AN INTERIM EVALUATION OF

THE COSTA RICA ENERGY POLICY DEVELOPMENT PROJECT

USAID PROJECT #515-0175

Submitted to:

USAID MISSION - COSTA RICA

Submitted by:

James D. Westfield, Ph.D.
Energy/Development International
1015 18th Street, N.W.
Suite 802
Washington, D. C. 20036

June 1984

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I. INTERIM EVALUATION OVERVIEW

A. Project Description

The USAID-funded Energy Policy Development Project was designed during late 1980 and early 1981. It was developed in response to the recognition that for Costa Rica to respond to the challenges of both an economic and an energy supply and demand crisis, their capacity to plan and manage the energy sector must be strengthened.

The project had four elements: 1) Energy Sector Management Activities (involving the provision of a long-term project advisor); 2) Energy Research and Studies (covering subcontracts and short-term specialists); 3) Energy Planning Information (an information center); and 4) Training and Exchange (inside and outside of Costa Rica training). The project was funded by a $1 million USAID grant and a counterpart contribution of $350,000 by the Costa Rican Government. It was signed in September 1981 and scheduled to be completed in September 1983. Several problems including slowness in meeting conditions precedent, a change in government, and subcontractor and subcontracting delays have required that the project completion date be extended at no increase in grant amount to June 1985. As of March 31, 1984, 67 percent of the project time has elapsed, 32 percent of the grant has been disbursed, 35 percent has been expended, and 78 percent has been committed. Although there have been delays by all participants, changes in project elements, and major contracting and subcontractor problems, it is expected that the money will be spent and the project objectives will be fulfilled by June 1985.

The Direccion Sectorial de Energia (DSE) established in 1982 under a managing and administrative committee composed of the Ministry of Industry, Energy and Mines (MIEM); Refinadora Costarricense de Petroleo (RECOPE); Instituto Costarricense de Electricidad (ICE); and Servicio Nacional de Electricidad (SNE) is the project executing agency. DSE was established to provide the capacity to: 1) produce medium- and short-term national energy plans, 2) address short-term problems, and 3) carry out specific projects

and investigations, especially in the areas of new and renewable energy and energy conservation. It is presently at almost full staffing having 17 professionals. In addition to the USAID project it has funding and support from the United Nations, France and Canada. It is negotiating for additional support from the Inter-American Development Bank, CEPAL, OLADE and Costa Rican sources. The principal operating and salary budget comes from RECOPE while ICE and MIEM also contribute small amounts. In a little under two years DSE has grown in size and influence to where it is a major participant in most energy sector matters. The USAID project has provided the major portion of outside funding and activity for the Direccion. Other donors and non AID-funded activities are beginning to increase to the point that they are or soon will be greater than the funding and activities supported by USAID.

B. Evaluation Scope

The mid-term evaluation, originally scheduled for September 1983, was delayed until this time in order to present a more complete set of project accomplishments. It is expected that the Government of Costa Rica and USAID will use this evaluation, in the near future, as one of the inputs to their process of deciding on future energy programs and cooperation. The stated purpose of the evaluation found in the Scope of Work is ". . . to determine whether the activities being carried out by the project are adequately focused on meeting the purpose of the project stated as follows: strengthen the Government of Costa Rica's capacity for energy sector planning." The full Scope of Work for the evaluation is presented in Appendix D.

II. EVALUATION CONCLUSIONS AND RECOMMENDATIONS

A. Findings and Conclusions

The first major finding of this evaluation is that the part of the project which is completed (a reasonable estimate is that 60 percent of the work is completed) has been done well, is consistent with the project paper expectations, and has helped improve the country's capacity to plan for the energy sector. However, there is much to be done, at least two and possibly three major study projects have yet to begin, the National Energy Sector Plan for the period 1986-2006 is far from completed (in this area the DSE may have significantly underestimated the amount of effort and time it will take to complete even a draft of the document), and the future role and necessary outside funding for DSE has only begun to be defined and sought out.

Of the project work remaining to be performed, two important studies are planned. The industrial energy conservation audit project has been well thought out, but there is a short time and much creative work to accomplish all that is expected. This study is very important if measurable energy savings are to result from DSE's work. The alcohol-gasohol study, originally a part of the early project work but postponed until now, could also bring important results. DSE has a good start in scoping the work, but must involve RECOPE and SNE in both the planning and execution if the study is to be useful and have policy impact. A study not yet planned, but which could be very important, is one with ICE to develop a methodology and complete projection of future electricity use. Traditional projection methods based on historic trends do not apply today in Costa Rica and a new approach is needed and wanted by ICE. These study efforts, if successful, will do much to enhance the energy planning capacity of the major energy institutions in Costa Rica.

The second major finding is that the area of public information, especially with respect to energy conservation and efficient use options, is not being given enough attention in this project. DSE should consider

spending more effort and lending more support to this area. In addition to making available the residential sector energy use information which they have, they should consider commercial and transportation sector information and education programs. It is not necessary for DSE to be responsible for the implementation of these programs but they should define what is needed, who should handle the area and how can it be managed, funded and coordinated with other energy sector activities.

The third major finding is that DSE itself should be paying more attention to its near- and long-term future. Although their role as a planning and coordinating agency is well on its way to being established and widely accepted, there are a number of things which must be done if DSE wishes to maintain this role or to expand into other areas. Priorities and foreign capital support for next year as well as background information about legal bases and needs for authority to permit and support financing, regulation and implementation activities by DSE or others do not exist. Additionally, the need for more short-term general programmatic support funding, though expressed by many in DSE, may not be matched by willingness to supply this in the major foreign donor group. DSE needs to develop more information on specific needs and study or project scopes of work to increase their chances of being granted more of this type of support.

The training program has been effective as far as it has gone and many training activities have been funded. The two types of opportunities which have not been well exploited are senior personnel exchanges and long-term training. More consideration should be given to funding these types of training during the remaining months of the project. There has been very little short-term technical assistance funded under this project. That which has, has involved training and help in major studies. No short-term consulting technical help is being used at this stage in the National Energy Sector Plan development. This is also an area where more emphasis could be placed in the remaining months.

The documentation center, library and information program are just being put in place. When the center is completed, additional personnel support must be provided if this project element is to be effective and

meet project expectations. At present, space limitations and the lack of a person directly involved in building and promoting use of the information resources of DSE has prevented exploitation of this resource.

The organization and administration of DSE, although unusual, appears to have had a positive rather than a negative effect. The payment of most of the salary and daily operating costs by RECOPE, with some contribution by ICE and the Ministry, has not created conflicting loyalties or unproductive organizational or technical biases in the DSE staff (the RECOPE contribution to DSE funding is shown in Appendix F). The DSE staff appear to feel that they are part of the energy planning and coordination group in the Ministry and they do not feel unduly influenced by being detached to DSE from RECOPE or ICE. It also appears that, to this point, neither ICE or RECOPE has exerted self-serving influence or applied pressure to those DSE staff on their payroll. The positive results of this unusual administrative mechanism include higher salary ranges for employees, especially those from RECOPE; an added interest in DSE work efficiency and quality by RECOPE and ICE; and a cooperative rather than competitive feeling among the three groups.

Up to now there have been no major conflicts in position between DSE and ICE or RECOPE, however, the potential for conflict is increasing. The national energy plan, the ongoing DSE energy pricing study, or the proposed gasohol study all offer potential areas where DSE could recommend policies, programs or projects with which RECOPE, ICE and/or SNE disagree. Because each of the above areas could have major and possibly negative implications to one of the other energy institutions, the practicality and utility of the unique DSE organization and administration arrangement will likely be strongly tested in the next several months.

There are also some existing legal questions concerning RECOPE's authority to fund DSE. If the present arrangement is deemed illegal or if conflict is brought about by DSE's planning, DSE's status and ability to contribute may be significantly affected. DSE management as well as those from RECOPE, ICE, SNE and the Ministry must be cognizant of these potential

problems and continue to work to keep DSE technically and politically independent and capable of meeting their goals and objectives.

The Project Advisor has become an integral part of the DSE becoming involved in all of its work. His performance and contribution is viewed by all as having been excellent. Because of this, he may have inadvertently prevented other DSE personnel from developing better relationships with some international funding agencies and sources of future support. This is not critical, but should be considered when looking to future efforts to find support.

As was stated in the first major finding, the project has, to this point, made good progress in meeting the goals and objectives of the Project Paper. There is much more to be done, but the staff and management of DSE has been well prepared to undertake the remaining work. A set of recommendations for future DSE actions has been developed and is presented in the following section.

B. Recommendations

The evaluation recommendations have been divided into three categories: 1) those activities and actions which DSE and AID should consider during the remaining project time, 2) those activities which DSE should consider to strengthen or formalize its position in the area of national energy sector planning and policy-making, and 3) other actions.

AID SHOULD:

- Begin to record and report host country funding contributions to the project.
- Consider all mechanisms open to them including IQC, Requirements and 8-A contractors for upcoming contracts. This can save time while still providing the quantity and quality of service necessary. Saving time in contracting is important if project completion by June 1985 is desirable.

- Help DSE in planning for future training activities by helping them identify opportunities in Latin America and other countries to initiate senior-personnel exchange programs.

- Consider providing a loan or grant to help implement the results of the industrial energy conservation audits. This loan fund would help industries purchase capital equipment necessary to achieve recommended and economically appropriate energy conservation. One good candidate for the institution to handle the fund would be the Costa Rican Private Investment Corporation now being established with help from the AID Mission.

- Continue to encourage and provide support to Washington to clear up existing problems and accelerate work progress on the Horquetas and coal analysis projects.

- Consider extending programatic funding support to DSE after the completion of this project in the areas of public information programs, senior personnel training and exchange programs and studies defining needs in areas of energy regulation, standard setting and compliance monitoring and financing.

DSE SHOULD:

- Continue developing the scope of work for the alcohol-gasohol study. They should involve RECOPE and SNE personnel both in this development and later directly in the conduct of the study.

- Develop, with ICE, a scope of work and then provide funding assistance, in developing and demonstrating a methodology for projecting future electricity use in Costa Rica.

- Focus its attention and commit its best technical and management capability to the industrial energy conservation audit project. DSE should also officially invite ROCAP's regional industrial energy conservation contractors to actively participate in the audits.

- Prepare a training plan defining what type of training is necessary and for whom. Both DSE and personnel from other institutions should be included in training.

- Consider using grant money to define existing actors and their involvement as well as gaps in information, regulation, financing and implementation in the energy sector.

- Use grant money to hire consultants to accelerate analysis and publication of results of residential energy survey and of other data from completed studies.

- Implement a more active strategy of encouraging use of the library materials and the other data and information resources held by DSE.

- Consider termination of English language training for personnel or provide more evidence that this is efficient and necessary.

In a more general and not necessarily project specific sense, DSE should consider implementing the following recommendations:

- Pay more attention to information programs, including the development and dissemination of energy conservation information.

- Define the amount and type of outside funding necessary to support their existence and development during the next few years and develop a strategy to obtain this funding.

- Develop priorities for next years (1985) work. Implement a more sophisticated internal project management system which would include monthly estimation and tracking of actual effort, expenditures, progress and problems.

- Include in the national energy sector plan a section on sector institutional issues, regulation, financing and implementation of plans and projects.

DSE will face some serious technical, organizational and financial challenges in the near future. These are not unexpected and they have been the subject of much discussion prior to and during this evaluation. The future role and influence of DSE will be affected by how these challenges are engaged and resolved. In this regard, DSE and AID should pay special attention to the following items.

The AID and UN supplied advisors have been instrumental in shaping DSE and they have also been important contributors to the work of DSE. One advisor is leaving soon and thus the USAID project advisor will become more important. AID and DSE should consider using more short-term consulting help over the next year in order to meet the expanded and accelerated

project work requirements and to compensate for the loss of the UN advisor. A second consideration should include the possibility of AID providing funding for an additional year of support for a technical advisor. The type of help needed in the year following the completion of this project will be much clearer upon the completion and acceptance of the national energy plan. At that time the type of technical and managerial needs at DSE will be better established and the qualifications for an advisor can be made explicit.

If AID is not interested in funding a full-time advisor following the completion of this project, they should consider providing project specific short-term technical help for an additional year. This could be done through budgeting funds for 12-18 person months of short-term technical assistance using the S&T/EY IQC subcontractors or a competitively selected single firm.

As has been mentioned several times, general programmatic and study support will continue to be a priority need for DSE. After the USAID project is completed, DSE will have identified several major study needs and will have developed work plans and funding requirements for these. DSE should consider requesting this form of AID assistance in the future. Meeting major study needs can be in the form of study specific funding or by providing a fund which can be used for several studies. Both of those mechanisms should also be considered.

III. PROJECT HISTORY AND STATUS

A. Project History

In 1978, following a long period of stability and growth, the economy of Costa Rica began to experience problems. Between 1977 and 1980, the cost of imports of oil and oil products almost doubled. Investments in ICE also almost doubled over this same period. Thus, while the country was experiencing a painful downturn in its economy, it was seeing energy use, energy sector investment and foreign exchange expenditures rapidly increasing. For example, in 1979 over 50 percent of all energy consumed in Costa Rica was petroleum based and thus came from imports. Costa Rica imports all fossile fuels (oil) and refines some in-country to produce oil products.

In response to this economic and energy crises, the Costa Rican Government began to initiate both short- and long-term actions. A formal energy sector was defined and a Government energy sector planning and management capability was created. The first effort in this area was the creation by decree of a Ministry of Energy and Mines (MOE) and an associated technical secretariat, the Executive Secretariat of Energy Sectoral Planning (SEPSE). This organization prepared a series of background reports on energy resources, uses and future options. One of their reports published in 1981, Alternativas de Desarrollo Energetico, provided the first information on energy sector activities. SEPSE worked with USAID to design this project and was designated as the Costa Rican Government's counterpart and the Grant implementing agency.

In late 1980, a Project Identification Document (PID) was produced by the AID Mission in conjunction with SEPSE and was transmitted to AID/ Washington for review. The PID was reviewed in Washington in early 1981 and as a result, several recommendations were made for the project development process.

In the middle of 1981 a Mission, LA Bureau and Consultant team worked with SEPSE and other Costa Rican Government personnel to produce the project paper. This paper was also submitted to Washington and reviewed and approved in September of 1981. The Energy Policy Development Project consisted of several activities designed to help Costa Rica address its existing economic and energy crisis. The emphasis was on activities which would strengthen their capacity in National Energy Sector Planning.

The project was designed to be completed in September 1983 and was to be funded with a $1,000,000 USAID Grant and a $350,000 GOC counterpart contribution. An important condition precedent in the Grant agreement was that only $50,000 could be disbursed until AID was given evidence that at least three new and highly qualified technicians had been added to the existing 2-person SEPSE staff. Because of this condition, the slowness in initiating work, a change in Costa Rican Government and other minor problems, little was accomplished until the hiring of a Project Advisor in November of 1982.

In early 1982, the MOE was dissolved because it had not had proper authorization, it had been operating as a ministry without portfolio, and in May of 1982, the Government created a new Ministry combining industry, energy and mining sectors under one institution. The legislative assembly approved the appointment of a new minister and also created the DSE under MIEM to be responsible for all national energy planning activities. DSE became the project executing agency and with the initiation of studies and hiring of the project advisor (Dr. Alvaro Umana) began to comply with the grant's condition precedent. At the time of hiring of the project advisor, less than $10,000 of Grant funds had been disbursed.

In December of 1982, a Project Activity Plan was submitted by DSE to AID. This plan included 5 major project financed studies to take place during the study and called for spending almost all of the $465,000 budgeted for energy research and studies. Work was started on some of these, however, only one, the Meta Systems Bioresource Use in Industry study, developed into a subproject activity. Other activities were substituted in an informal process between AID and DSE as there were

changes in interest and need within DSE and the energy sector. The four other original project activities were completed without Grant expenditures, postponed until later and/or after an initial effort were found to be unnecessary and were terminated.

In addition to the above described activities, one other major subproject was initiated. The adaptation of an existing energy investment model (EnVest) was subcontracted to Development Sciences, Inc. of the USA. This and the Meta Systems contract were awarded on a non-competitive sole source basis. Table 1 presents information on project funded activities including timing, estimated cost, products and executing entity. As can be seen from the table, studies, equipment, training, short-term consultation, construction, materials and the services of the project advisor are substantive elements being paid for by USAID.

By early 1983, it had become evident that because of the initial delays in starting the project and complying with the condition precedent, the later problems with the timing of subcontracts and subcontractor performance and the late start of almost all grant funded activities, the project would not be completed by September 1983. It was agreed that a project extension was reasonable and in late 1983 a no cost project extension until June 1985 was granted.

As of March 31, 1984, only slightly more than 35 percent of the project funds have been expended. Over $400,000 dollars of the budget are awaiting contract signing or affected by major unresolved problems with subcontractors. A long delayed contract for $200,000 for the industrial energy conservation audits is about to be signed and the alcohol-gasohol study should be defined in the near future. In spite of this current low level of spending, it appears that the project will be completed within the remaining time.

TABLE 1

MAJOR GRANT FUNDED PROJECT ACTIVITIES

ACTIVITY

TYPE	MAJOR ACTOR	DESCRIPTION	ACTUAL TIMING DURATION	ACTUAL TIMING COMPLETION	ESTIMATED OR ACTUAL COST $USA
A	Meta Systems	Biomass use in Industry. Prefeasibility study.	13 months	June '84	100,000
A	Development Sciences	Adaptation of model for Energy Sector Planning.	15 months	Dec. '84	143,000
B	Marelco	Bioelectrification Demonstration at Horquetas Costa Rica.			100,000 Grant (570,000 Central Bureau)
A	Not yet selected	18 Industrial Energy Conservation Audits and Reports.	7 months	Feb. '85	200,000
C	Costa Rican personnel	Residential Energy Survey		July '84	17,000
C	Costa Rican personnel	Productive Use Survey			20,000
C	Various	Training			38-78,000
C	D.S.E.	Equipment Purchases			65,000
C	Alvaro Umana	Project Advisor Salary and Expenses			64,000
C	Not yet selected	Alcohol-Gasohol Study	4-5 months	March '85	50-80,000
	Local Firm	Information Center Upgrading	2 months	August '84	17,000

A = Mission Subcontracted Study

B = USAID/Washington subcontract with partial mission participation.

C = Mission payment for expenses and/or personal services.

D = Mission payments for equipment.

B. Project Objectives

In the project paper, two gaps in the national energy planning process were identified. The first was a need for strengthening the entities responsible for planning and the second was a lack of pertinent information on which to base decisions, policies and strategies. The Energy Policy Development Project was designed to:

- Strengthen Costa Rica's existing energy planning institutions; and
- Compliment the energy planning work already underway through more detailed study of the countries' energy options.

The 1982 USAID Country Development Strategy Statement (CDSS) placed emphasis on alternative energy (non-fossil fuel based) development, thus this area was also made an important part of the project. The project followed a science and technology project in which applied research in energy matters, industrial technology and the rational use of natural resources was emphasized. These were also mentioned as important elements to be considered by the Energy Policy Development Project.

The stated project goal was to help Costa Rica reestablish the dynamic growth of its economy. In order to assist in this process, the project was to focus on supporting the development of a comprehensive energy development plan, to provide for more efficient energy use and to investigate alternative sources of energy supply. These were all taken into consideration in developing the project and they will serve as part of the criteria set used in this evaluation.

C. Executing Agency

The Costa Rican executing agency for the project is the Direccion Sectorial de Energia (DSE). DSE was created in 1982 as an outgrowth of several reorganizations and responsibility shifts affecting energy sector management in the executive branch of the government. DSE, although

organizationally under and a part of the MIEM, is administratively and financially controlled by RECOPE. DSE has a governing commission made up of the heads of (or their representatives) from MIEM, RECOPE, ICE and SNE. This commission, described in the constitution of the Industrial, Energy and Mines Sector, also manages the Costa Rican Energy Planning System. DSE, within this planning process, is charged with preparing an Energy Sector Development Plan, an annual operating plan and establishing a permanent system of energy planning, evaluating and developing Costa Ricas' natural energy resources and initiating and supporting the saving and conservation of energy.

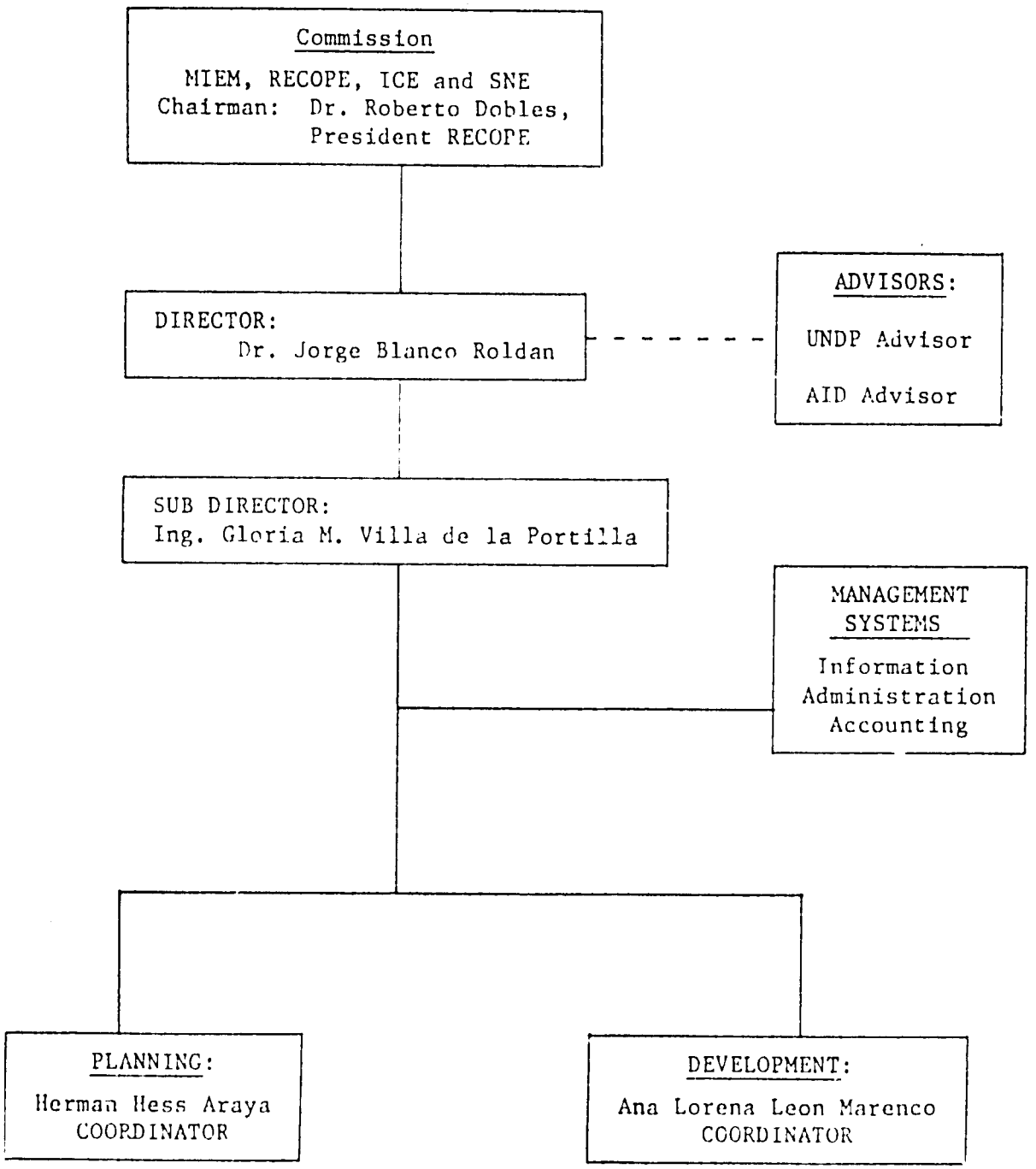
Following its creation in 1982, as an outgrowth of a previous group, La Secretariat Ejecutiva de Planificacion Sectorial de Energia, (SEPSE), DSE grew from three professionals to its present compliment of 17. DSE is organized as shown in Figure 1.

The work of DSE has, from the start, been dominated by the AID Grant. For instance, the AID Grant has contributed well over 60 percent of the agencies outside funding, paid for all but one or two of its subcontracted efforts and supplied office equipment and machinery as well as one of two full time advisors. This substantial contribution is beginning to diminish and by mid-1985 it will, unless replaced by other AID support, be depleted.

The DSE staff (see appendix G for more details on the current staff) are young and for the most part inexperienced in handling both energy and other sector planning responsibilities. The Director, Dr. Jorge Blanco, has recently been appointed to his post, having previously been a professor of Electrical Engineering at the University of Costa Rica. Most of the experience of the other personnel in DSE comes from short careers with RECOPE or ICE, their (maximum 3 years) experience with DSE or its predecessor organization and training financed at least in part by the Grant. The organization has grown in size and influence during its short history and it is about to face its greatest and most demanding period of development. The production of a Sectorial Energy Plan and its continuing management and coordination is what it was established and organized to accomplish.

FIGURE 1

ORGANIZATION OF DSE



The DSE has initiated many actions and activities, has completed several (see a listing of DSE reports produced in Appendix D), and is being given both guidance and cooperation by others in government as it works towards completing the first Sectorial Energy Plan. The USAID Grant has been used to provide trained people, studies, information and data, analytical tools and short-term technical assistance to help in formulating the plan. The AID project advisor has worked almost as a senior DSE employee being useful to both grant and non-grant funded activities. Although there are and will continue to be problems which can be deliterious to the energy sector planning effort, it appears that DSE has the ability and will to complete an energy sector plan prior to the completion of the AID Grant.

One unique aspect of DSE is its relationship with the Ministry, RECOPE and ICE. As the governments energy planning and coordinating agency DSE must manage, coordinate and work with the other agencies however, it must have a perspective much broader than any of the others. Because its staff are, in fact, employees of RECOPE and ICE and administratively responsible to these organizations, there exists a potential for conflict. RECOPE and ICE have their own energy resource and/or supply sector specific responsibilities and perspectives. These very important but necessarily narrow responsibilities sometimes require that RECOPE or ICE must compete for scarce resources. DSE will be involved in setting priorities through their sectorial (national) energy planning activities and in resolving conflicts between agencies the unique organizational and administrative arrangement for DSE could become a problem. This could be a problem particularly if the other organizations require or the DSE staff feels loyalties peculiar to RECOPE or ICE. As long as DSE and its staff adopt the national overall energy and sectorial perspective and the individual agencies don't interfere, the positive aspects of the arrangement should continue to predominate.

D. Project Status

General

The project, as described in the project paper, was to be composed of four elements, each contributing to the creation of an enhanced energy sector planning and management capacity. The elements as originally (project paper) and most recently (March 31, 1984) described and budgeted are shown in Table 2. This table also presents the current expenditures in each of the major categories. The realignment of the budget was accomplished in late 1983 and reflected a realization that available funds and spending priorities were not balanced. The realignment essentially took unexpended money from the Project Advisor, Contingency and Inflation and Energy Planning Information elements and added this to the Energy Research and Studies category. The necessity of and rational for this switch of funds included:

- hiring of a project advisor at less than was budgeted;
- the energy research study was found not to be necessary;
- the industrial energy conservation element is much more ambitious and costly than originally expected; and
- inflation and contingency money was available for use in other categories.

As a result of delays and other problems the project completion date has been officially extended (at no cost) until June 1985. The project budget presented above was based on this extension and includes the costs of an extended term (more than two years) for the project advisor.

While only a small percentage of the project money has been disbursed, several factors are operating to radically increase spending. These include the eminent start-up and short duration (8 months) of the Industrial Energy Conservation Audit Contract costing approximately $200,000 (this is included in the amount reported above as committed); the slow progress and disbursement of funds to the EnVest modeling project

TABLE 2

MAJOR PROJECT ELEMENTS AND BUDGET (U.S.)

(AID Portion)

	Original $	%	Recent $	%	Expend thru March 1984 $	%
1. Energy Sector Management:						
Project Advisor	175,000		64,000		31,000.00	
Equipment and Office Supplies	13,000		13,000		13,000.00	
Local Rent	15,000		8,400		8,400.00	
Vehicle	12,000		14,700		14,700.00	
Personnel and Miscellaneous	10,000		15,500		7,000.00	
SUB TOTAL	225,000	22.5	115,600	11.6	74,100.00	9.5
2. Energy Research and Studies:						
Short-Term Technical Assistance	425,000		654,000		593,256.00*	
Information Survey	20,000		20,000		20,000.00	
Computer Time	20,000		2,000			
Personnel and Miscellaneous						
SUB TOTAL	465,000	46.5	676,000	67.6	613,256.00	78.6
3. Energy Planning Information:						
Short-Term Technical Assistance	15,000		15,000		6,200.00	
Pent (Documentation Center)	15,000		10,000		10,000.00	
Documents and Equipment	60,000		60,000		29,093.00	
Study	10,000					
Personnel and Miscellaneous						
SUB TOTAL	100,000	10.0	85,000	8.5	45,293.00	5.8
4. Training and Exchange Program:						
Seminar and Workshop	25,000		13,000		8,200.00	
Exchange and Overseas	30,000		65,400		30,000.00	
Personnel and Miscellaneous						
SUB TOTAL	55,000	5.5	78,400	7.8	38,200.00	4.9
Project Evaluation	20,000		20,000			
Contingencies and Inflation	135,000	15.5	25,000	4.5	2,500.00** 7,000.00***	1.2
TOTAL	1,000,000	100.0	1,000,000	100.0	780,350.00	100.0

* This includes funds committed but not necessarily disbursed as of March 31.

** International telephone.

*** To cover the difference in the costs of the remodeling of the Information Center.

(only 25% of the total $134,000 has been disbursed under a fixed payment schedule tied to deliverables while the project is scheduled for completion in November of 1984). A $50,000 to $80,000 alcohol use for gasohol study is under consideration and will be scheduled for completion prior to the end of the contract; and a $100,000 contribution to the AID Central Energy Office managed Horquetas Gasification project has been committed but not disbursed. Approximately $150,000 remains to be allocated to specific uses. This allocation is expected to take place during the next few months.

E. Project Elements

The four project elements were developed on the basis of an excellent understanding of and agreement upon what was necessary to strengthen the energy planning capability in Costa Rica. The early discussions and planning which lead to the project paper and the resultant project elements have, for the most part, been shown to be accurate and on target. The project today is very close to what was proposed in the project paper.

The first of the four elements, Energy Sector Management, has included the hiring of a project advisor and secretary, the equipping, with desks, chairs, typewriters, etc., of much of the DSE office space, and the provision of other necessary supplies and material. The selection of a Costa Rican citizen as project advisor resulted both in a knowledgeable and extremely well qualified person being hired and in savings in project expenditures due to lower support costs (per diem and living expenses). In this category, the original budget has been reduced by almost 50% without sacrificing or altering quality.

The second project element, Energy Research and Studies, was described in the project paper as filling ". . . critical gaps in energy data and analyses . . ." 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. Several possible studies or analyses were suggested including:

- a survey of energy sector data;
- a plan for energy studies; and
- studies on non-conventional fuels, energy conservation, hydroelectric power, conventional fuels and energy sector management.

Studies have been initiated under project funding covering a planning model (EnVest), a pre-investment Analysis of Woody-Biomass Fuel Use in Industry (Meta Systems Study), Coordination and Funding support for the Horquetas Bio Electrification Project (major funding by S&T/EY), and a Price and Sectorial Energy Consumption Study including household and major productive uses of energy surveys. An about to start major industrial energy conservation audit project and a gasohol feasibility study (presently a scope of work of the latter is being developed) make up the remaining components of this project category.

The studies which have been completed, are in the process or will soon be started fit very well into the project paper concept of this element. The woody biomass and the household energy survey have been completed and both final reports will soon be issued.

The EnVest planning model development has been much slower than anticipated and the contractor has been notified that their work must be completed on time (October 1984). Discussions are underway at this time to reprogram the DSI effort to be in line with DSE needs and subcontract stipulations.

The project involvement in the AID centrally funded Horquetas Bio-Electrification Project includes in-country coordination of all sectors for S&T/EY and a contribution of $100,000 of Grant funds for purchase of part of the Equipment. This project, which is to be completed in stages, includes the use of wood chips as a fuel for a gasifier to be used to generate 190 KW of electricity for the village of Horquetas. The wood will

be provided through management of a nearby forest area. Several Costa Rican institutions are involved in the project including Forestry, ICE and DSE. There have been a number of problems with the U.S. supply of equipment and with the contractor from the U.S. and the project is both behind schedule and facing several problems which place in question the future of the efforts. A cable has been sent by the Mission to S&T/EY on June 12, 1984 asking for clarification and action. The committed $100,000 of Grant funds have not been disbursed and because of several of the existing problems, it is not clear how or when these funds will be used.

The Price and Sectorial Energy Consumption Study has two elements. A Prior DSE Short Term Pricing Study completed in draft in December 1983 serves as one input. The second input is two surveys; the completed residential use survey and a productive use survey currently underway and grant funded at approximately $20,000. Specific surveys are being made of the agricultural, manufacturing, transport and service sectors. The largest energy users in the economy, as well as the largest contributors to value added will be surveyed first and then a sample of smaller users and contributors will be conducted. The entire survey is designed to include a statistically significant sample. The scheduled completion date for all work on this component is September 1984.

The Household energy survey project element has been completed and data are now being analyzed and prepared for publication. This element, also funded at $20,000 was carried out in cooperation with UNDP. The survey focused on energy end use patterns in a statistically significant sample of both urban and rural populations.

The two remaining project Energy Research and Studies activities include a contract about to be awarded to a U.S. consulting firm to manage and execute industrial energy conservation audits and a study on the production of alcohol for use as a gasoline additive. The industrial energy conservation-audit subcontract covers the auditing of 18 major industrial plants in Costa Rica, participant training and the development of generalized energy use and conservation opportunity projections for major energy sectors. This contract is scheduled to start in July or

August of 1984 and will be completed in a maximum of 8 months. The terms of reference for the Alcohol-Gasohol Study are being revised and the 4 to 5 months study costing $50-80,000 should be completed by March 1985.

The third major project element involves training and exchange programs. As of 31 March, 24 such activities have been completed or were pending. These activities ranged from the slightly controversial English language training for DSE staff to the bringing of personnel to Costa Rica for seminars and technical assistance. Appendix E presents a more detailed description of the training and exchange activities of the project. There are no additional major activities currently planned, however, participant training in the U.S. or technical assistance in Costa Rica may still be provided with the remaining $40,000 of grant funds left in this project element.

The fourth and final element involves the acquiring of energy planning materials and the creation of a Documentation Center (for material and reference storage, display and use). As of this date basic supplies and references have been acquired. A part-time librarian was employed to organize and catalogue materials and publications and other materials are being received, further catalogued and used. The official Documentation Center, a place to use this and other information, is being constructed adjacent to the MIEM building and grant funds are being used for construction, decoration and equipping. The center will be ready for use by September 1984 and materials will be available for reference and use.

There are a number of other energy related activities being carried out by AID or the DSE which affect or rely upon project elements and status. An ongoing central AID funded S&T/EY project on Coal Analysis is experiencing problems. There are a number of unresolved issues which although not directly connected to elements of the DSE project they do affect how Costa Rican institutions, especially RECOPE, view AID and the grant project. AID Washington is funding exploration and geological investigation of known but undefined coal reserves in Costa Rica. The problems involve the extent of the study and the locations to be included. A three man transportation energy conservation study team visited DSE

during June 1984 using S&T/EY funding. This team will recommend additional activities in transportation energy conservation which should be considered for project support and funding.

DSE is now committing a major portion of its resources to prepare a National Sectoral Energy Plan (1986-2006). Many inputs to this plan are project outputs. The one major analytical planning tool DSE is presently developing, (EnVest) while not necessary for this first energy sector planning effort, is being counted on as facilitating otherwise arduous and complex hand calculations and analyses. The household and productive sector energy use data are very important to and necessary for this planning process. Other models, the UN advisor, and information being obtained as a result of training and the documentation center are also being incorporated into this effort. The first draft of the plan being prepared by DSE staff is expected to be ready in October 1984 for review by RECOPE, ICE, SNE and MIEM staff. An approved and official plan is scheduled for formal presentation and release in February of 1985.

IV. PROJECT ACTIVITIES AND EVALUATION ISSUES

A. Introduction

The project goals and purposes have been stated in many ways in both the project paper and in this evaluation document. The most general statement is that the project goal was to strengthen the Government of Costa Rica's energy planning capability. The project was designed to accomplish this end through supporting personnel development and training, by providing a senior Project Advisor, by funding studies and analyses, by helping collect and assemble existing base line data and by creating a center for the display and use of this data. While the above statements describe what types of activities were to be emphasized, the major and most important energy planning responsibility of DSE during the project has been the preparation of a National Energy Sector Plan. The strengthening and growth as an institution and role definition of DSE has been a secondary responsibility. This evaluation as summarized from the scope of work (see Appendix C), is responsible for considering both of the above responsibilities; 1) production of a National Energy Plan with all its subtasks, especially those which are grant supported; and 2) general progress towards strengthening of GOCR energy sector administration and management, including the role of DSE. The following discussion of project activities and issues will address Item 1 above first, and Item 2 later. It has been much easier to evaluate the project elements and progress towards completion of a National Energy Sector Plan than to estimate the impact of the project on energy sector administration and coordination. Even though much work remains before even a draft plan is produced, there are some objective measures of progress in this process. Goals and objectives have been defined and accepted, work plans exist, studies are completed or underway, training has been provided, material has been produced, analytical tools are being developed, working groups are meeting, money is being spent, etc. Criteria and data from the Log Frame summarized in Table 3, will be helpful in this part of the evaluation.

TABLE 3

SUMMARY OF PROJECT PAPER LOG FRAME ENTRIES

Item	Objectively Verifiable Indicators	Evaluation Notes *
Goal: reestablish dynamic economic growth	A 6% per year GDP growth rate is achieved during 1985-1990.	Achievement also depends on many other non project related activities.
Sub Goal: augment available domestic energy supply	Costa Rica's imported energy decreases by 1988 to 30% of total energy used.	Assumes this goal is held and supported by all other government actions.
Purpose: strengthen Costa Rica's capacity for energy sector planning	An energy sector plan is produced by end of 1983 and project results have an influence on energy policy and energy use.	Very directly connected to project activities.
Project Elements:		
1. Energy Sector Management	Adequate reports on planning data and analysis gaps.	This assumes, in part, that the supply of a project advisor, the provision of programmatic support, and setting of conditions precedent will stimulate activities.
2. Energy Research and Studies	Technical energy committee becomes active, review of energy supply options completed, and at least 5 prefeasibility studies and planning analyses completed.	Assumes AID can contract in a timely manner, and implementing agency is organized and expanded rapidly.
3. Energy Planning Information	Information needs analyzed, and documents collected and organized.	
4. Training and Exchange Programs	Personnel in energy sector institutions are trained. Key energy planners participate in exchange programs.	No training plan was called for.

* These notes were made by the evaluator and were not a part of the Project Paper Log Frame.

With respect to strengthening the Costa Rican Government and defining a future role for DSE, there is much less objective information. A major set of questions at the center of this issue is:

- Has the grant affected and/or strengthened other institutions involved in energy sector planning?
- Will the national energy sector plan be done well and acceptable and set the stage for future planning execution?
- What should DSE do in the future?

The criteria supplied in the Log Frame are less helpful in this part of the evaluation because they are macro indicators of success and dependent on other major occurrences. The project is also not yet complete and the time stipulated as the measurement period has not arrived.

B. Strengthening Capacity for Planning

Planning has been the major focus of DSE since its beginning and this area of project support was to include the provision of a senior project advisor, equipment and office supplies, local rent, a vehicle and additional personnel support. As of the end of March 1984, the specific grant support (see Table 2) has been almost identical to what was anticipated. Because rental of office space for DSE was not always necessary, the unused portion of this budget item has been transferred to other items. Costs for the project advisor have been much less than originally anticipated and these unused funds have also been transferred to other items. The items funded and level of assistance provided with grant funding appears to have been (or will be) equal to or greater than was anticipated.

The provision of a project advisor has helped develop and expand the capability of DSE in many ways. The advisor has brought many skills and capabilities to the staff, he has been involved in both grant and non-grant funded activities and he has assisted AID as was expected. The advisor, in conjunction with other full-time UNDP funded consultants, has brought

experience and maturity to the DSE which it needed but would not have had without them.

The DSE can be said to be only two years old and in this short time, it has grown substantially in numbers of people and planning capability. The roster of the Direccion (see Appendix G), depicts its broad capability and potential. The USAID Grant has acted as a major catalyst in the formation and growth process of DSE. This fact is recognized and admitted to by people of DSE, the Ministry, RECOPE, ICE and SNE. The project was slow in starting, taking almost a year from grant signing until movement and growth was initiated in DSE. However, once started, the development in size and capability has been impressive. In two years, DSE has become a major actor in the energy policy development process. Not all the credit belongs to AID because RECOPE and ICE have also supported and nurtured DSE's development.

The creation and installation of this project has strengthened the capacity for energy sector planning in DSE and the Government. Because of the change from SEPSE to DSE at the beginning of the project, the expected role of OFIPLAN and the Energy Sector technical committee has not materialized. The specific mechanisms for coordination, and the types of relationship's expected in the project paper have not occurred. However, different and equally meaningful mechanisms, processes and relationships have been and are being created. DSE has developed in size and capability to where it is recognized as being the coordinator and manager of national energy sector planning. As to its recognized right and ability to be the energy sector planning entity there are still some questions.

As indicated above, DSE's role as a coordinator and manager of energy sector planning has been widely accepted. There is still much discussion as to what and how it should contribute to the plan. An example of this still unresolved issue is the ongoing discussion between DSE, RECOPE and to some extent, ICE. DSE is currently writing the first draft of the National Energy Sector Plan for the period of 1986-2006 in-house without directly involving RECOPE, ICE or SNE planning personnel. DSE personnel feel they

are acting as national energy sector planners should. Their rational appears to be:

1. Inputs were developed jointly as a part of previous DSE work or are being taken from available RECOPE, ICE and SNE data and documents.

2. DSE can, for the purpose of the first draft, adequately reflect at least ICE and RECOPE, attitudes, expectations, priorities, bases, policies, etc., because many people have worked in the past and in fact are now on the payroll of RECOPE and ICE.

3. Because the plan must be more than an assembly of inputs from RECOPE, ICE, SNE, MIEM, etc. The time for input from others is before the plan is developed and after a draft is completed. Input at these times is felt to be more appropriate and efficient. The early input has already been sought and once the draft is completed, thorough review, discussion and revision will be possible.

RECOPE appears to desire a different approach which is based more on DSE being a coordinator and manager with RECOPE, ICE and SNE being assigned to produce parts of the draft. In a recent memo by RECOPE, a detailed suggestion for relationships and assignments in this process is presented. There may be a blurring of institutional positions and the uniqueness of opinions because the departments of Energy in both RECOPE and ICE are, in fact, made up of the same people who work in DSE. As was discussed earlier, DSE at present is staffed by people paid by and shown as also being on the staff of RECOPE and ICE. There appears, however, to be no bias in favor of these organizations because people have a payroll relationship to one of them.

The above differences in opinion as to planning process and plan production will be resolved in the near future. It is the nature of this resolution as well as the nature of the plan itself that will have a significant affect on DSE. It is difficult at this time to predict what the resolution will be or how it will affect DSE or the quality of the plan. However the issue is resolved, the capacity for planning and the impact of DSE on the planning process has already been demonstrated.

If one looks at the entries in Table 3 (Log Frame Summary) to measure accomplishment another indication of energy sector management and planning capacity is found. An examination of the list of reports produced by DSE (see Appendix D), plus those already available or currently being produced, by both DSE and others, indicates that the available data and information are substantial. There are important pieces which still must be developed. Reports such as a breakdown of sectorial data on economic and energy use to more discrete and subsectorial levels, an electric sector planning model, EnVest working and demonstrated, data on transportation energy use, a refinery operation model, etc. must still be described. However, given the short-time (two years) and the other accomplishments it is safe to say that there has been substantial progress towards developing and improving energy sector management and planning capacity.

C. Technical Studies and Contributions

The largest percentage of grant funds, 68 percent or $676,000 has been allocated to this project element. As of 31 March 1984 approximately $300,000 or 30 percent of the total element budget has been disbursed while 91 percent or $613,000 has been committed (for more details see Tables 1, and 2). Because 78 percent of the project time has elapsed the rate of disbursement must increase rapidly. In spite of this lagging of spending behind commitment and the passage of time a number of important technical studies and contributions have resulted.

The Meta Systems Biomass Study has been accepted by DSE and judged to be a valuable contribution. Although there were some misunderstandings and disagreements between DSE and contractor staff during the study the study report (Volume I) will be published (after a thorough editing) and widely distributed. The study has also identified and described a number of projects in industry where biomass should be substituted for other fuels. These projects are being considered for further support by DSE. Data and analyses provided in the study will also be used by DSE in future planning and analysis activities.

The Development Sciences, Inc. project involving the adaptation of the EnVest energy investment analysis model has been underway since September 1983, and was originally scheduled to be complete in April of 1984. Progress has been much slower than anticipated and DSI was recently granted a no cost extension of their contract until August 1984. DSI had developed this model for use in Morocco on another USAID Project and although the model was available to DSE for free as developed in Morocco it needed a number of adjustments, improvements and changes to make it useful for energy planning in Costa Rica. It was originally anticipated that EnVest would be used during July, August, and September of this year to assist in the preparation of the draft of the National Energy Sector Plan. EnVest is the only computer based analytical planning tool now possessed by DSE. Its availability is not now critical, and even if it is not ready for use in this planning cycle, it will not be critical. However, if the model were ready now it could be very useful. This tool will be one of several planning models developed or adopted by DSE and it should be, when completed and demonstrated, a powerful piece of their analysis software. In this regard, this study, like the Meta Systems project, is viewed by most people as a positive contribution of major value to DSE in the future.

The two surveys which form a part of the energy pricing study (residential and productive use) are or will soon be completed; results of neither have been published and although the residential energy use survey (data taking and some analysis) has been completed for several months, publication of results are not scheduled. The data along with that to be produced by the productive use survey will be used extensively in developing the National Energy Sector Plan. These data and the analysis will be very helpful in defining use levels, making projection and in helping decide among energy development options. This activity has and is providing DSE and the GOCR with two types of data necessary to produce a well founded National Energy Sector Plan.

The Horquetas Rioelectrification Study is actually a separate AID Washington financed project in the energy area which DSE is coordinating and contributing some grant funding. The project is partially completed with the Costa Rican work, including substation and grid construction and

forest management arrangements, completed. The remaining parts of the project involve the procurement, shipping, installation, and testing of U.S. equipment for wood chipping, gasification and electricity generation. The demonstration of this type of renewable energy use is consistent with project goals and its successful accomplishment can produce positive results and establish a demonstrated and widely repeatable mechanism for reducing the national reliance on imported fuels. At the present time, based only on information and observations made in Costa Rica, the successful completion of the project is not assured.

The Industrial Energy Conservation Audit project has experienced a series of unfortunate delays and problems which prevented the work from starting much earlier in the project life. In the middle of 1982, a detailed scope of work was prepared by DSE and discussed with the Mission. This scope underwent several changes and was finally processed and advertised in the Commerce Business Daily in August of 1983. The first set of responses were received and due to a problem in the handling of a late proposal, the contract had to be rebid. At the present time, the AID regional contracting office in Panama is considering best and final offers from the U.S. firms judged to be in the technically competitive range. It is expected that a contract can be signed and work can start by August of 1984. The project will involve audits of 18 industrial plants, training of local auditors, the preparation of general industrial subsector energy conservation recommendations and development of first order estimates of achievable savings and costs. The audits, to be provided free of charge, and the associated generalized industrial energy sector conservation analysis will provide the basis for a major industrial energy conservation program. This program, if justified and developed, would be directed at achieving major savings in energy use in the industrial sector by providing a financing mechanism (low interest loans) to assist the industries in purchasing capital equipment necessary to achieve the document savings. DSE, AID and IDB are already jointly and separately considering management, institutional and financial mechanisms for accomplishing this.

In addition to this project, the AID Regional Office for Central America (ROCAP) is sponsoring a Regional Industrial Energy Conservation

project using contractors. The ROCAP financed project offers several services to industries including seminars, training, technical assistance and audits. They are working with the Costa Rican chamber of industries and DSE to coordinate these activities. It appears that there may be duplication and some conflicts in these two projects.

The DSE project emphasizes major industries and thorough audits over a short period of time. DSE will not charge for the audits but plans to seek payment later from only those industries which implement recommendations using the loan or financing program being considered as a follow on project. The ROCAP contractors will also be asked to participate in the Costa Rican audits. The extent of the impact on ROCAP's program by the DSE audits because they do charge industries a small fee for audits is not known. This should be monitored closely. ROCAP's program is regional although they were asked to provide the Costa Rican audit services it appears that they did not feel they could provide the level, and the intensity of services expected by DSE. It is worthwhile noting that the contractor team carrying out the project for ROCAP did submit a proposal to DSE to provide the Costa Rican audits separately and not as a part of the ROCAP program.

The alcohol-gasohol study which is being considered for project funding was one of the original five studies planned. When the study was first being defined, there was no excess sugar production in Costa Rica and alcohol production from sugar was not considered a priority by the sugar producers organization or DSE. Plans for the study were therefore abandoned. Since that time, the international sugar market has decreased and an excess of sugar is available. It also appears that this excess will be available for several years. Additionally, RECOPE attempted to introduce gasohol in a limited way last year and experienced serious technical and administrative problems. RECOPE has recently issued a memorandum stating that until a detailed study of problems, economics and institutional issues are conducted, they have decided not to attempt any further efforts in this area. Because the study was originally included in the project and it is now needed and wanted, DSE has decided to proceed with development of a scope of work and selecting a contractor. A major

problem with completion of the study within the remaining project time is the time consuming process of contractor selection. Various options to limit this to a minimum are being considered.

In general, each of the studies funded under this element will provide both necessary and widely useful data on the National Energy Sector. In reviewing the Log Frame criteria and verifiable indicators in Table 3, it is evident that progress is being made in this area but much must be accomplished over the remaining project time (1 year) to meet the expectations presented in the Project Paper. The one Project Paper assumption for this area which has been important is that appropriate contractors had to be found and hired in a timely manner. The contractors which were found appear to have been appropriate, however, except for the two Sole Source Contracts (Meta Systems and DSI), hiring by competitive procurement has not been rapid. This is not a problem that is peculiar to Costa Rica and while it has delayed the Industrial Energy Conservation project, it appears so far, not to have created serious problems.

D. Training

The project sponsored training program has been both eclectic and opportunistic. It has been eclectic in that while DSE has a guiding training philosophy, there is no official annual training plan. Trainees and training opportunities appear to have been sought, encountered or brought to the attention of DSE, almost on a case by case basis. It is opportunistic in that it has often been used to fund travel and per diem for people attending existing formal training programs sponsored by AID and others. Both of these characteristics are consistent with the project paper and acceptable for a training program. Appendix D presents the type of training activities completed or imminent under project auspices. A number of training activities have been funded, however, only approximately 50 percent of the funding has been spent. The training activities have also mostly been short-term activities involving one person. There has been no exchange (as defined in the Project Paper) or long-term training. This area appears to warrant more attention and some rethinking. There is

a desire and a need in other institutions in Costa Rica for energy related training and more attention should be paid to this need. Some institutions such as ICE have asked for more training than they have had funded.

If one divides the number of dollars spent per person receiving some training, the resultant fraction would be a small number (approximately $600 per person for this project). As one indicator of the contribution, this is a gross measure of cost efficiency. It appears that this project element has been cost efficient in providing training. However, it must be recognized that in several cases, other training programs provided much more support and funding. The Log Frame criteria are not very explicit. Numbers or specific information to facilitate evaluation are not provided. In general, it appears that not as much has been done as could have been even though originally $55,000 not the current $78,000 was budgeted for this element. It will be hard to find opportunities and match them with people and needs or vice versa but it will be worth the effort. More effort on planning and providing training opportunities is indicated. One activity currently being funded as a training activity is English language study for selected DSE personnel. There is no doubt that some of the staff could benefit from being better able to understand and speak English. Whether the present program of English lessons is either cost efficient or producing the desired results is questionable. If English language training is to be continued, it should be done in a more controlled, monitored, and results oriented manner. If this is not possible the English language study program should be terminated.

E. Information and Data

The information and data element as described in the Project Paper included needs definition, studies, material acquisition and the creation of a documentation and/or energy research center. The original budget for this activity has been scaled down and at present, approximately 50 percent of the category funds are remaining. A library of books, reports, magazines and other materials pertinent to the energy sector in Costa Rica is being developed; approximately 1,000 titles are catalogued and many,

many more have not been formally entered in the system. Other reports and materials are held by individual DSE employees, most if not all of which are treated as personal property not provided with DSE or grant funding. The document center is being constructed and equipped and should be ready in two months.

At the present time, the DSE staff and some outsiders (particularly university students) use the library materials. It is presently very difficult because of space problems for outsiders to use this material, but this problem will be solved in two months. A more basic problem is that currently no one is in charge of updating, expanding and promoting this resource. Not even a part-time librarian is currently available and the more ambitious possibilities mentioned in the project paper for things such as computerized information retrieval are not being pursued.

In general, the whole area of public information is not being addressed. This has not been made one of the major priorities of DSE, their efforts and attentions have been directed to other areas. While their publication list shows 29 publications, there are some important gaps. One of these is that data and results from major efforts such as the energy use surveys is not available.

The results of the residential energy use study are not available and there is currently no firm date set for their publication. The AID mission has asked that DSE give this task a high priority. The workplan for the productive use survey shows 16 tasks, the last one of which is final report preparation. No date is yet programmed for this task.

DSE does not appear to view public information programs as a major responsibility. In their defense, they feel that they must give priority to other areas. The Log Frame criteria mention analysis of information needs and document collection and organization as verifiable indicators of achievement. An assessment of needs was performed, but it must be updated, especially considering the current role of DSE and its concomitant needs. Documents have been collected and organized, but many are not catalogued. This will be improved with the completion and occupying of the document

center. The level of spending for this element could have been greater during the early part of the project. This element needs some current attention for it to be as valuable a contribution as it was meant to be.

F. Other Activities and Issues

With respect to meeting the Log Frame criteria for the goal, subgoal and purpose of the project as defined by the objectively verifiable indicators, there may be some problems. Achieving a 6 percent per year GDP growth rate in the period 1985-1990 does not look possible at this time. Unofficial estimates indicate an average of 2 to 3 percent growth in GDP for this period. It is also apparent that many other economic, social, political and technical factors control this area. So far, this project is helping reestablish dynamic economic growth but only in small ways. Completion of the National Energy Sector Plan and some of the remaining DSE and grant funded subprojects will help even more.

Meeting the subgoal of decreasing imported energy supply to 30 percent of the total by 1988, may be possible. When the project started, (Project Paper data) imported petroleum was approximately 50 percent of the total. Current figures (1983 estimates prepared by DSE) show it was approximately 42%. There has been a decrease in the percentage and further decreases are possible. The project has begun to contribute to this decrease and in the future, its impact should be even greater. The National Energy Sector Plan should have more to say about the mix of energy resources and better estimates of what will exist in 1988.

The two criteria given for use in verifying achievement of the purpose have not yet been achieved. Both will be achieved to some extent before the project ends. The report called for will be the National Energy Sector Plan due in mid-1985 and the measurable influences in energy efficiency and policy must wait to be quantified. As has been stated elsewhere, at present, there is no indication that either efficiency or policy implementation has yet been accomplished as a result of the grant.

There are a number of areas which though not necessarily directly funded by the grant, they are elements which are common to several DSE activities which were not covered by discussions presented elsewhere in the evaluation. The following paragraphs cover these here-to-fore ignored subjects. The impact which DSE has so far had on energy policy and energy use has been almost entirely in the area of establishing its role in or affecting in some way the existing process of energy policy decision making. DSE appears not to have directly affected any major energy sector decision. They have become an important actor in the decision making process. Their impact is being produced and seen in two ways.

On one level DSE, with the help of funding from USAID and other honors, is creating activities and projects which will directly lead to changes in energy use. Some examples of this are:

- The biomass substitution in industry study (Meta Systems) has identified specific industries for action. One of these is now being considered by DSE and AID as a project for funding with AID's local currency account.

- The French government is funding another DSE identified biomass conversion project in the cement industry.

- Industrial energy audits about to begin will provide detailed plant specific plans for conservation actions and more efficient energy use. DSE is looking to AID for funding assistance for the next steps in this process including a loan program to help with capital improvement costs.

These direct actions are leading to energy savings and affecting energy use at a National Level. Coupled with this and at the same level DSE developed data can have, but is not yet having, other direct energy use impacts.

The information and data so far developed by or known to DSE could be used by them in many ways to affect national energy use. Public information, technical assistance, regulation or permitting programs could be studied, encouraged and supported or actually undertaken by DSE. If some or all of these activities were considered and implemented an

additional positive impact on national energy use could be achieved. At present, there is no consensus in government as to whether DSE should be involved in these. In order to sharpen the discussion and make the implications of a choice clearer, there are some things which DSE could be doing. A definition of who are the actors in the energy field, what laws and regulations exist and what is needed would help immeasurably. A follow on to this could be suggested institutional changes and program guidelines for financing, regulation, implementation and monitoring in the energy sector. These are areas which should also be covered in the National Energy Sector Plan to be produced in a few months.

As a related matter DSE should develop a more formal definition of its future. Part of this (defining the long-term role) would be accomplished by performing the above studies and investigations. A point which appears not now to be receiving enough attention is their role and needs for the next few years. This is very critical in terms of defining the type and level of foreign funding needed, the sources for this funding, the types of activities necessary to encourage donation or lending of this money and the types of near terms activities necessary to enhance achieving what ever future they decide they want.

On the basis of this evaluation and discussions held with many people, the most probable future for DSE is in producing information useful in the decision making process and in setting the stage for others to take actions. DSE's role as preparer of the National Energy Sector Plan, as was mentioned earlier, is not yet established.

Planning is one of many possible roles, however, there are obvious needs in the energy sector for public awareness and participation, project implementation, project financing, regulation and control as well as for planning. Their short-term development process needs more attention so that these options can be studied and decisions about who and how can be made at the appropriate time.

Another minor, but worth mentioning observation made during this evaluation is that the project (or study) management system in DSE should

be given more attention in the future. Expenditure tracking of both grant and counterpart funds by the project is not done on a monthly basis. The project manager should have a system which allows him to view the project process in terms of effect, time and money expended vs. product produced. This type of system would also be useful for overall DSE management.

APPENDIX A

COSTA RICAN AND OTHER INSTITUTIONS

CACM	Central American Common Market
CAEI	Center for Assistance in Energy in Industry
CATIE	Centro Agronomico Tropical de Investigacion y Ensenanza
CATSA	Central Azucarera del Tempisque S.A.
CODESA	Corporacion Costarricense de Dessarrollo S.A.
DGF	Direccion General Forestal, Ministerio de Agricultura y Ganaderia
DSE	Direccion Sectorial de Energia
GOC	Gobierno de Costa Rica
ICAITI	Instituto Centroamericano de Investigacion y Technologia Industrial
ICE	Instituto Costarricense de Electricidad
IDB	Interamerican Development Bank
IICE	Instituto de Investigaciones en Ciencias Economicas Universidad de Costa Rica
ITCR	Instituto Technologico de Costa Rica
MIEM	Ministerio de Industria, Energia y Minas
MIDEPLAN	Ministerio de Planificacion Nacional y Politica Economica
MOPT	Ministerio de Obras Publicas y Transportes
PEICA	Programa Energetico del Istmo Centroamericano, UNDP
RECOPE	Refinadora Costarricense de Petroleo, S.A.
ROCAP	Regional Office for Central American Programs (USAID)
SNE	Servicio Nacional de Electricidad
TRANSMESA	Transportes Metropolitanos S.A.
USAID	United States Agency for International Development

APPENDIX B

APPENDIX B
REFERENCES

Project Paper: Energy Policy Development. USAID Project N°515-0175 Costa Rica- September 28, 1981.

Quarterly Report Energy Policy Development. March 31, 1984.

Quarterly Report Energy Policy Development, December, 1983

Costa Rica: Issues and Options in the Energy Sector, Report of the Joint UNDP/World Bank Energy Assessment Program, January 1984.

Dirección Sectorial de Energía; MIEM; RECOPE; ICE, SNE, Folleto # 36, March 1984.

Donación AID 515-0175, Nov 82 - Nov 83. Primer informe anual del asesor del proyecto, por Alvaro Umaña.

Letter form Ing. Claudio Antonio Volio, Minister MIRE to Mr Danil Chaij, Director of AID/COSTA RICA, 4 noviembre 83 (a request for a change in termination date to 30 June 85 and a realigment of the budget).

Los Precios de la Energía y la Política Energética Coyuntural, Folleto # 29 (Borrador # 2, circulación restringida) preparado por Hermann Hess Araya, November 1983.

Recursos Bioenergéticos y Posibilidades de Sustitución en el Sector Industrial de Costa Rica, Un reporte para la AID y la Dirección Sectorial de Energía (3 volúmene-, preparados por Meta Systems Inc. Abril 1984.

A degree # 15138-MEIM (creation of DSE) in La Gaceta # 18 Miércoles 25 de enero de 1984.

A Memorandum to Dr. Jorge Blanco Roldán from Ing. Fernando P. Caldas entitled Evaluation de Borrador presentado por Meta Systems Inc. dated 30 marzo 1984.

A note in response to review Memorandum prepared on Bioenergy Resources and

options for substitution in the agro-and industrial sector of Costa Rica. by Allan Poole, undated but market as received by DSE May 7, 1984.

Programa de Auditorías Energéticas Industriales por DSE, AID and Cámara de Industrias de Costa Rica (an undated pamphlet)

Project Grant Agreement AID Project # 515-0175. Date September 29, 1981.

Project Grant Agreement First Amendatory Grant Agreement AID Project # 515-0175. May 23,1982.

Términos de REferencia para el Estudio de Producción de Alcohol con Fines Carburantes en Costa Rica (Preliminar), preparado por Ing. Javier González (DSE) May 7, 1984.

Elementos sobre la Experiencia con Alcohol Carburante En Costa Rica, preparado por Adriana Garrido Q, Feb. 1983.

Memorandum del Viceministro del MIEM Jorge Eduardo Monge para Dr. Jorge Blanco (DSE) asunto, Alcohol Carburante, 21 mayo 1984.

Letter form Mr. Em M. Hine Jr. President of National Planning and Consulting Corporation of Coralbables Fla to Dr. Rodrigo Alttmann O. offering an absolute alcohol feasibility Study, March 2, 1981.

Cable (unclassified)from USAID Mission Costa Rica to J. Vanderryn SIT/EY Subject Costa Rica Problems with Centrally Funded Project. 12 June 1984.

Memorandum form Dr. Alvaro Umaña to Dr. Jorge Blanco, Director DSE, covering comments on the Meta Systems final draft report and contract dated 14 june 1984.

Anuario Estadístico Sector Energía Costa Rica, 1980, Despacho de Energía y Minas. Agosto 1981.

Plan Anual Operativo 1984 Sector de Industria, Energía y Minas, MIEM, Enero 1984.

Alternativas de Desarrollo Energético, Período 1981-2000. Enero 1981.

APPENDIX C

APPENDIX C

SCOPE OF WORK
FIRST EVALUATION
AID GRANT 515-0175

ENERGY POLICY DEVELOPMENT

A. Objective:

The Contractor will conduct an interim evaluation of AID Grant 515-0175. The evaluation is to determine whether the activities being carried out by the Project are adequately focussed on meeting the purpose of the Project stated as follows: strengthen the Government of Costa Rica's capacity for energy sector planning.

B. Scope of Work:

The Contractor shall:

1. Undertake an interim evaluation of the main components of the Grant:

   a. General progress toward strengthening of GOCR energy sector administration and management, including the role of the Direccion Sectorial de Energia (DSE), as measured by:

      (1) its envolving status in the GOCR energy sector;
      (2) the quality of personnel;
      (3) independent (non-grant funded) technical contribution to GOCR energy strategy by DSE staff.

   b. Selection and progress toward completion of prefeasibility energy technical studies.

   c. Effectiveness of the training and exchange activities.

   d. Progress toward completion of the Documentation Center.

   e. Effectiveness of short term technical assistance.

2. Provide comments and specific recommendations to improve the effectiveness of the activities presently carried out or programmed under this grant.

3. Indentify priority areas and provide recommendations for follow-on technical assistance and investment opportunities, primarily with the private sector.

C. Reports:

The Contractor will prepare a written report in English in original and four copies, on the evaluation. The report will be submitted by the Contractor to the AID Mission in San Jose within three weeks of departure from Costa Rica.

March, 1984

APPENDIX D

PUBLICACIONES DE LA DIRECCION SUBSECTORIAL DE ENERGIA DURANTE LOS AÑOS 82-83-84

Los números que no aparecen en la lista, son folletos que se han editado con circulación restringida, o están en proceso de elaboración.

Nº	NOMBRE DEL FOLLETO	HECHO POR
001	Uso de la energía y alternativas energé-	
	ticas para la Industria y Agroindustria de Costa Rica	Ing. Fernando Caldas
002	Auditorías energéticas para la Industria	
	y Agroindustria de Costa Rica	Ing. Fernando Caldas
007	Evaluación del Componente energético en	Ing. Oscar Solera
	los costos de los diferentes productos de consumo interno y externo	Ing. Julio Córdoba
008	El contexto económico	Hermann Hess A. Economi
009	Evolución de las ventas de hidrocarburos	
	en Costa Rica 1978-1982	Hermann Hess A. Economi
010	Metodología para la proyección del consu-	Est. Juan Antonio Rodrí
	mo de hidrocarburos	Hermann Hess A. Economi
012	Informe sobre el precio del alcohol	Hermann Hess A. Economi
		MSC. Adriana Garrido
013	Términos de referencia estudio consumo y	Hermann Hess A. Economis
	precios de la energía	
014	Informe sobre situación actual de los	Hermann Hess A. Economis
	fondos (Convenio de San José)	
015	Algunas consideraciones sobre variación de precios de los hidrocarburos	Hermann Hess A. Economis
018	Interconexión Eléctrica Intraregional	Ing. Ligia Mojica Ajún
021	El Sector Industrial y su Consumo ener-	Ing. Gloria Villa
	gético	
022	Lineamientos para la elaboración de in-	Ing. Milton Fonseca C.
	formes técnicos	

Nº	NOMBRE DEL FOLLETO	HECHO POR
023	Costa Rica: Antecedentes y perspectivas de uso del alcohol para fines carburantes	MSc. Adriana Garrido
024	Final Project Report - Prelim. Industrial Energy	Mr. Robsor Fernando P. Caldas
025	Estudio sobre el consumo y precios de la Energía	Hermann Hess - Economist
026	Sistemas de Información	Ing. Milton Fonseca
028	Tablas de conversión, equivalencias y otros datos útiles en el sector energía	Ing. Ligia Mojica Ajún
029	Los Precios de la Energía y la Política Energética Coyuntural	Hermann Hess
030	Elementos sobre experiencia del alcohol como carburante en Costa Rica	MSc. Adriana Garrido
031	¿Qué significa planificación energética?	Licda. Ana Lorena León
032	Encuesta residencial consumo energético	Licda. Ana Lorena León
033	Modelo de programación lineal refinación	Ing. Ligia Mojica
034	Proyecto Electrificación Transporte C.R.	Ing. Alexandra Hernández
035	Prop.Esquema para un módulo Ener. C.R.	Hermann Hess
036	Creación e informes labores DSE	Dr. Jorge Blanco Roldán
038	Metodología para la elab. balance energético en Costa Rica	Licda. Ana L. León
039	Estudio sobre costo combustible en horas pico en las autopistas	Javier González
040	Base metodológica Control Presupuesto	Ana L. León

APPENDIX E

APPENDIX E

CAPACITACION/TRAINING

Name of Traveler	Date and Place of Work	Purpose of Travel
Oscar Solera	DIRECCION Sectorial de Energia 2/16/81	To attend the 5th session of training in Alternative Energy Technology in Gainesville, Florida, USA. Tickets only.
Adrian Flores	ICE 3/13/82	To attend the Energy Management Training Program. Tickets only. New York. Washington, D. C., USA.
Eduardo Sibaja A.	Instituto Tecnologico de Costa Rica	To attend the seminar about wind energy in Texas, USA.
Roberto Dobles Rafael Carrillo Alvaro Umana	RECOPE SNE AID	To attend a conference about Energy Analysis, Planning, and Policy Development. Reston, Virginia, USA.
Fernando Pinto C.	DSE 7/5/83 through 9/16/83	Visit Georgia Tech., Technology Applications Laboratory. To attend Energy Conservation course at TVA.
Enrique Evans	ICE 7/11/83 through 8/12/83	To attend a course about Geothermal Energy in Denver, Colorado, USA.
Marco A. Gonzalez	ICE 5/9/83 through 6/10/83	To attend Organization and Operation of Rural Electric Distribution Systems course in Washington, D. C., USA.

Name of Traveler	Date and Place of Work	Purpose of Travel
Kenneth Bolanos	RECOPE 5/30/83 through 6/7/83	Charcoal National Program. Washington, D. C., USA.
Edgar Robles	ICE 6/27/83. Tickets only.	To attend Flood Predictions, Estimations and Forecasting. University of Colorado, USA.
Javier Brenes	ICE 9/5/83 through 12/18/83	Westinghouse course about design of electricity systems.
Alvaro Umana Hector Ferro Jorge Monge	AID-All the charges ONU-Participation costs DSE-Participation costs	To attend XII World Energy Conference in New Delhi.
Hector Vargas F.	ICE 9/14/83 through 9/16/83	To attend a course about Computer Analysis of Electric Load Forecasting and Generation Capacity Expansion. Columbus, Ohio, USA.
Rafael Carrillo	SNE	To attend the Energy Planning course at Stony Brook, New York, USA.
Javier Sanchez Luis A. Barquero	ICE ICE 9/20/83 through 3/20/83	Course: Electricity Systems by Tennessee Valley Authority, USA.
30 participants Jose Joaquin Seco	Some institutions	Seminar about Energy. ITAN, COSTA RICA

Name of Traveler	Date and Place of Work	Purpose of Travel
Oscar Acuna Leonel Fonseca	SNE SNE 11/1/83 through 17/1/83	Visit to study electronics production, refinery operation, and pricing of products. Miami, St. Louis, and Austin, USA.
Lourdes Quesada	RECOPE 10/15/83 through 11/15/83	Analysis of Coal Samples course by USGS in Reston, Virginia, USA.
Roger Solano	Instituto Tecnologico de Costa Rica. May 1983.	Energy Audit course by Tennessee Valley Authority, USA.
Bruce Dennis Manuel Echave	Laboratorio Los Alamos	Technical Assistance to ICE. COSTA RICA.
Mark Benjamin	Seattle University	Technical Assistance to FANAL. COSTA RICA.
Edgar Robles	ICE 6/24/83 through 6/30/83	To assist at the seminar "Erosion y Analisis del comportamiento de Rios." Colorado, USA.
Professor Gerald Sazama of Connecticut	San Jose. 5/2/83 through 5/27/83.	Seminar about Energy Project Evaluation. 20 attendees.
Rex C. Crowder	Technical Services Public Utility Commission of Texas	Technical assistance to SNE. COSTA RICA.
Mrs. Bodle English Instructor	Independent classes	English courses for the DSE people. 1983. COSTA RICA.

APPENDIX F

APPENDIX F

ANALYSIS OF DSE BUDGET** FOR 1984

RECOPE CONTRIBUTION IN COLONES

Category	Amount	%
Personnel Services	6,046,912	51
Other Services	3,741,903	31
Materials and Supplies	477,000	4
Training and Support	202,285	2
Taxes and Depreciation	1,374,694	12
TOTAL	11,842,794*	100

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* At an exchange rate of 43 colones/$U.S. the total budget is equivalent to approximately $275,400 U.S.

** ICE contributes the salary and personnel costs for two professionals and one secretary is paid for by MIEM. This budget also does not include any grant or loan contribution from USAID or other donors.

APPENDIX G

APPENDIX G

DSE PERSONNEL AND THEIR BACKGROUND

Nombre	Especialidad o cargo en DSE	Institución o Procedencia	Fecha de Ingreso DSE	Salario Mensual
Ing. Jorge Blanco Roldán	Director	RECOPE	octubre 1983	₡ 35.000.00
Gloria M. Villa de la Portilla	Sub-directora	ICE	(1) Mayo 1982	₡ 22.137.00
Hermann Hess Araya	Economista Coordinador Area de Planificación	RECOPE	13 setiembre 82	₡ 21.042.00
Ana Lorena León Marenco	Adm. Empresas Coordinadora Area Desarrollo	ICE	(1) Mayo 1982	₡ 19.220.00
Milton Fonseca Corrales	Analista Sist. Encargado del Sistema de Información	RECOPE	(5) Abril 1983	₡ 21.170.00
Fernando Caldas Pinto	Ingeniero Eléctrico	RECOPE	13 set. 1982	₡ 29.000.00
Adriana Garrido	Matemática	RECOPE	1 agosto 1982	₡ 22.168.00
Giovanni Castillo	Ing. Eléctrico	RECOPE	15 abril 1983	₡ 28.900.00
Alexandra Hernández	Ing. Civil	RECOPE	16 agosto 1983	₡ 14.760.00
Julio Córdoba	Ing. Químico	RECOPE	(2) Enero 1984	₡ 15.250.00
Carlos Luis Leiva	Economista	RECOPE	13 febrero 1984	₡ 31.600.00
Javier González	Ing. Mecánico	RECOPE	1 marzo 1984	₡ 14.250.00

NOMBRE	ESPECIALIDAD O CARGO EN DSE	INSTITUCION O PROCEDENCIA	FECHA DE INGRESO DSE	SALARIO MENSUAL
Juan Antonio Rodríguez	Estadístico	RECOPE	(6)16 marzo83	₡ 15.740.00
Ana Cecilia Fernández	Secretaria de la Dirección y Subdirección	RECOPE	1 nov. 1982	₡ 9.751.00
Marlene Morales Acosta	Secretaria	MIEM	1 marzo 84	₡ 7.750.00
Luis Poveda Valladares	Chofer	RECOPE	(1) mayo 1982	₡ 9.400.00
Vacante	Ingeniero Industrial	RECOPE		
Vacante	Asistente Administrativo	RECOPE		
Vacante	Ingeniero Químico	RECOPE		
Vacante	Analista Sist.	RECOPE		
Vacante	Profesional	ICE	(4)	

(1) Ingresaron en la antigua SEPSE en 1981. Luis 20-4-81
(2) Ingresó como asistente el 3/1/83
(3) Sustituyó a Patricia Murillo quien ingresó el 1/5/83
(4) Lo ocupaba la Ing. Ligia Mojica de junio 1982-Febrero 1984
(5) Por contrato Dic. 1982, 6/3/83 plaza fija

NOTA: LOS SALARIOS QUE SE PRESENTAN SON LOS SALARIOS BRUTOS PERSIVIDOS INCLUYENDO DEDICACION EXCLUSIVA ANTIGUEDAD, ESCALA PROFESIONAL, ETC. CUANDO CORRESPONDA.