECIFIC INFORMATION AND A MORE DETAILED JUSTIFICATION IS REQUESTED TO ACCOMPANY PP CONCERNING WAIVER REQUEST FOR THE PROCUREMENT OF INFORMATION AND TRAINING FROM CODE 000 TO 899 PERTAINING TO ENERGY CONSERVATION AND EFFICIENCY.

7. PROJECT MANAGEMENT. IN VIEW OF THE FACT THAT THE MISSION DOES NOT HAVE AN ENERGY OFFICER, IT WAS RECOMMENDED THAT THE MISSION CONTRACT AN ENERGY SPECIALIST OR I.E. CONSULTING FIRM TO HELP MANAGE THE PROJECT AND COORDINATE ITS VARIOUS ACTIVITIES.

8. PROJECT DEVELOPMENT. IT WAS SUGGESTED THAT DURING PROJECT DEVELOPMENT, MISSION MIGHT WANT TO SEND COSTA RICANS TO THE DOMINICAN REPUBLIC OR ECUADOR TO SEE DIFFERENT MODELS FOR ENERGY PLANNING. RESOURCES FOR PROJECT DEVELOPMENT AND IMPLEMENTATION COULD POSSIBLY BE MADE AVAILABLE THROUGH PPC'S TOTAL RESOURCE ENERGY PROJECT AND THE ENERGY POLICY AND PLANNING PROJECT IN DS/EY. SPECIFICALLY, ASSISTANCE MAY BE AVAILABLE IN SUMMARIZING COSTA RICA'S ENERGY RESOURCE BASE OR IN DEFINING FOCI FOR THE PLANNING AND POLICY STUDIES.

CARL DUISBERG, LAC/DR ENERGY OFFICER WILL BE AVAILABLE FOR TDY ASSISTANCE FOR A TWO WEEK INTERVAL BETWEEN MID FEBRUARY AND MID APRIL WITH THE EXCEPTION OF MARCH 24 - 27 AT WHICH TIME HE WILL BE ATTENDING AN ENERGY CONFERENCE IN HONDURAS. REQUEST MISSION TO ADVISE WHEN TDY ASSISTANCE WILL BE NECESSARY. HAIG

AGENCIA PARA EL DESARROLLO INTERNACIONAL

MISION ECONOMICA DE LOS ESTADOS UNIDOS EN COSTA RICA



U.S.A.I.D.

UNITED STATES EMBASSY
SAN JOSE, COSTA RICA

ANNEX D

Page 1 of 2

PROJECT AUTHORIZATION AND REQUEST FOR ALLOTMENT OF FUNDS

Name of Country: Costa Rica
Name of Project Energy Policy Development
Number of Project: 515-0175

Pursuant to Part I, Chapter 1, Sections 105 and 106 of the Foreign Assistance Act of 1961, as amended, and to the Redelegation Authority No. 133.3, I hereby authorize a Grant to The Republic of Costa Rica, the "Cooperating Country", of not to exceed one million United States Dollars (\$1,000,000), the "Authorized Amount", to help in financing certain foreign exchange and local currency costs of goods and services required for the project as described in the following paragraph.

The project consists of various activities designed to strengthen the Government of Costa Rica's capacity in national energy sector planning, including technical assistance in project analysis and energy planning, prefeasibility and other studies in selected energy areas, planning in energy information, and various short-term training activities.

The Project Agreement, which may be negotiated by the officer to whom such authority is delegated in accordance with AID regulations and Delegations of Authority, shall be subject to the following essential terms and covenants and major conditions, together with such other terms and conditions as AID may deem appropriate.

A. Source and Origin of Goods and Services

Project financed goods and services will, except as AID may otherwise agree in writing, have their source and origin in countries included in AID Geographic Code 000 and the Central American Common Market within the Mission Director's authority.

B. Local Cost Financing

Local cost financing may be authorized under any form of project assistance.

C. Conditions Precedent to Initial Disbursement

Prior to the disbursement of more than \$50,000 under the Grant or the issuance by AID of documentation pursuant to which disbursement will be made, the Grantee will, except as the Parties may otherwise agree in writing, furnish to AID in form and substance satisfactory to AID evidence that at least three additional high quality counterpart technicians have been added to the SEPSE staff.

D. Special Covenant

The Parties agree that the Plan for Energy Studies and amendments thereof will require prior AID approval in writing.

Stephen P. Knaebel
Director
USAID Mission to Costa Rica

Date

ANNEX E

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: ENERGY POLICY DEVELOPMENT 515-0175

INSTRUCTION: THIS IS AN OPTIONAL FORM WHICH CAN BE USED TO ORGANIZE DATA FOR A PARAGRAPH REPORT. IT NEED NOT BE COMPLETED OR SUBMITTED.

Life of Project:
From FY 81 to FY 83
Total U.S. Funding: \$1,000,000
Date Prepared: _____

PAGE 1

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Program or Sector Goal: The broader objective to which this project contributes:</p> <p><u>Goal</u></p> <p>Reestablish dynamic economic growth of the Costa Rican Economy</p> <p><u>Sub-Goal</u></p> <p>Augment the effectively available domestic energy supply through support of Costa Rican energy planning to achieve more efficient energy use and the development of alternative energy supplies in ways that are economically feasible.</p>	<p>Measures of Goal Achievement: A.2.</p> <p>A 6.0% p.a. growth rate in GDP during the 1985-1990 period.</p> <p>By 1988 the percentage of Costa Rica's energy supply imported in the form of petroleum has decreased to 30% of total energy use.</p>	<p>(A.3)</p> <p>Central Bank</p> <p>MOE records</p>	<p>Assumptions for achieving goal targets: A.2</p> <p>Other economic factors will complement energy supply and efficiency efforts:</p>

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Budget: 81 83
From FY: 81 83
Total U.S. Funding: \$1,000,000
Date Prepared:

Project Title & Number: ENERGY POLICY DEVELOPMENT 515-1075

Page 2

NARRATIVE SUMMARY	OBJECTIVE VERIFIABLE INDICATORS	MEANS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>Project Purpose:</p> <p><u>Purpose</u></p> <p>Strengthen the Government of Costa Rica's capacity for energy sector planning.</p>	<p>Conditions that will indicate progress has been achieved:</p> <ol style="list-style-type: none"> 1. Report on Energy Planning prepared by the end of 1983 2. Project research and results influences national energy policy, and energy efficiency and production programs 	<p>R-2</p> <ol style="list-style-type: none"> 1. Energy Planning report. 2. In-depth evaluation 	<p>Assumptions for achieving purpose:</p> <p>Data obtained in planning report is applied. (i.e. programs/projects carried out based on information gathered and analyzed).</p>

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Project Title & Number: ENERGY POLICY DEVELOPMENT 515-0175

Date of Project _____
From FY _____
Total U.S. Funding _____
Date Prepared _____

PAGE

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	ANALYSIS OF VERIFICATION	IMPORTANT ASSUMPTIONS
Project Outputs: C-1	Magnitude of Outputs: C-1	C-1	Assumptions for achieving outputs: C-1
1. Energy Sector Management	1. Adequate reports on planning data and analysis gaps	1. OFIPLAN reports 2. SEPSE reports 3. Quarterly reports by Project Advisor	1. GOCR energy sector entities assume functions described by executive decree.
2. Energy Research and Studies	2. a. Technical Energy Committee becomes active b. Review of energy supply options completed c. At least 5 pre-feasibility studies and planning analyses completed.	2. a. SEPSE reports b. Study reports c. Contractor reports	2. Appropriate contractors found in a timely manner
3. Energy Planning Information	3. a. Information needs analyzed b. Documents collected and organized	3. a. Information Analysis reports b. Library/data handling facilities c. SEPSE reports d. Contractor reports	3. GOCR provides necessary space and personnel.

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Title of Project: _____
From FY _____ to FY _____
Total U.S. Funding _____
Prepared _____

ENERGY POLICY DEVELOPMENT 515-0175

PAGE 4

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS	METHODS OF VERIFICATION	IMPORTANT ASSUMPTIONS
<p>4. Training and Exchange Programs</p> <p>a. Seminars and Workshop</p> <p>b. Exchange Programs/ Courses Overseas</p>	<p>Magnitude of Outputs: C-1</p> <p>4. By end of project:</p> <p>a. Personnel in energy sector institutions complete short-term training seminars of work-shops.</p> <p>1</p> <p>ake part</p>	<p>4. a. USAID training records</p> <p>b. SEPSE records</p> <p>c. Contractor reports</p>	<p>Assumptions for achieving outputs: C-1</p> <p>4. Appropriate short-term training and exchange programs identified.</p>

PROJECT DESIGN SUMMARY
LOGICAL FRAMEWORK

Life of Project:
From FY _____ to FY _____
Total U.S. Funding _____
Date Prepared: _____

Project Title & Number ENERGY POLICY DEVELOPMENT 515-0175

PAGE 4

NARRATIVE SUMMARY	OBJECTIVELY VERIFIABLE INDICATORS			MEANS	JUSTIFICATION	IMPORTANT ASSUMPTIONS
Project inputs: (D-1)	Implementation Target (Type and Quantity)			D-3:		Assumptions for providing inputs: D-4:
	(\$000)					
	AID	GOCR	Total			
1. Energy Sector a. Technical assistance b. Equipment and supplies c. Personnel and rent d. Vehicle	1. 225	200	425	AID vouchers		1. Technical assistance procured in a timely manner
2. Energy Research and Studies a. Technical assistance b. Information survey c. Computer time and software d. Equipment/lab tests, maps e. Personnel	2. 465	35	500	Project reports and budgets		2. Contract support procured in a timely manner
3. Energy Information a. Technical assistance b. Library materials and rent c. Personnel	3. 100	50	150			3. Cooperation with existing data handling facilities secured and personnel provided to handle documents
4. Training and Exchange Programs a. Seminars b. Exchange Programs c. Personnel	4. 55	30	85			4. a. Personnel in energy planning willing to take course b. US institutions willing to participate in exchange programs
Project Evaluation	20	-	20			
Contingencies & Inflation	135	35	170			
TOTAL	1000	350	1350			

INITIAL ENVIRONMENTAL EXAMINATION

PROJECT LOCATION: Costa Rica

PROJECT TITLE: Local Energy Development

FUNDING: FY 1981 and FY 1982 Grant \$1,000,000

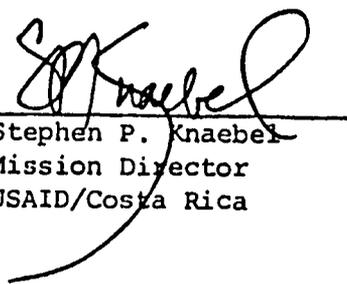
LIFE OF PROJECT: Three (3) years

IEE PREPARED BY: 
Heriberto Rodríguez
USAID/General Engineer

DATE: December 12, 1980

ENVIRONMENTAL ACTION

RECOMMENDED: That the project will not have a significant effect on the environment and therefore a negative determination is appropriate.

CONCURRENCE: 
Stephen P. Knaebel
Mission Director
USAID/Costa Rica

DATE:

PROJECT DESCRIPTION

This project will provide funds for a series of specialized research effort, data collection, studies and analysis of the actual and projected energy situation in Costa Rica, short term training of Ministry of Energy and personnel of other entities engaged in energy and information exchange.

It is anticipated that in some special cases, studies at a pre-feasibility level will be done. A great deal of information from studies would be required for the formulation of a national energy plan. This project will provide the GOCR with the information required to make reasonable policy decisions on energy.

This project will include analysis, studies, training, and information exchange. In accordance with regulation 16, section 216.2(a), 216.2(c), 216.2(e), it does therefore not require an Environmental Impact Statement or the preparation of an Environmental Assessment.

IMPACT IDENTIFICATION AND EVALUATION FORM

<u>Impact Areas and Sub-Areas</u> 1/	Impact Identification and Evaluation 2/
A. LAND USE	
1. Changing the character of the land through:	
a. Increasing the population -----	N
b. Extracting natural resources -----	N
c. Land clearing -----	N
d. Changing soil character -----	N
2. Altering natural defenses -----	N
3. Foreclosing important uses -----	N
4. Jeopardizing man or his work -----	N
5. Other factors	

B. WATER QUALITY	
1. Physical state of water -----	N
2. Chemical and biological states -----	N

1/ See Explanatory Notes for this form.

2/ Use the following symbols: N - No environmental impact
L - Little environmental impact
M - Moderate environmental impact
H - High environmental impact
U - Unknown environmental impact

- 3. Ecological balance -----
 - 4. Other factors
-
-

C. ATMOSPHERIC

- 1. Air additives -----
 - 2. Air pollution -----
 - 3. Noise pollution -----
 - 4. Other factors
-
-

D. NATURAL RESOURCES

- 1. Diversion, altered use of water -----
 - 2. Irreversible, inefficient commitments -----
 - 3. Other factors
-
-

E. CULTURAL

- 1. Altering physical symbols -----
 - 2. Dilution of cultural traditions -----
 - 3. Other factors
-
-

F. SOCIOECONOMIC

- | | |
|--|-------|
| 1. Changes in economic/employment patterns ----- | N |
| 2. Changes in population ----- | N |
| 3. Changes in cultural patterns ----- | N |
| 4. Other factors | |
| _____ | _____ |
| _____ | _____ |

G. HEALTH

- | | |
|---|-------|
| 1. Changing a natural environment ----- | N |
| 2. Eliminating an ecosystem element ----- | N |
| 3. Other factors | |
| _____ | _____ |
| _____ | _____ |

H. GENERAL

- | | |
|---------------------------------|-------|
| 1. International impacts ----- | N |
| 2. Controversial impacts ----- | N |
| 3. Larger program impacts ----- | N |
| 4. Other factors | |
| _____ | _____ |
| _____ | _____ |

I. OTHER POSSIBLE IMPACTS (not listed above)

- | | |
|-------|-------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

COMPLEMENTARY AID-FINANCED ACTIVITIES

AID-financed activities which will complement the Energy Policy Development grant fall into three categories - AID/Washington centrally-funded programs, ROCAP - sponsored regional projects, and on-going USAID/Costa Rica projects. These are briefly described below.

1. AID/Washington supports several projects that offer useful ancillary resources to this project. The Office of Energy in the Development Support Bureau (DS/EY) sponsors projects on a world-wide basis in Energy Policy and Planning, Bioresources, Small Hydroelectric power generation, and Conventional Energy Resource Identification and evaluation. Training courses in three areas are also available:

- a) Energy Management Training Program: this is a nine week course offered twice a year at Brookhaven National Laboratory and NY State University (Stony Brook). Participants will be mid-to senior level LDC officials involved in policy aspects of national energy programs.
- b) Training in Alternative Energy Technology: this is a 15 week course offered at the University of Florida. The curriculum deals with solar, biomass and other renewable energy resources, including their availability, collection, conversion technology, and applications. While participants will generally have a strong technical background, the course is also designed for mid-to-senior officials involved in energy planning aspects.
- c) Conventional Energy Training: this project involves a program of energy fellowships in US academic institutions, industries and research labs. Training is at the Master's level, and primarily in science and engineering disciplines related to the exploration, development and production of conventional fuels. Non-degree training and internships are also available to provide practical experience in engineering, management, analysis and decision-making related to conventional energy. Training periods will generally be for one-two years.

The Latin America Bureau of AID/W has also provided support through its sponsorship of the Central American Energy Assessment and direct assistance to ROCAP for a regional energy conference held in March of this year. The results of both

these activities should encourage greater communication between, and knowledge of, the energy sector situations and approaches in neighboring countries. The AID/W Science Advisor Fund and the National Academy of Sciences grant may also eventually provide useful information, technical assistance and training.

2. ROCAP is a second source of assistance and information to be considered. The ROCAP budget, although limited, supports the development of several projects that could prove useful in Costa Rican energy sector planning. Most prominent is the on-going Fuelwood Project, which reviews the fuelwood status of Central America and Panama and concentrates on ways to both increase the efficiency of fuelwood consumption and increase fuelwood production. ROCAP is also sponsoring activities which are 1) briefly assessing the economic prospects for ethanol production in the region, 2) planning a strategy for better regional meteorological data collection and utilization, and 3) reviewing possibilities for various energy conservation activities for both the agricultural and industrial sectors.

3. Most immediately relevant to this project are two on-going USAID/Costa Rica loans which will complement the proposed grant. These are:

- a) Science and Technology (515-0138), \$4,500,000 - This project is funding a series of applied scientific and technological research studies, some of which will be in the energy area. The project is also designed to strengthen the capabilities of Costa Rican research institutions through graduate level training and short-term courses. Finally, this project will attempt to tackle the question of transfer of technology from the development stage to entrepreneurial adoption through its technical extension component.
- b) Natural Resource Conservation (515-0145), \$9,800,000 - Project components concerned with pilot projects in reforestation, forestry production, and watershed management touch directly on priority areas for Costa Rican energy planning. Policy analysis and research will be conducted to examine the effects of various governmental policies on natural resource conservation and management. Other project components are concerned with the preparation of resource management plans and training and technical assistance; these could well have at least an indirect impact in the area of national energy planning.

Summary of Decree No. 11145-E-OP, Establishing
the Energy Sector, February, 1980.

CHAPTER 1 - General

- Article 1: Establishes the Energy Sector.
- Article 2: The Energy Sector integrates the
- (a) Ministry of Energy
 - (b) OFIPLAN
 - (c) Ministry of Culture, Youth and Sports
 - (d) Ministry of Public Works and Transportation
 - (e) Ministry of Economy, Industry and Commerce
 - (f) Costa Rican Electricity Institute
 - (g) National Electricity Service
 - (h) Costa Rican Petroleum Refinery
 - (i) Costa Rican Development Corporation
 - (j) Other institutions determined by the President, proposed by the Minister of Energy.
- Article 3: The Energy Sector is structured in the following form:
- (a) The National Energy Sector Council
 - (b) The Executive Secretariat of Energy Sector Planning.
 - (c) The Technical Energy Sector Committee
 - (d) The Regional Energy Sector Committees and
 - (e) All the coordination and advisory mechanisms, commissions, committees establishes by the Minister of Energy.

CHAPTER II - Energy Sector Coordination

- Article 4: Is to the effect that MOE and the President will coordinate the energy sector with the assistance of SEPSE.
- Article 5: MOE will carry out the following functions:
- (a) Preside over the National Energy Sectorial Council;
 - (b) Submit to the National Energy Sectorial Council for their consideration the Project for the Sector Development Plan as well as

proposed policies, studies, programs and projects presented by SEPSE, institutions and ministries in the sector;

- (c) Approve, in consultation with the President, the Plan for the Development of the Energy Sector, as well as evaluate and monitor its execution;
- (d) Present the Plan for the Development of the Energy Sector to OFIPLAN to ensure that it is compatible with other sector and regional policies, including the National Development Plan;
- (e) Present the budget of the Executive Secretariat to the National Energy Council for its approval;
- (f) Name the Director of SEPSE in consultation with the National Energy Council;
- (g) Encourage and strengthen regional coordination through regional development councils and other coordination mechanisms;
- (h) Name, when necessary, work groups for special studies and problems;
- (i) Identify and establish interinstitutional coordination mechanisms to ensure reaching sector objectives;
- (j) Other appropriate functions assigned by the President.

CHAPTER 3 - National Energy Sectorial Council

Article 6: The National Energy Sectorial Council is an organism of coordination and consultation and will be composed of the following persons:

- (a) Minister of Energy;
- (b) Minister - Director or Vice Minister - Sub-Director of OFIPLAN;
- (c) The Minister or Vice Minister of MCJD;
- (d) The Minister or Vice Minister of POPT;
- (e) The Minister or Vice Minister of MEIC;
- (f) The Executive President of ICE;
- (g) The Director of SNE;

- (h) The Executive President of RECOPE;
- (i) The Executive President of CODESA;
- (j) Two representatives of the private sector, named by the President.

Article 7: The functions of the National Energy Sectorial Council are the following:

- (a) Analyze problems of the energy sector and propose policy lines in accordance with the National Development Plan and Energy Sector Development Plan;
- (b) To take care of special problems transmitted to MOE by the President;
- (c) To propose modifications to the Energy Sector Development Plan;
- (d) To propose regulations and work plans for the coordination, programming and evaluation of interinstitutional programs;
- (e) To coordinate the plans and programs presented by institutions involved in Energy in direct contact with OFIPLAN;
- (f) To suggest work groups for special problems;
- (g) To propose whatever measures will improve work in the sector.

Article 8: Sessions of the Council can be convened by the President or other public or private institutions whom the Council wishes to hear

Article 9: The Council will ordinarily meet at least once a month, or whenever convoked by the President.

The Council will establish its own procedures.

CHAPTER 4 - Executive Secretary of Energy Sector Planning

Article 11: The Energy Sector will include an Executive Secretary of Energy Sector Planning who will specifically:

- (a) Elaborate the project of the National Energy Development Plan soliciting and fitting together the proposals and support of the departments and planning units of the institutions in the sector;

- (b) See to the regulations of the National Development Plan which pertain to the sector, bringing them into agreement with regional policies and directives from the MOE, the Council, and OFIPLAN;
- (c) Carry out studies on a regional and national scale, and in conformance with these and the objectives of the National Development Plan, propose energy policies;
- (d) Present annual and biannual reports to the Council;
- (e) Analyze, evaluate and supervise everything related to technical cooperation, investments and external financing as well as negotiation with foreign organizations or experts in the energy sector;
- (f) Establish adequate means of communication with the institutions that make up the sector, as well as with the public and private entities and other organizations related to the energy sector;
- (g) Create a documentation and information center that distributes periodic statistics to the National Planning System of information and statistics;
- (h) Maintain direct coordination and collaboration with the Division of National Planning and Economic Policy;
- (i) Other functions assigned by the President of the Council;

Article 12: To carry out his functions, the Executive Secretary of Energy Sector Planning will be subordinated to the President of the Council, and for administrative matters will be assisted by OFIPLAN.

Article 13: SEPSE will gather for completion of its functions:

- (a) Technical and administrative personnel and services, aided by the institutions represented on the Council;

- (b) Contributions of the institutions of the sector;
- (c) Resources provided by national and international organizations in the sector.

Article 14: SEPSE will be in charge of a Director named by the President of the Council. The Director will be subordinated to the President of the Council.

Article 15: The Director will carry out the following functions:

- (a) Execute the work program approved by the Council;
- (b) Preside over the Technical Energy Sector Committee;
- (c) Function as Secretary of the Council and participate in its sessions with voting rights;
- (d) Propose technical and administrative personnel to the MOE;
- (e) Whatever other functions assigned by the President of the Council.

CHAPTER 5 - Technical Energy Sectorial Committee

Article 16: The Technical Committee is composed as follows:

- (a) The Director of SEPSE, who will preside;
- (b) The Director of the Division of Sectorial Planning and Coordination of OFIPLAN;
- (c) The chiefs of the Planning departments of the institutions represented on the Council.

Article 17: The functions of the Technical Committee are as follows:

- (a) To assist SEPSE;
- (b) To collaborate in the structuring of the work programs, according to the agreements of the Council;
- (c) Provide SEPSE the information that it requests for the development of its functions;

- (d) Serve as a link with the institutions in elaborating necessary studies; research and evaluations;
- (e) Follow up recommendations and actions necessary to achieve efficient integration of policies and coordination of the participating organizations.

Article 18: The Technical Committee will meet at least once a month and additionally when convoked by the President of said Committee.

CHAPTER 6

Article 19: The Energy Sector will include, when justified, a sectorial committee for each region. This committee will be composed of the regional representatives of the institutions that make up the sector.

NATIONAL PROGRAM FOR ALCOHOL PRODUCTION

General Objectives

To develop a national program for substituting alcohol fuel for most of the total demand of gasoline and diesel fuel.

The alcohol program is part of the National Development Plan which integrates all the programs, projects and activities which the country proposes to accomplish. The alcohol program was created at the request of the Ministry of Energy and Minerals which will execute the program in cooperation with other institutions involved in the energy sector.

Specific Objectives

A. The National Program of Alcohol Production proposes to substitute alcohol for gasoline for 10% of the national consumption of gasoline either by 1) mixing 10% alcohol with 90% gasoline or 2) using 100% alcohol.

It has been estimated that the first phase will require approximately 25 million litres of alcohol to be used for the 103,000 vehicles which consume gas.

B. The program plans to develop three agricultural and industrial areas and to provide these areas with the necessary infrastructure to produce sugar cane for alcohol fuel. The areas are located in different geographic regions with the objective of reducing the cost of fuel transportation and distribution.

C. In a similar manner, the program proposes to implement a plan concerning the reasonable use of energy including methods of saving and conserving renewable and non-renewable energy.

D. Policies concerning the production of cane for sugar and the production of cane for fuel will be developed independently of one another and independent of the fluctuation of prices on the national or international sugar market.

E. Incentives for the use of 100% alcohol fuel for automobiles will be implemented as part of the alcohol program.

Plan of Action

A. To develop cane plantations in three areas in order to supply the required raw materials for the production of 25

million litres of alcohol per year. In order to produce the quantity indicated above, 3,600 hectares of land will need to be developed which will be distributed in the following zones:

- 1) San Carlos province of Alajuela
- 2) Guápiles, province of Limón
- 3) Golfito, province of Puntarenas

The cost of the agronomical development is approximately US \$8 4 million.

B. To re-establish the plant, Fábrica Nacional de Licores, in San José in Zone 1 in order to use the equipment in the production of approximately 25,000 litres/day or 7.5 million litres/year

The plant, including the transfer of the distillery, additional equipment and whatever else is required, is estimated to cost US \$3.9 million.

C. The acquisition and implementation of 2 distilleries of alcohol of 30,000 litres/day or 9 million litres/year will be in zones 2 and 3.

The cost of the distilleries is estimated to be US \$18 million

D. Execution of the required infrastructure for the installation, processing and administration of the plants. The cost for zones 2 and 3 is estimated to be US \$11.4 million.

E. Construction and/or improvement of roads required for the transfer of alcohol to distribution and sale centers

F. To regulate the importation of vehicles which consume diesel fuel with the objective of substituting vehicles which run on alcohol for those which consume diesel fuel.

G. To plan future actions (from 1983) concerning industrial, agricultural and financial factors to facilitate the last steps of the development of the alcohol fuel program.

H. To continue to regulate traffic, in order to make the best and most reasonable use of energy.

DRAFT SCOPE OF WORK FOR TECHNICAL ASSISTANCE

1. Objective

The contractor will provide all grant-financed goods and services required for project implementation, except for the project evaluation

2. The Energy Policy Development

The Energy Policy Development Project Paper will provide the contractor with general guidance in his work in assisting SEPSE to implement the project.

The purpose of the project is to strengthen the Government of Costa Rica's capacity for national energy sector planning. To assist the GOCR in achieving this objective, the project will provide assistance in 1) strengthening energy sector management; 2) developing and carrying out a plan for energy research and studies; 3) establish and organize a centralized system for the collection and use of energy information; and 4) carry out a program of short-term energy training and exchange activities.

The project will be administered and implemented by SEPSE. The Director of SEPSE will be in charge of coordinating all project-related activities, including liaison with OFIPLAN and other GOCR and energy sector entities. SEPSE will receive and review proposals for prefeasibility studies and energy planning research activities; will select and approve particular research proposals and areas of study which together will comprise a Plan for Energy Studies. SEPSE will also establish and organize a Documentation Center within its offices and identify training needs for both energy planners and technicians in energy sector institutions.

3. Role of the Contractor

The contractor will provide SEPSE with the technical assistance and support necessary to implement the project. This will include the following:

a. Long-Term Technical Assistance

The contractor will provide a long-term (24 months) Project Advisor with a degree in engineering, resource management, physical or biological sciences, or other discipline relevant to the technical areas of the energy field. The Advisor should be fluent in Spanish and have at least three

years experience in management or energy-related research, with some experience in energy analysis and technical administration.

The Project advisor will:

- 1) Provide technical assistance to the Director of SEPSE, the Energy Sector Technical Committee, and other energy sector institutions as needed;
- 2) Identify and recommend training programs for energy sector personnel, including short-term formal courses, seminars, and possible sites or activities outside Costa Rica appropriate for an exchange program;
- 3) Provide assistance in the identification and procurement of various technical journals, references and text materials to form an energy Documentation Center in SEPSE;
- 4) Assist SEPSE in writing scopes of work and terms of reference for training, information and other project activities;
- 5) Keep the USAID continuously informed of project progress and problems, and assist SEPSE in the preparation of quarterly reports and other implementation documents.

The Project Advisor will be based with SEPSE in San José but will be expected to travel as necessary to carry out the functions described above. The contractor will also provide a full-time bilingual secretary, rental costs of office space in SEPSE, and equipment and furniture.

b. Short-Term Technical Assistance

The contractor will provide the technical assistance necessary to define terms of reference for a wide range of energy research activities and studies in areas such as biomass utilization, hydropower, alcohol fuels, energy conservation, energy assessment and analysis, information system planning and others. To the extent that the most suitable and qualified technical assistance may be provided, the contractor may subcontract any of these functions from Costa Rica or any other approved source. All subcontracts will require prior SEPSE and USAID approval.

c. **Contracting Research Activities and Studies**

Once the Plan for Energy Studies has received USAID approval, and as the terms of reference for individual research activities and studies are approved by SEPSE and USAID, the contractor may begin to negotiate the approved activity or study. The contractor may subcontract any of these functions from Costa Rica or any other approved source with prior approval from SEPSE and USAID. The contractor may initiate work on individual activities and studies once the individual costs have been approved by SEPSE.

d. **Procurement of Goods**

All goods required for project implementation, including a vehicle and equipment, furniture and materials for the office and Documentation Center, will be provided by the Contractor.

4. **Reports**

- a) The contractor will submit quarterly reports to USAID, whose content will be based on the USAID Quarterly Report format.
- b) Every six months for the two years of his employment, the Project Advisor will provide USAID with a report summarizing his progress and problems in assisting with implementation of the project, and recommending future courses of action to facilitate project implementation.
- c) Thirty (30) days before the end of this contract, the Contractor will provide USAID with three copies of a final report summarizing all activities carried out under the project; progress achieved in relationship towards strengthening Costa Rica's institutional capacity for national energy planning; problems in carrying out project activities; and recommendations as to particular areas where future energy activities should be focussed.

5. **Level of Effort**

The level of effort for the performance of this contract shall be thirty-six (36) months, beginning on or about September 30, 1981.

DRAFT SCOPES OF WORK

The following are illustrative scopes of work for five possible studies to be included in the Plan for Energy Studies. Scopes of work for additional studies and research activities identified in the planning process will be reviewed and approved by SEPSE. All the studies listed below will be performed by the contractor, either directly or by subcontract.

A Alcohol Fuels Assessment (\$80,000)

1. Scope of Work

The goal of this study is to fill a gap in Costa Rican energy planning by focusing on the socioeconomic effects of a large-scale alcohol program while simultaneously reviewing the technical aspects. This study is closely aligned with study C on Biomass resources and care will be taken to avoid duplication. The following tasks will be accomplished:

a. Review GOCR project plans for the alcohol fuels program.

b. Collect and analyze existing studies of fuel alcohol programs, especially those pertaining to Costa Rica. These studies will fall into the following categories:

- (1) Alternative feedstocks
- (2) Costs of alternative technologies
- (3) Impacts on the agricultural sector
- (4) Foreign exchange effects
- (5) Employment, regional impacts, and other macroeconomic effects.
- (6) Social and environmental issues.

c. Analyze critical issues in production, conversion, and utilization of alcohol fuels, treating for example the following issues and others:

(1) Production

-Who should produce the biomass materials---private farmers, cooperatives, public companies?.

-Where should these materials be produced? What about land ownership, contiguous plantings, transportation to distillery? Is there a risk that the cane produced may be lost to nearby sugar mills?

-What feedstocks could be used in relation to resource availability? Sugar cane, yucca, sorghum, corn, bananas, cattails? Could alternate feedstocks facilitate longer operating seasons for distilleries? Where could these alternate crops be best grown? Might not wood for ethanol or methanol be considered in the future?

-What are the seasonal and climatological variations that affect the hexose sugar content of cane? Could cane be harvested year-round for ethanol?

-How much will it cost to produce these crops considering planting, fertilizing, protecting, harvesting, transport variables?

-Is it economical to transport molasses or sugar cane juice to a beverage distillery for fuel ethanol?

-What government incentives might be considered to encourage increased production of biomass for energy? How large a subsidy can be justified?

(2) Conversion

-What size distilleries would be built? Where, and using what feedstocks? How should distillery location be related to fuel demand?

-What technologies might be incorporated in these facilities to conserve feedstock or energy: waste heat for bagasse drying, cogeneration, solar stills, solar bagasse drying, methane or single-cell protein (SCP) production from stillage, alternate uses for bagasse (pelletization, fiber board, chemicals, animal feed)?

-Should the country pursue a hydrous ethanol (straight ethanol) program and risk production and price fluctuations with feedstocks (i.e., can fuel production be separated from food production?), or should a gasohol blend (up to 20% anhydrous ethanol with 80% volume gasoline) be sought which allows more flexibility in the short term?

-What kind of tax credits or minimum prices should the government provide for fuel ethanol?

-What are the impediments/constraints to the operation of the 240,000 liter/day CATSA plant?

Should Costa Rica slow its ethanol plans until more is known on the prospects for thermo-chemical conversion of woody biomass to methanol?

(3) Utilization

-How will the fuel be transported, distributed, mixed, stored and sold?

-How can the ethanol quality be controlled--water content, acid content, other impurities?

-How should ethanol/gasohol be priced versus gasoline?

-What incentives should be created to encourage the possible conversion of gasoline/gasohol motors -- (cost \$200 - \$300 per vehicle)?

-How can the diesel stock of vehicles
be best converted or replaced?

d. Model potential effects on the Cost Rican agricultural sector prices and factor costs. Available computer programs will be adapted, or new ones generated, and will be exercised on a selected set of scenarios for future alcohol fuel programs.

e. Analyze projected foreign exchange debits or credits to be expected from future alcohol programs.

f. Investigate other macroeconomic, socioeconomic, and environmental effects, for example,

- regional development
- rural employment
- pollution problems from stillage

g. Construct and examine scenarios for the phased-in changeover of feedstocks from sugar and starches to wood. (This activity may well be subsumed in Study C on Biomass.) The investigation will require:

- (1) Collection of data on the wood biomass resource.
- (2) A preliminary cost and feasibility analysis of both methanol and ethanol technologies based on wood feedstocks.
- (3) Construction of a brief scenario of possible wood-feedstock alcohol economies.

h. Review the consequences of the preceding investigations and develop recommendation for future action, specifically for the design of future fuel alcohol projects.

2. Costs and Timing

Estimated costs of this study are \$80,000.

The study length would be 12 months.

B. Industrial and Agricultural Energy Conservation and Fuel Switching Survey and Training (\$60,000)

1. Scope of Work

The following tasks will be accomplished as part of a prefeasibility study for future projects in industrial energy conservation.

a. Review GOCR work on industrial energy conservation.

b. Collect data on trends in industrial energy use in Costa Rica.

c. Evaluate the extent of data gaps and the costs of collecting adequate data on disaggregated industrial energy use in Costa Rica.

d. Identify typical promising energy efficiency and fuel switching options by industry.

e. Design and cost out a program of expert consultants to visit Costa Rican industrial establishments and give specific advice on energy-saving options.

f. Design a relevant program of short courses for industrial managers, using local expert instructors where possible. Also examine the merit of forming and training a domestic expertise in conducting energy audits, performing heat balances, etc.

g. Make preliminary investigations of necessary interfaces between subproject staff, A.I.D., and GOCR agencies.

h. Evaluate projected subproject costs and energy savings and specify other institutional environmental and socioeconomic constraints that could enter into subproject planning. This would include discussion of the applicability and possible effect of government policy, tax incentives, etc.

2. Costs and Timing

The prefeasibility study will cost \$60,000.

The study should require 6 months to complete.

C. Biomass Energy Resources Survey and Analysis (\$100,000)

1. Scope of Work

The following tasks will be performed as part of this study:

- a. Collect existing studies on land use, total biomass resources (including municipal solid waste), and biomass production and use patterns in various regions of the country.
- b. Collect information on present GOCR agricultural, and forestry planning and solid waste handling initiatives.
- c. Establish liaison with ongoing A.I.D. projects in forestry and agriculture.
- d. Identify key gaps in data on land use, agricultural planning, reforestation schemes, energy content of fuels, efficiency of biomass use, growth rates in natural vs. selected vegetation, solid waste collection and content, etc. that impede effective biomass planning.
- e. Review and briefly evaluate energy options based on field crops and crop wastes. These would include, but not be limited to, land use planning and energy technology problems involving: solid waste recovery and utilization; proposed areas for sugar cane production; introducing sweet sorghum; the feasibility of using banana wastes for ethanol; prospects for biogas from cattle wastes at dairy and poultry operations and from coffee and cocoa byproducts; and the possibility of using rice husks and other agricultural residuals processing for combustion.
- f. Thoroughly evaluate the wood energy potential of Costa Rica by performing the following tasks:
 - (1) Wood fuel availability analysis including:
 - (A) assessment of the physical parameters of the resource base, including the volume, size, age, quality and species composition of the forest stands, their area, geographic distribution, and slope characteristics.

- (B) assessment of the economic, social and institutional availability of the forest stands as affected by the distance to road, rail and river transportation; land ownership patterns; existing social, legal and institutional restrictions on wood harvesting; and existing competition for the wood resource by non-energy users.
 - (C) assessment of the long-term fuelwood productive capability of lands in Costa Rica, including the potential for more intensive wood production in existing forests and fuel plantations.
- (2) Economic analysis of alternative wood technologies relevant to Costa Rica including:
- (A) residential cooking and heating systems
 - (B) industrial direct combustion systems producing steam and/or electricity
 - (C) industrial and small scale gasification and pyrolytic systems and
 - (D) methanol and ethanol synthesis systems
 - (E) gasogen units for transportation.
- (3) Brief environmental analysis of wood energy alternatives including:
- (A) wood harvest impacts
-soils, water, wildlife
 - (B) wood transportation impacts
-traffic, noise, air pollution

- (C) wood energy conversion and end-use impacts
-air pollution, water pollution,
solid waste disposal impacts
 - (D) review of the importance of forests
in maintaining valuable watersheds.
- (4) Socio-economic trade-off analysis of
wood energy alternatives; and
 - (5) Net energy and net oil displacement
analysis of wood energy alternatives.
- g. Estimate approximate costs for various
levels of national production of energy from biomass sources
and detail possible problems.
 - h. Recommend, in the form of a costed and
prioritized list, a set of projects for biomass energy in Costa
Rica including outlining the method for collecting needed
information and evaluating possible technical interventions.

2. Cost and Timing

Estimated costs for this study are \$100,000.
This study would be run approximately 18 months, concurrently
with the Alcohol Fuels Assessment, because of the great deal of
complementarity between the two activities.

A.I.D. and the GOCR are aware of the complexity
of this task, but believe that a very useful product can be
developed for this sum if the assessment is well managed, uses
available Costa Rican talent, and is careful not to duplicate
existing work.

D. Small-scale hydropower (\$40,000)

1. Scope of Work

The following tasks will be accomplished as part
of a pre-feasibility study of the use of small-scale hydropower
in Costa Rica:

- a. Review selected existing studies for Costa
Rica and other countries.
- b. Conduct a quick survey of small hydro sites.

c. Identify potential load areas remote from existing and planned grids --- especially those already using diesel or other high-cost decentralized electricity.

d. Assess impoundment and other civil works costs for a selection of potential small-hydroelectric sites.

e. Establish total costs per kwh for a series of scenarios matching potential sites to potential load centers.

f. Make recommendations for or against implementation of pilot programs.

2. Costs and Timing

Approximate costs will be \$40,000 for a study period of 6 months.

E. Utilization of Excess Hydroelectric Capacity (\$60,000)

1. Scope of Work

The tasks listed below will be part of a prefeasibility study of the use of hydroelectric power emphasizing the prospects for optimizing and extending utilization and reducing oil imports.

The importance of preserving these resources should also be addressed. A more detailed subsequent study should be prepared that summarizes the existing knowledge on the status of Costa Rican watersheds and outlines mechanisms for promoting their protection.

a. Review existing Costa Rican data on hydroelectric operation and load profiles.

b. Interview ICE representatives on existing plans for increased usage and off-peak usage and potential problems.

c. Briefly review existing schemes for electricity-intensive industries to establish contexts for other excess capacity usage schemes.

d. Make preliminary marginal cost estimates of off-peak electricity, including daily and seasonal variations.

e. Review alternatives that have been proposed for maximizing use of existing and planned hydroelectric facilities including export to Nicaragua and Panama, electric intensive industries, etc.

f. Review electrical vehicle options for Costa Rica and analyze which combinations may be most cost effective, taking into consideration environmental benefits.

g. Study the time-averaged capital, operation and maintenance costs of water electrolysis and ammonia production considering the changing availability of excess electricity.

h. Review possible electric tariff structures and other schemes that might encourage de facto load leveling or greater electrical substitution for petroleum. Assess load management problems possibly resulting from changes such as switching from gas to electric stoves or recharging electric vehicles during peak hours, etc.

i. Summarize the cost-effective electricity applications that could reduce dependence on imported oil.

j. Recommend any future studies indicated to complete economic prefeasibility assessments of increased loads and more efficient power usage.

2. Costs and Timing

Costs of \$60,000 are estimated, with a study duration of 6 months.