



# FINAL REPORT OF ACTIVITIES

for the first phase of the  
Initiative to Finance Renewable Energy  
Enterprises in Central America

FENERCA

A project executed with the support of the US Agency for  
International Development (USAID) under the Agreement  
RFA N°USAID/G/ENV/EET/99-01

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June, 2000 – October, 2001



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### **INTRODUCTION**

This report contains the activities carried out by BUN-CA, the Regional Office for Central America of the Biomass Users Network, for the period between June 2000, through October 18, 2001, in accordance with the Contract signed with E&Co on June 28, 2000, for the execution of the *Iniciativa de Financiamiento de Empresas Energéticas en Centro América (Initiative to Finance Renewable Energy Enterprises in Central America)*, known as **FENERCA**.

The objective of the Contract was to involve BUN-CA in the development of activities as presented to USAID, particularly to be directly responsible for the execution of two of the activities: “*Capacity Building for the Finance Sector on Smaller-Scale and Rural Energy Applications*” (CA5) and “*Developing Regulatory and Policy options for Renewable Energy Projects*” (CA7).

The execution of the activities within BUN-CA was assigned to a program management unit conformed by:

- Jose Maria Blanco, Regional Director
- Gilbert Masís, Director of Operations
- Leonel Umaña, Renewable Energy Project Officer
- Joost Siteur, Renewable Energy Technical Officer
- The in-country representative in each country where FENERCA has been implemented (Guatemala, El Salvador, Honduras, Nicaragua and Panama)

During this period BUN-CA worked closely with E&Co (the Project Managers) and with PA Consulting Group (a US consultant group hired to develop specific tasks).

In the execution of FENERCA, financial and technical support has been received from the program “*Fortalecimiento de la Capacidad en Energía Renovable en América Central*” (*Strengthening of the Capacity for Renewable Energy Development in Central America*) known as **FOCER**, executed by BUN-CA with funding from UNDP/GEF. FOCER’s support has played a significant role in the development of diverse training activities, missions to countries in the region, hiring of local representatives, as well as removal of the barriers that hinder the development of renewable energy projects. The total counterpart contribution offered by the FOCER program is US \$725,000 for its twenty-four months of duration.

Hereafter, a detailed report is presented for the activities implemented by BUN-CA in each of the FENERCA’s project tasks.

## **1. Task CA1: Rapid Assessment and Final Work Plan Development**

1.a. To facilitate the strengthening of a regional network of stakeholders in renewable energy, and to prepare the ground for FENERCA, BUN-CA updated its contact lists for the 5 countries, accounting for about 600 records. These contacts include public agencies, project developers, NGOs, service companies, consultants and financial institutions.

1.b. A total of 537 surveys were distributed during a two-month period, far exceeding the anticipated result that targeted 400 surveys distributed within the region. A six-week waiting and follow-up period was established for the receipt of responses. This term ended on July 15, 2000. At that time, a total of 116 responses had been received, representing nearly 29% of the sample size setup at the beginning (400). The total response constitutes a 22% response rate over the increased number of surveys sent (537).

**Table 1**  
*Survey responses per country*

<b>Country</b>	<b>Sent</b>	<b>Responses</b>	<b>% per country</b>	<b>% of total response</b>
El Salvador	132	40	30%	34%
Nicaragua	138	31	22%	27%
Honduras	114	19	17%	16%
Guatemala	55	14	25%	12%
Panama	98	12	12%	10%
<b>Total</b>	<b>537</b>	<b>116</b>	<b>22%</b>	<b>100%</b>

1.c. The combination of these responses and the project pipelines of E&Co and BUN-CA yielded an initial list of 23 projects, which on a first approximation appeared to meet the requirements of the Initiative to be supported in the completion of business plans (Task CA3). An additional list of 59 projects was identified, too. Table 2 shows the results of the projects submitted and pre-selected for receiving support from FENERCA.

**Table 2**  
*Number of projects submitted in the surveys*

<b>Country</b>	<b>Total</b>	<b>Pre-selected</b>
GUATEMALA	7	4
HONDURAS	17	9
EL SALVADOR	33	5
NICARAGUA	26	4
PANAMA	9	1
<b>TOTAL</b>	<b>92</b>	<b>23</b>

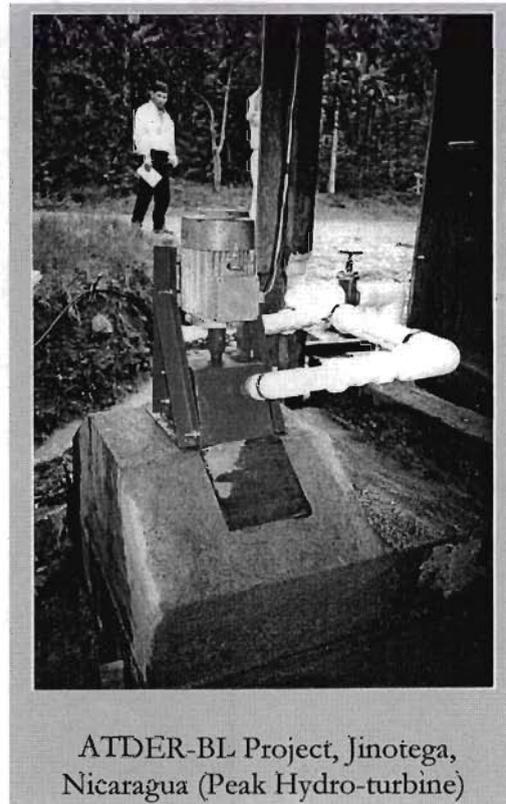
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1.d. Meetings were held with USAID's local missions in the five countries to introduce FENERCA and discuss their interest in participation of the Initiative since the beginning. Upon becoming effective, the team sent introductory letters presenting FENERCA and announcing country-missions during the first months of operation and the follows. As projected, the team held meetings with:

- *USAID Mission-Honduras*: Mr. Peter Hearne, Environmental Officer.
- *USAID Mission-El Salvador*: Ing. Flor de Rivera, Environment and Water Office, Ms. Heidi Gomez and Mary Latino de Rodriguez from the Environment and Water Office.
- *USAID Mission-Guatemala*: Mr. George Carner, Director, Marta Velazquez, Director of Regional Trade Office, Brian Rudert, Income and Natural Resources, Karin MacFarland, Coordinator of TEA/Mitch Energy, Zoyla Letona, Energy and Infrastructure Department.
- *USAID Mission-Nicaragua*: Dr. Efrain Laureano, Reconstruction Program, Mission Economist, supervisor of energy projects.
- *USAID Mission-Panama*: Mr. Lars Klassen, Director, Lee Russell, Development Sustainable Director, Mr. Half Cardwell, Nilka de Varela, Specialist on Project Administration, Sergio Claire, Senior Water & Environmental Manager,

1.e. Meetings were held with different people in the national authorities in each of the countries, like: Secretary of Natural Resources and Environment (SERNA) in Honduras, National Energy Commission (CNE) in Nicaragua, Commission for Energy Policies (COPE) in Panama, National Trust Fund for Energy and Telecommunications (FINET) and General Direction of Electrical Energy (DGEE) in El Salvador, and the Ministry of Energy and Mines (MEM) and Direction General of Energy (DGE) in Guatemala.



ATDER-BL Project, Jinotega,  
Nicaragua (Peak Hydro-turbine)

## **2. Task CA3: Enterprise Development Services and Completion of Business Plans**

2.a. Initial contacts were established with the enterprises selected under CA1 to receive support from FENERCA for the development of business plans, as it is shown in the following table.

**Table 3**  
*Projects selected by FENERCA to receive support in Business Plan development by October, 2001*

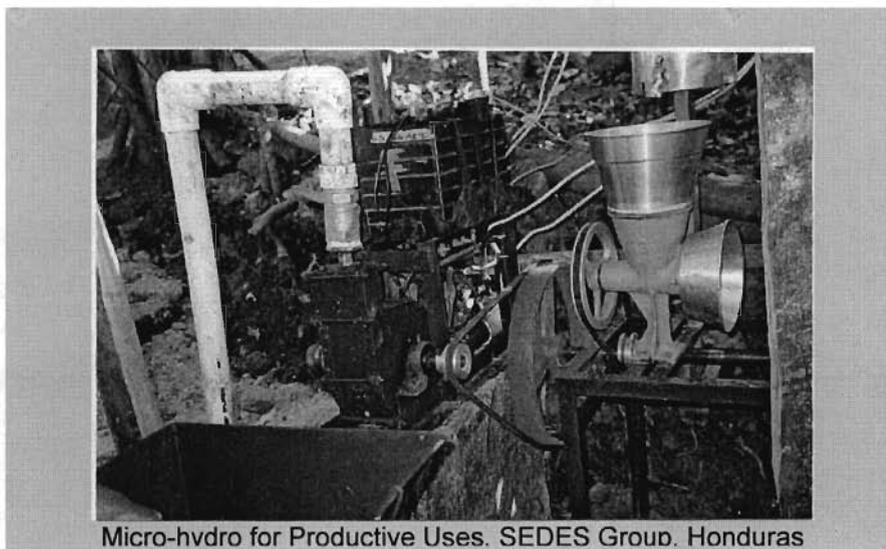
<b>Country</b>	<b>Project</b>	<b>Technology</b>	<b>Responsibility</b>
Guatemala	San Judas	Hydro	E&Co
Guatemala	San Marcos Municipal Utility	Hydro/Wind	BUN-CA
Guatemala	Chan Chan	Hydro	E&Co
Guatemala	Jones	Hydro	E&Co
Guatemala	Dintersa	PV	E&Co
Honduras	Hidro Yojoa	Hydro	E&Co
Honduras	Snow Mt./Rio Lindo	Hydro	E&Co
Honduras	SEDES	Hydro	BUN-CA
Honduras	Atlantis	Hydro	E&Co
Honduras	Cenit	Hydro	E&Co
Honduras	Tres Valles	Biomass	BUN-CA
Panama	ADEMIPP	PV	BUN-CA
Panama	ANCON	PV	BUN-CA
Nicaragua	Bronzeoak-Sagcomsa	Biomass	E&Co
Nicaragua	Tecnosol	PV/Hydro	E&Co
Nicaragua	Atder-BL	Hydro	BUN-CA
El Salvador	Tecnosolar	PV	E&Co
El Salvador	EEN	Biomass	E&Co

2.b. BUN-CA had the responsibility for the development of 6 business plan during this phase. Four of these projects fully completed their business plans with BUN-CA's assistance: Ademipp and Ancon in Panama, Tres Valles and Sedes in Honduras. These business plans are under review by E&Co. The other projects San Marcos and Atder, in Guatemala and Nicaragua, respectively, will be finished by the end of 2001.

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- 2.c. As part of the support of FOCER to 21 local projects and the alliance with FENERCA, BUN-CA will assist the project developers in obtaining financing for the implementation of their projects, through the development of business plans (see Table 4). The alliance between BUN-CA, E&Co, through FENERCA and FOCER, has provided excellent perspectives for the development of innovative financial mechanisms.
- 2.d. On September 6, 2000, an internal working session on the development of business plans was held in the E&Co-LAC Office. Participants in that session were Sergio Guillén and Lorna Li from E&Co-LAC, and Leonel Umaña and Joost Siteur from BUN-CA.
- 2.e. From January 21<sup>st</sup> to 24<sup>th</sup>, 2001, various work sessions related to Business Plans preparation were held in Guatemala City in conjunction with In-country representatives, BUN-CA staff and E&Co personnel. In these sessions, features of the Business Plans such as format, elaboration, collection of necessary information and the commitment needed from local representatives, were discussed.
- 2.f. On June 12<sup>th</sup>, 2001 a working session on FENERCA's activities was held in Costa Rica with the participation of Johanna Hjerthén, Gina Rodolico, Phil Larocco, Christine Eibs-Singer, Fernando Alvarado, Kathya Fajardo and Lorna Li from E&Co and Jose María Blanco, Gilbert Masís, Joost Siteur and Leonel Umaña from BUN-CA. This meeting focused on the specific Business Plans being developed under FENERCA and the efforts to finish them.
- 2.g. On October 11<sup>th</sup>, 2001 a working session was held in Bloomfield, NJ with the participation of all staff member involved in FENERCA from E&Co, Fernando Alvarado and Lorna Li from E&Co-LAC and Jose María Blanco, Gilbert Masís and Leonel Umaña from BUN-CA. This meeting focused on the business plans concluded during this phase and the projects that will need extra assistance during the next months.



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**Table 4**  
***FENERCA's projects that receive additional support from BUN-CA (FOCER)***

Proyecto	Tecnología	Estado	Capacidad Instalada prevista	Generación de energía	Apoyo financiero de FOCER	Inversión estimada	Ubicación geográfica del proyecto	Beneficiados	Sustitución de fuentes de energía contaminantes	Estimación de emisiones evitadas
<b>Honduras</b>										
Hidro Yojoa	Hidroeléctrico a filo de agua conectado a la red, mas la electrificación de una comunidad vecina	Terminó el estudio de factibilidad y Plan de Negocios, tiene firmado el PPA para 20 años, consiguió financiamiento de E&Co, busca financiamiento adicional	630 kW	3 GWh por año	\$23.000	Total: \$ 785,000 (75% deuda) \$1,246 por kW	Lago Yojoa, Municipio Santa Cruz de Yojoa	Empresa privada; Economía nacional (ahorro en la importación de petróleo); Comunidad local con la electrificación de 50 viviendas y 3 centros educativos	Sustitución de 5,200 barriles de diesel por año ( a revisar)	2,500 toneladas de CO2 por año
Sedes	Sistemas hidroeléctricos individuales para generación de electricidad y energía mecánica en zona cafetalera	Se han instalado 3 sistemas, se está terminando el tri-folleto; problemas en la contraparte de clientes por el bajo precio de café	0.5 - 3 kW por sistema	-	\$ 16.000	\$ 1,000 - 2,500 por sistema, se busca financiamiento de ±US\$ 250,000 para programa de crédito y expansión de producción y venta	Zonas cafetaleras del Departamento de Comayagua	Empresa privada; Caficultores; población rural de la zona	Reemplazo de generadores de diesel de 3-5kW para despulpe de café y electricidad	A definir
Tres Valles	Co-generación basado en bagazo para auto uso y venta a la red	Se encuentran terminando el Estudio de Factibilidad y el Plan de Negocios; se está negociando PPA	15 MW, 4.1 MW para auto consumo, 10.9 MW para venta	A definir	\$15.000	± \$ 15 millón	Aldea El Porvenir, Municipio de San Juan de Flores, Departamento de Francisco Morazán	Ingenio; Economía nacional (ahorro en la importación de petróleo)	Sustitución de combustibles fósiles para la generación de electricidad	A definir
<b>Guatemala</b>										
San Marcos / NRECA	Plan de Negocios para Empresa Eléctrica Municipal de San Marcos, incluyendo proyecto eólico y hidro	Se inició el estudio, se está esperando el diagnostico	4.2 MW	A definir	\$19.000	± \$ 5 millón	Municipio de San Marcos	Empresa municipal; Economía nacional (ahorro en la importación de petróleo)	Electricidad de generación térmica	A definir
<b>Nicaragua</b>										
TecnoSolución / Iglesia Morava	Sistema fotovoltaico para una clínica de salud	Se terminó el proyecto, se está preparando el estudio de caso	1,700 W	± 1,500 kWh por año	\$21.000	US \$ 24,500 (incluye sistema original y contraparte en especie para capacitación)	Bilwaskarma, RAAN	80 comunidades aledañas, beneficiando a más de 8,000 personas.	Planta de diesel	A definir
ATDER-BL	Sistemas hidroeléctricos individuales para generación de electricidad y energía	Están finalizando el diseño del equipo, instalaron un sistema y están formulando un	1 - 3 kW por sistema	No aplica	\$20.800	\$ 2,000 - 3,000 por sistema, se busca financiamiento de ±US\$ 250,000 para	Jinotega, Nicaragua	Empresa privada; Caficultores; población rural de la zona	Reemplazo de generadores de diesel de 3-5kW para despulpe de café y	A definir

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	mecánica en una zona cafetalera	Plan de Negocios				programa de crédito y expansión de producción y venta			electricidad	
Panamá										
ADEMIPP	Bombeo de agua para riego por goteo con sistemas fotovoltaicos	Instalaron el sistema piloto, están en proceso hacer pruebas, elaboraron el Plan de Negocios para la reaplicación de 500 sistemas	300 W por sistema		\$14.500	US\$ 8,000 por sistema (incluye sistema de riego), se busca capital de trabajo de US\$ 500,000 para programa de crédito	Chitré, Provincia de Herrera y los Santos	2.000 productores interesados en el sistema, 700 familias, 34 comunidades	Reemplazo de generadores de diesel	A definir
ANCON	Sistema fotovoltaico para una casa de guarda parques en reserva natural	Se diseñó el sistema, se está licitando la instalación	1200 W	± 1,000 kWh por año	\$21.000	± \$ 12,000	Punto Patiño, Provincia de Darién	Guardaparques y centro de educación ambiental	Planta de diesel	A definir

Total Leveraged by BUN-CA in 21 FENERCA projects	
Estimated Capacity:	Estimated Total Cost:
20 MW	\$22,015,000
Total investment from FOCER	US\$ 156,000

### 3. *Task CA4: Strengthening of Financial Institution's Capacity*

3.a. The first two-day workshop on Financial Engineering was organized in Tegucigalpa, Honduras, July 12<sup>th</sup> and 13<sup>th</sup> 2000, with the participation of 35 professionals from 18 organizations, of which 2 participants came from 2 commercial banks (for a total of 16 hours of training).

**Table 5**  
***Participating Banks in the Workshop on Financial Engineering held in Honduras on July, 2000***

- |   |
|---|
| <ol style="list-style-type: none"><li>1. Central American Bank of Economic Integration (CABEI)</li><li>2. Banco Atlantida of Honduras</li></ol> |
|---|

3.b. BUN-CA reviewed the Spanish and English versions of the Business Plan Manual (Toolkit), which is the main material used for the training workshops. The materials used in the Honduras workshop were reviewed by BUN-CA, as well.

3.c. On November 8, 2000, the "Small-Scale Renewable Energy Workshop in Panama" was jointly organized and held in Panama City with the participation of 7 officers from 6 financial institutions for a total of 56 hours of training. Appendix N°1 shows a detailed list of the participants in the activity.

3.d. The Financial Engineering Workshop was organized and held in Guatemala City on January 23<sup>rd</sup>, 2001, with the participation of 24 professionals; among them 8 financial institutions participated, for a total of 192 hours of training. In addition, the Vice-Minister of Energy, Mr. Rodolfo Santizo, participated in the closing ceremony. He encouraged the financial institutions to invest in this type of business and expressed the need for Guatemala to establish a fund that helps to extend renewable energy services in the country's rural areas where the electrical grid does not reach. Appendix N°2 shows the list of participants in this event.

**Workshop on Financial Engineering held on Guatemala City on January, 22-23, 2001**



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- 3.e. A similar workshop on financial engineering for renewable energy projects was organized and held in Tegucigalpa, Honduras, on February 27, 2001, with the participation of 26 participants from 14 financial institutions, for a total of 208 hours of training. Among the participants were Mr. Jorge Morales, the Coordinator of a Regional Project for Financing Renewable Energy Projects that is currently being prepared by the Central American Bank for Economic Integration-CABEI, with funding from GEF through UNDP. Appendix N°3 contains the list of participants in this Workshop and the results of the evaluations as provided by the participants.
- 3.f. The Workshop in Panama for Financial Institutions was held on April 3<sup>rd</sup>, 2001, with the participation of 24 professionals; among them 13 financial institutions participated, for a total of 192 hours of training. Among the participants was Mr. Roberto Carrillo from UNDP local office. Appendix N°4 shows the list of participants.
- 3.g. The Financial Engineering Workshop in Nicaragua was held on April 6, 2001, with the participation of 18 professionals; among them 12 financial institutions participated, for a total of 144 hours of training. This event was prepared with the full collaboration of the Nicaraguan Bank Association. Appendix N°5 shows the list of participants in this event.

**Workshop on Financial Engineering held in Managua, Nicaragua on April, 5-6, 2001**



- 3.h. The Financial Engineering Workshop for Financial Institutions in El Salvador was held on June 14, 2001, with the participation of 17 professionals; among them 12 financial institutions participated, for a total of 136 hours of training. In addition, a representative from the Ministry of Energy and Natural Resources attended the workshop, and the National Coordinator for a Renewable Energy Program, financed by UNDP/GEF, presented their goals to the participants. Appendix N°6 provides the list of participants.
- 3.i. Through the existing alliance between BUN-CA and E&Co, co-financing equivalent to 50% of total costs was contributed to the above training activities in Central America for a total BUN-CA investment of US \$18.000.

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In summary, under Task CA4, during the first phase of FENERCA, the following activities have been held, as shown in Table N°6:

**Table 6**  
***Summary of Activities and Results for Task CA4:***  
***Strengthening of Financial Institution Capacity***  
***from June 2000 through October 2001***

Country	Date	Workshop	Financial Institutions	Participants	Training Hours
Honduras	July/2000	Renewable Energy	2	2	16
Panama	Nov/2001	Small-Scale Renewable Energy	6	7	56
Guatemala	Jan/2001	Financial Engineering	8	24	192
Honduras	Feb/2001	Financial Engineering	14	26	208
Panama	April/2001	Financial Engineering	13	24	192
Nicaragua	April/2001	Financial Engineering	12	18	144
El Salvador	Jun/2001	Financial Engineering	12	17	136
<b>TOTALS</b>			<b>67</b>	<b>118</b>	<b>944</b>

#### **4. Task CA5: Capacity Building for NGOs and Micro-Lenders on Smaller-Scale and Rural Energy Applications**

4.a. The Government of Honduras, through the Secretary of Natural Resources and Environment (SERNA), requested the BUN-CA's support for the organization of a training seminar on financial engineering for renewable energy projects. This training was held on 11-12 July 2000, co-organized by FOCER and FENERCA, with 35 participants from 18 organizations, including NGOs, national authorities and developers of renewable energy projects. The workshop comprised a total of 280 person-hours of training. The workshop provided the opportunity to study the new privatization law of the energy sector under review. The following Table presents a list of the participating organizations.

**Table 7**  
***List of Organizations Participating in the Workshop on Financial Engineering held in Honduras on July, 2000***

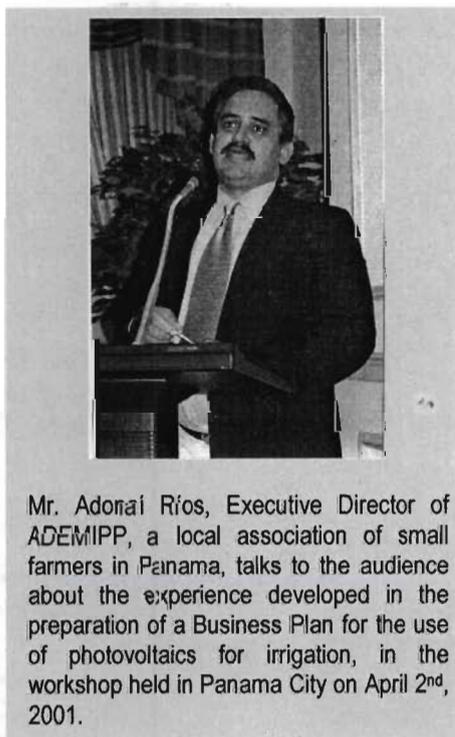
Private Developers:
1. ELCOSA
2. INVERSIONES CERNA
3. HIDROYOJOA
4. ENERGISA
5. CENIT
National Authorities or Government Organizations:
6. Secretary of Natural Resources and Environment (SERNA)
7. Direction General of Energy (DGE)
8. National Energy Commission (CNE)
9. National Company of Electrical Energy (ENEE)
10. Municipality of Utila
11. Energy Policy Commission (CPE)
12. Honduran Joint Implementation Office (OICH)
NGOs:
13. ASEM
14. AHPPEH
15. ADESOL
16. UICH
17. SOLUZ
18. COMERCIAL LAEISZ

4.b. On November 8, 2000, the "Small-Scale Renewable Energy Workshop in Panama" was organized jointly with the FOCER Program. It was held in Panama City, with the participation of 52 participants from 34 institutions, among them NGOs, private companies, cooperating agencies, the public sector, and universities, for a total of

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416 hours of training. In addition, support was provided by the Centro Internacional para la Capacitación Ambiental (CICA—International Center for Environmental Training) associated with ANCON, a large local NGO. Collaboration with this group has been useful for strengthening capacity in Panama on the issue of renewable energy. Appendix N°1 shows a detailed list of the participants in the activity.

- 4.c. The Workshop on Financial Engineering for Development Organizations (NGOs, private companies, and micro-lender entities) in Guatemala, was held on January 22, 2001, with the participation of 38 people, from 23 different organizations, for a total of 304 hours of training. Appendix N°7 has a list of participants in the event.
- 4.d. The Workshop in Panama for Development Institutions was held on April 2<sup>nd</sup>, 2001, with the participation of 31 professionals, among them 27 organizations, for a total of 248 hours of training. Among the participants, Mr. Michael Mihalitsianos, the Executive Director of Commission for Energy Policies of Panama (COPE) attended the event all day long. Appendix N°8 shows the list of participants.
- 4.e. The Financial Engineering Workshop for Development Organizations in Nicaragua was held on April 5<sup>th</sup>, 2001, with the participation of 42 professionals, from 37 different organizations, for a total of 336 hours of training. Appendix N°9 shows a complete list of participants in the workshop.
- 4.f. In El Salvador, the workshop was organized on June 15, 2001, with the participation of 28 participants from 21 different development organizations (NGO's, universities, micro-lenders, and others). The event concluded with a presentation made by Mr. Roberto Rivas, General Director of Environment of the Ministry of Environment and Natural Resources. A total of 224 person-hours was achieved in this workshop. See Appendix N°10 for the list of participants in this event.
- 4.g. Through the existing alliance between BUN-CA and E&Co, co-financing equivalent to 50% of total costs was contributed to the training activities in Central America for a total BUN-CA investment of US \$18.000.



Mr. Adonai Ríos, Executive Director of ADEMIPP, a local association of small farmers in Panama, talks to the audience about the experience developed in the preparation of a Business Plan for the use of photovoltaics for irrigation, in the workshop held in Panama City on April 2<sup>nd</sup>, 2001.

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In conclusion, for Task CA5, the following results have been achieved during the first year of FENERCA activity until October 18, 2001:

**Table 8**  
***Summary of Activities and Results for Task CA5: Capacity Building for  
 NGOs and Micro-Lenders on Smaller-Scale and Rural Energy  
 Applications***  
***from June 2000 to October 2001***

Country	Date	Workshop	Development Organizations	Participants	Training Hours
Honduras	July/2000	Renewable Energy	18	35	280
Panama	Nov/2001	Small-Scale Renewable Energy	34	52	416
Guatemala	Jan/2001	Financial Engineering	23	38	304
Panama	April/2001	Financial Engineering	31	48	248
Nicaragua	April/2001	Financial Engineering	37	42	336
El Salvador	Jun/2001	Financial Engineering	21	28	224
<b>TOTALS</b>			<b>164</b>	<b>226</b>	<b>1,808</b>

**Workshop on Renewable Energy in Panama City,  
 held on November 8<sup>th</sup>, 2000**



Mr. Anoldo Lombardo, from the Bank for Agropecuary Development (BDA), talks about their experience on finance small scale energy projects.

## **5. Task CA6: Organization of Next Stage Financing**

- 5.a. For the projects to continue towards later development phases, some of them are still being supported by the FOCER Program, executed by BUN-CA with GEF/UNDP funds, as indicated in Table N°4.
- 5.b. Through the periodical visits to countries in the region, initial contacts have been made with regional financial organisms to determine their possible interest in the projects FENERCA is supporting, with the goal of obtaining next stage financing for them, as indicated in the following Table:

**Table 9**  
*Contacts made for next-stage Project Financing*

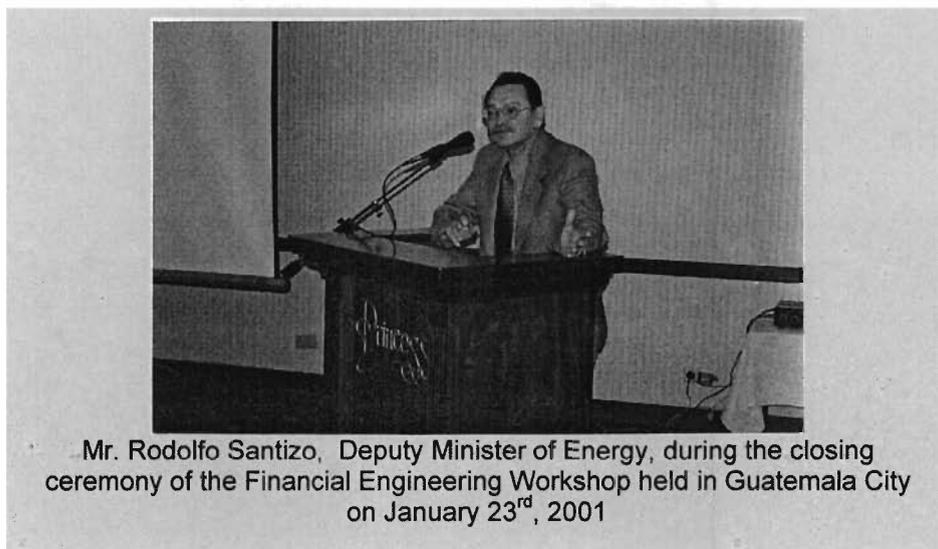
<b>Organization</b>	<b>Contact</b>
Promotional visit to Guatemala with E&Co	5 commercial banks identified
Banco Centroamericano de Integración Económica (CABEI)	Jorge Morales Gracia Ma. Barahona
Comisión Centroamericana de Ambiente y Desarrollo (CCAD)	Mauricio Castro Marco González
German Agency for International Cooperation (GTZ)	Alexander Kaztl Tilman Herberg
ADventures in Sustainable NRG - Consulting Services	Ad Dankers
Olasso y Asociados, S.A.	María Isabel Olasso
Financial Counsel Group	Oscar Chavarría
Inter-American Finance Corporation (IADB)	Carlos Otarola Gustavo Romero
Inter-American Development Bank (IADB)	Arnaldo Vieria
E-7 Group	
Energy and Climate Change Program (PECC/UNDP)	René Castro
Solar Development Group	Phil Covell JD Doliner
Environmental Financial Corporation	Adriana Madrigal

- 5.c. BUN-CA participated in the First International Fair on Renewable Energy and Energy Efficiency organized by the Secretaría de Recursos Naturales (SERNA—Secretary of Natural Resources) of the Ministry of Energy in Honduras that was held in San Pedro Sula between February 22 and 25, 2001. In the activity, BUN-CA participated in a business breakfast with the ministers, their representatives, private companies and project developers, where some potential partners were identified. The following are the most important results of the participation:
- The SERNA provided to BUN-CA with information about the state-of-the-art of renewable energy in Honduras and other important issues. Among other things, the list of renewable energy projects being handled by SERNA, which shows the total potential for small renewable energy projects close to 1,000 MW, is noteworthy.

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- The Joint Implementation Office in Honduras has the Yojoa Hydroelectric Project on its portfolio, which is also a project supported by FENERCA.
  - Renewable energy technology suppliers were contacted at the local level and an active presence of foreign firms interested in renewable energy was noticed.
- 5.d. During August, the 9<sup>th</sup> and 10<sup>th</sup>, three members of BUN-CA participated in a workshop in Honduras organized by the Central American Bank for Economic Integration-CABEI, on financing for renewable energy projects.



Mr. Rodolfo Santizo, Deputy Minister of Energy, during the closing ceremony of the Financial Engineering Workshop held in Guatemala City on January 23<sup>rd</sup>, 2001

## **6. Task CA7: Developing Regulatory and Policy Options for Renewable Energy Projects**

- 6.a. On July 28<sup>th</sup>, 2000, BUN-CA organized a meeting in Costa Rica between representatives of BUN-CA, E&Co-Bloomfield, E&Co-LAC and representatives from Fundacion Solar and Winrock International, Oscar Coto and John Ryan, respectively. The objective was to discuss current actions on renewable energy policy in Central America and coordinate efforts of both initiatives funded by USAID.
- 6.b. In November 2000, a meeting between BUN-CA and representatives of the PA Consulting Group was held in Washington, D.C. Afterwards there was a meeting between BUN-CA and E&Co officers at the headquarters in Bloomfield, NJ. As a result of these meetings, an action plan was developed in order to continue the work on policies within the region and to determine how to implement the removal of detected barriers to renewable energy.
- 6.c. As a follow-up to the activities for capacity strengthening in the region, and in order to identify partners to work on the issue of political barriers to renewable energy in Central America, on January, 2001, a meeting with Mr. Mauricio Castro, Executive Secretary of the Central American Commission on Environment and Development (CCAD) was held on the subject.
- 6.d. As a concrete activity to strengthen the local capacity in Nicaragua, BUN-CA participated in the National Workshop on the Formulation of Energy Policies in Nicaragua, organized by the National Commission of Energy (CNE), on January 29 and 31, 2001. Its objective was to ponder and create conditions for formulation and application of the country's energy policies, through a guide used by "OLADE" for the formulation of energy policies.
- 6.e. Later on the information gathered in the surveys through Task CA1, the field mission trips, and the meetings with national authorities, FENERCA prepared a document on national and regional policy issues relevant to renewable energy, with the assistance of PA Consulting Group. This document has been complemented and reviewed by the national authorities on Energy in five Central American countries. The aim of this document is to influence overall national policies towards the promotion of small-scale renewable energy projects, without pretending to change the existing legal frameworks in the short term.
- 6.f. During the period of July 24-31, 2001, BUN-CA distributed the document in each the target countries for the review by the national energy authorities.
- 6.g. This document was presented recently in a working session, funded by the FOCER Program and held in Costa Rica on September 20, 2001, with the participation of all National Energy Authorities in Central America, including Costa Rica and the participation of representatives from USAID-Guatemala and UNPD-Costa Rica. The participants in this meeting were:

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- Ing. Rudy Nájera, General Director of Energy of the Ministry of Energy and Mines (MEM), Guatemala.
- Ing. Jorge Rovira, General Director of Electrical Energy of the Ministry of Economy, Industry and Commerce (MEIC), El Salvador.
- Arq. Rina Rodríguez, Energy Director of SERNA- Secretary of Natural Resources, Ministry of Environment and Natural Resources (MEM), Honduras.
- Ing. Gioconda Guevara, Energy Policies Director of National Energy Commission (CNE), Nicaragua.
- Ing. Michael Mihalitisianos, Executive Director of Commission for Energy Policies (COPE), Panama.
- Ing. Gloria Villa, General Director of Energy , Ministry of the Environment and Energy (MINAE), Costa Rica.
- Novelty Sánchez, General Direction of Energy , Ministry of the Environment and Energy (MINAE), Costa Rica.
- Zoyla Letona, Energy and Infrastructure Department, United States Agency for International Development (USAID), Guatemala.
- Andres Calvo, Program Officer, United Nations Development Program (UNDP), Costa Rica.
- Lillia Perrone, Ken Barnes, PA Consulting Group.
- Fernando Alvarado, Lorna Li, Latin America and the Caribbean Office, E&Co
- José María Blanco, Joost Siteur, Leonel Umaña and Hazel González, BUN-CA.

Working session held in Costa Rica on September 20, 2001, with the participation of energy authorities of Central America



6.h. After this meeting, the document titled “*Developing Regulatory and Policy Options for Renewable Energy Projects in Central America*” (Promoción de Energía Renovable en Centroamérica: Oportunidades para el Planteamiento de Políticas) has been edited and completed. The Appendix N°11 shows a summary of the policy issues identified in each of the target countries.

6.i. Along the implementation period, regular meetings with national authorities in each of the countries have been held, with the objective of identifying national priorities with regards to renewable energy. These meetings verified that for the majority of countries about to privatize the energy sector, small-scale renewable sources constitute an important niche for the project developers, but there is still a lack of political will for them to be used broadly. During this period official contact has been made with more than 20 national authorities, including:

- **Guatemala:** Mr. Raúl Archila, Minister of Energy and Mines-MEM, Dr. Rodolfo Santizo, Vice-Minister of the MEM; Ing. Sergio Lavarreda, Vice-Minister of the MARN, Dr. Juan de Dios de Calle, CONAMA, Benjamín Solórzano, Coordinator of Rural Electrification, General Directorate of Energy; MEM, Rosa María Ordóñez, Consultant, General Directorate of Energy, MEM, Ing. Rudy Nájera, Director of Energy, MEM, Diana de Freire, Sub-Director of Energy, MEM.
- **Honduras:** Ms. Xiomara de Caballero, SERNA Minister; Architect Rina Rodríguez, Director of Energy, SERNA; Ms. Suyapa Zelaya, Director of Institutional Liaisons, OICH, Filadelfo Canales, Reform of State Program Coordinator, Jack Arévalo, Senator.
- **El Salvador:** Dr. Ana María Majano, MARN Minister, Ms. Yvette Aguilar, Consultant, MARN Minister; Mauricio Castro, M.Sc., Director of CCAD, Mr. Ernesto Lima Mena, Superintendent, SIGET, Ing. Jorge Rovira, Director of Electricity, MEIC.
- **Nicaragua:** Mr. Luis Velásquez Molieri, Executive Secretary of the National Energy Commission-CNE, Mr. Victor Valencia, Directorate of Energy Policies, CNE, Ms. Gioconda Guevara, Director of Energy Policies, CNE, Mr. Jorge Terán, Director of Rural Electrification, CNE, Mr. Juan Carlos Izaga, Director of Isolated Systems, Electric Company-ENEL.
- **Panama:** Mr. Gonzalo Menéndez, ANAM, Mr. Michael Mihalitsianos, Executive Director, COPE, Mr. Bolívar Santana, Office of Rural Electrification, Ing. Ligia Lobo, Wind Project Coordinator, ETESA.

6.j. To provide direct follow-up to each governmental entity in charge of the policies for the countries in the regions, BUN-CA participated in the “*First International Fair on Renewable Energy and Energy Efficiency*”, organized by the Directorate of Energy on the Secretary of Natural Resources (SERNA) of the Ministry of Energy in Honduras. This was held in San Pedro Sula on February 22 and 25, 2001. Within this activity, BUN-CA coordinated a panel of experts to discuss barriers on the development of renewable energy. In addition, with the support of GEF/UNPD, BUN-CA sponsored the participation of the Ministers or their representatives in the Fair, including:

- i. Ms. Xiomara Gómez de Caballero, Minister of Natural and Environmental Resources-SERNA of Honduras
- ii. Mr. Ernesto Bondy Reyes, Vice-Minister of Natural Resources and Energy, Honduras
- iii. Architect Rina Rodríguez Perdomo, General Director of Energy, Honduras

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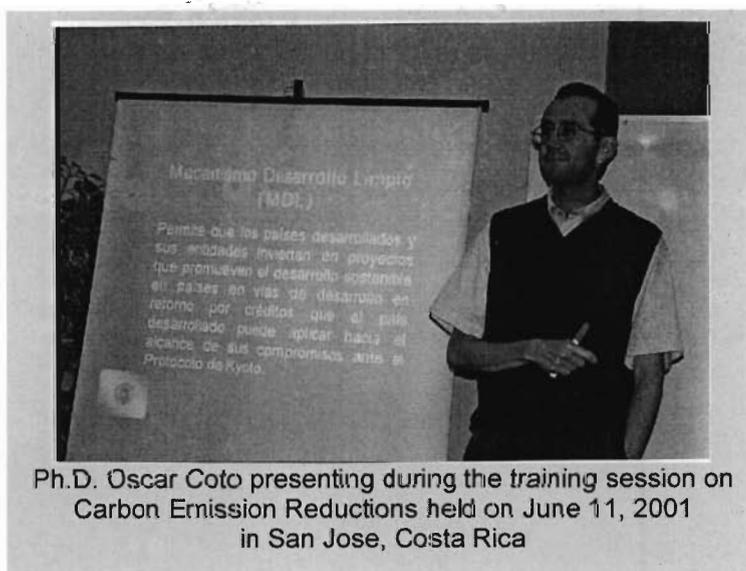
- iv. Mr. Roberto Larios Silva, Mayor of the Municipality of San Pedro Sula
  - v. Mr. Herman Charlesworth, Vice-Minister of Public Services, Communications and Immigration, Belize
  - vi. Mr. Raúl Archila, Minister of Energy and Mines, Guatemala
  - vii. Mr. Ernesto Lima Mena, General Superintendent of Electricity and Communications, El Salvador-SIGET
  - viii. Mr. Leopoldo Herrera, Representative of the National Energy Commission, Nicaragua-CNE
  - ix. Ms. Nobely Sánchez, Representative of the Ministry of Environment and Energy-MINAE, Costa Rica
- 6.k. Along the execution of FENERCA, several field missions to the region were undertaken by PA Consulting Group. On all the missions members of BUN-CA attended the meetings with government officers, project developers and others, as follows:
- on March 26<sup>th</sup> and 27<sup>th</sup>, 2001, PA Consulting Group worked in Costa Rica together with BUN-CA and E&Co personnel in planning the activities and completed the final Work Plan to be carried out for Task CA7;
  - on March 28<sup>th</sup> and 29<sup>th</sup>, 2001, the team worked in Guatemala;
  - on March 30<sup>th</sup>, 2001, work was performed in Nicaragua;
  - on May 18<sup>th</sup>, 2001 work was done on El Salvador;
  - from May 19<sup>th</sup> to 22<sup>nd</sup>, 2001 the team worked in Honduras and visited the Hidro Yojoa Project;
  - on May 23<sup>rd</sup>, 2001, the team worked in Costa Rica; and
  - on May 24<sup>th</sup> and 25<sup>th</sup>, 2001 in Panama.
- 6.l. BUN-CA aims to distribute by the end of October, 2001, the final version of the policy document in Central America to the USAID and UNPD local offices, Energy Directors, and Energy Ministries.



Planning session held in Guatemala on January 2001, with the participation of staff from E&Co, BUN-CA and the in-country representatives

## 7. Task CA8: Facilitation of Carbon Transactions

- 7.a. BUN-CA assisted the Task Manager of CA8 with inputs and revision of the Manual for Carbon Transactions. Additionally, based on a previous activity carried out under the FOCER Initiative for the Government of El Salvador, BUN-CA provided two examples of CO<sub>2</sub> calculations for energy projects, one based on bagasse cogeneration and the other on the use of solar home systems for rural electrification in El Salvador. Currently, BUN-CA is coordinating the editing and printing the Spanish version of the Manual.
- 7.b. As part of the strengthening process for BUN-CA to understand carbon transactions in the region, its staff participated in three different meetings organized by the Costa Rican Office of Joint Implementation with the national energy sector. The goal was to determine the interest and policies on the purchase of CO<sub>2</sub> emission reductions by the Prototype Carbon Fund, developed by the World Bank.
- 7.c. On March 9, 2001, BUN-CA participated in the conference-workshop organized by the Canadian Office of Joint Implementation and Clean Development Mechanism, to determine the scope of a Central American study on potential investors for the purchase of CO<sub>2</sub> emission reductions. The primary goal of the activity was to determine interest on investing in Costa Rica, but much interest was projected for the region, especially Honduras.



Ph.D. Oscar Coto presenting during the training session on Carbon Emission Reductions held on June 11, 2001 in San Jose, Costa Rica

- 7.d. In the First International Fair on Renewable Energy and Energy Efficiency, held in San Pedro Sula, Honduras, BUN-CA carried out some additional activities for CA8.
- The FENERCA Initiative was presented to the Office of Joint Implementation in Honduras (OICH), focusing on the availability of information prepared under Activity CA8.

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- Efforts were joined with the General Directorate of Energy of the Secretary of Natural Resources and the Environment (SERNA), which provided information on the status of Renewable Energy in Honduras, as well as the actions that have been taken in Honduras for the inventory of CO<sub>2</sub> energy projects.

7.e. With the support of FOCER, BUN-CA organized a training session on Carbon Emission Reductions on June 11, 2001, in Costa Rica with the participation of Johanna Hjerthén, Phil Larocco, Fernando Alvarado, Gina Rodolico, Lorna Li, Kathya Fajardo from E&Co and Tania Orlich, Kattia Quirós, Leonel Umaña, Joost Siteur, José María Blanco, Gilbert Masís and Ronny Cascante from BUN-CA. This session was conducted by Oscar Coto, an expert in this matter. This workshop focused on the data base of information about CO<sub>2</sub> and carbon calculations through an electronic worksheet for estimating carbon emission reductions and potential commercial revenues for the renewable energy entrepreneur.

## 8. Task CA9: Support and Capacity Building of BUN-CA

8.a. As a result BUN-CA's involvement in the execution of FENERCA, BUN-CA's was able to hire on a longer and more intensive bases in-country representatives. By October 18, 2001, the professionals working for BUN-CA in Central America include:

- In **Panama**: Orlando Aguilar, who works also as an associate professor to the Universidad Tecnologica de Panama.
- In **Honduras**: Patricia Panting, who has been an active associate of BUN-CA for the past 5 years.
- In **Guatemala**: Carolina Palma, who has a bachelor degree on engineering and has been involved in the past years with a local NGO on renewable energy.
- In **Nicaragua**: María Engracia De Trinidad, who has also been an active collaborator of BUN-CA and is the Executive Director of Proleña, a local NGO actively working on biomass to energy uses in Nicaragua.
- In **El Salvador**: Ismael Sánchez, an engineer who works also an associate professor in the Universidad Centroamericana Jose Simeón Cañas –UCA.

Participants in the Hands-on Training Workshop on PV held in Alta Verapaz, Guatemala on June 19-20, 2001



8.b. In addition to the in-country representatives, BUN-CA maintains in all the Central America countries close links with more than 40 professionals and 20 NGOs engaged in renewable energy. The following table shows details of the networking undertaken by BUN-CA with NGO, and consultants:

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**Table 10**  
**List of NGO and Consultants**  
**as part of the BUN-CA Network on Renewable Energy**

Country	Organizations	Consultants
El Salvador	3 FUPRODEH, UCRAPROBEX, CONFEDERACION NACIONAL CAMPESINA	8 Ana María González*, Nelson Ramírez, Ana Lillian Castillo, José Mario Vázquez, Yvette Aguilar, Hermes Landaverde, Carlos Cardona, Ismael Sánchez*
Guatemala	2 NRECA, FUNSOLAR	7 Jorge Galindo*, Oscar Coto, David Kittelson/Hugo Arriaza, Rodolfo Santizo, Mónica León, Karla de Román, Carolina Palma*
Honduras	2 SEDES, ADESOL	8 Ana Cristina Zepeda*, Patricia Panting*, Karla Hernández, Manuel Ma-Tay*, Rina Rodríguez, Jorge Morales, Suyapa Zelaya, Diana Soliz
Nicaragua	3 PROLEÑA, FUNPROTECA, ATDER	5 María Engracia De Trinidad*, Serafín Filomeno, Victor Salazar, Luis Velásquez, Vladimir Delagneau
Panama	4 ANCON, EDWARI CUNDRÁ, ADEMIPP, Fundación Natura	7 Orlando Aguilar*, Rosa Montañés, Michael Mihalitsianos, Gonzalo Menéndez, Adonai Ríos, Javier Guerrero, Roxana Segundo
Costa Rica	6 ACOPE, Asociación ERA, COOPEUNIORO, Fundación Tuva, Coopesantos, FICOSA	10 Gustavo Jiménez*, Luis Fernando Chanto*, Alvaro Montoya*, Reto Rechsteiner*, Agustín Rodríguez, Jan Borchgevink, Mario Alvarado, Novelty Sánchez, Misael Mora, Henry Chinchilla
Belize	1 Sarteneja Youth Group	1 Luis Aké*
<b>TOTALS</b>	<b>21</b>	<b>46</b>

\* Contracts signed with these consultants

8.c. With the aim to disseminate the scope of FENERCA, BUN-CA prepared and published under the supervision of E&Co, an informational brochure that includes general information, coordinates of the project executers and their main roles and descriptions. A copy of the brochure is include in Appendix N°12.

8.d. A total of 919 person-hours on training, were received by BUN-CA staff under FENERCA, as shown in the following Table:

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**Table 11**  
*Person-hours of training received by BUN-CA to  
October 18, 2001*

Activity	Participants of BUN-CA	Hours by person	Total hours
Technical missions in Costa Rica and El Salvador	17	8	136
Financial Engineering Workshop held in Honduras	3	8	24
Hands-on training on Manuals of BP, XC1, XC2, XC3	9	15	135
Financial Engineering Workshops held in Guatemala	10	16	160
RE Seminar held in Panama	3	8	24
Financial Engineering Workshops held in Honduras	3	8	24
Financial Engineering Workshops held in Panama	3	16	48
Financial Engineering Workshops held in Nicaragua	3	16	48
Financial Engineering Workshops held in El Salvador	3	16	48
Workshop on maintenance and installation of PV Systems held in Guatemala	2	24	48
Production and installation of Solar Water Heater Systems held in Belize	2	40	80
Workshop on Carbon (MDL and others) held in CR	7	8	56
Technical meeting with E&Co – Costa Rica	4	8	32
Installation of Photovoltaic Systems held in El Salvador	2	16	32
Central American Energy Directors Meeting held in Costa Rica	3	8	24
<b>TOTAL PERSON-HOURS OF TRAINING</b>			<b>919</b>

8.e. The presence of BUN-CA region-wide has been extended and has become more constant in all the countries thanks to FENERCA. Currently, the headquarters has a more stable and defined technical and administrative professional structure. In the last year it has retained new personnel as shown in Table 12, and it has improved its in-house capacity including new computer equipment, conditioning of the main offices, and a new telephone system.

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**Table 12**  
***New Staff Hired by BUN-CA***  
***June, 2000 - October, 2001***

Name	Profession	Charge	Starting Date
Leonel Umaña	Master on Business Administration	Project Officer Renewable Energy	Jun/2000
Ronald Valverde	Accountant	General Accountant	Jul/2000
Tania Orlich	Master on Project Management	Project Officer	Aug/2000
Franklin Mora	Accounting Assistance	Accounting Assistance	Oct/2000
Luis Aké	Electric Engineer	Representative in Belize	Oct/2000
Ana C. Zepeda	Business Administration	Temporal Representative in Honduras	Oct/2000
Ronny Cascante	Business Administration	Management/Accounting Officer	Oct/2000
Ismael Sánchez	Mechanic Engineer	Representative in El Salvador	Apr/2001
Carolina Palma	Industry Engineer	Representative in Guatemala	Aug/2001
Marcela Quirce	Secretary	Administrative Assistant	Sep/2001
Kathya Fajardo	Agronomist Engineer	Project Officer	Oct/2001

- 8.f. With the support of E&Co, BUN-CA has prepared a long term Strategic Work Plan. This proposed Plan was prepared after holding several internal working meetings among BUN-CA staff and with the valuable contribution of E&Co.
- 8.g. Thanks to the strategic alliance established by BUN-CA, FENERCA is now also known by the national and regional offices of the United Nations Development Program (UNDP), bringing more institutional support to FENERCA's objectives and potential links with other on-going initiatives related to renewable energy and climate change in the near future.
- 8.h. As part of FENERCA activities and the strengthening of BUN-CA, contacts have been made with other organizations or initiatives related to the issue of renewable energy or energy project financing such as:
- Central American Network for Gender and Energy, Fundación Solar, Guatemala
  - Central American Bank for Economic Integration, Honduras
  - Central American Commission on the Environment and Development, El Salvador
  - Energy and Climate Change Program for Latin America and the Caribbean of the UNDP, Costa Rica
  - Local USAID Missions in the five Central America Countries
  - Local Missions of the United Nations Program for Development (UNDP)
  - National Association for the Conservation of Nature– ANCON, Panama
  - Inter-American Development Bank (IADB), Washington, DC
  - OLADE, Ecuador

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- 8.i. Total funds earmarked as BUN-CA's working capital for institutional strengthening were received from USAID/E&Co. This will allow continuation of BUN-CA work in the region in the long term. Currently this fund is made up as follows:

**Table N13**  
***BUN-CA Equity Fund***  
***as of October, 2001***

<b>Source</b>	<b>Contribution</b>
Fenerca (USAID/E&Co)	\$ 54,000
Other BUN-CA sources	\$ 60,000
<b>TOTAL EQUITY FUND</b>	<b>\$ 104,000</b>

- 8.j. As concrete actions that have been done by BUN-CA to increase the capacity of its representatives on the issue of renewable energy, the following may be mentioned:
- i) In June 2000, BUN-CA participated in the regional Seminar "*Regional Market for Wind Power Generation*", organized by the ERAC Project (Renewable Energy in Central America) held in Honduras. This event broadly discussed the opportunities for wind power generation but the whole spectrum for renewable energy projects in the region. FENERCA offered a main presentation upon an official invitation by the organizers. BUN-CA had an active participation during the discussions.
  - ii) On June 28- 29 BUN-CA participated in the "*First Forum on Alternative Energy*", organized by the Commission on "People and Environment" of the Central American Parliament (PARLACEN) organized in San Salvador. This encounter discussed the state-of-the-art and the opportunities for renewable energy in Central America. FOCER and FENERCA initiatives were presented by 3 in-country representatives and by the Regional Director of BUN-CA.
  - iii) In November 2000, the representative for Nicaragua along with a BUN-CA functionary participated in the "*Rural Electrification Workshop*" organized by the World Bank and the CNE and carried out at Montelimar, Nicaragua.
  - iv) In December 2000, the representative for Nicaragua participated in the "*Workshop on Renewable Energy, Experience and Challenges for the Future*" organized jointly with FUNPROTECA, carried out in Leon, Nicaragua, and which was also supported by the FOCER Program.
  - v) At the end of January 2001, the representative for Nicaragua participated in the "*National Workshop on the Formulation of Energy Policies in Nicaragua*," organized by the CNE.
  - vi) The representative for Panama made two presentations on renewable energy technologies in the Workshops for Financial Institutions and for NGOs and private companies, held in Guatemala on January, 2001.
  - vii) Participation of all BUN-CA representatives in these workshops carried out in Guatemala, about financial engineering.

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- viii) Two members of BUN-CA's staff participated and gave lectures in the XVIII Latin-American Conference on Rural Electrification (CLER), held in Costa Rica on April 24-27, 2001.
- ix) It is important to mention that as a result of BUN-CA's support within its programs for the strengthening of local capacity in the region, the BUN-CA representative for El Salvador, Ms. Ana María González, was hired since February 1<sup>st</sup>, 2001, by the Ministry of Environment and Natural Resources-MARN in El Salvador as the coordinator of the National Rural Electrification Project financed by the GEF, through UNDP.
- x) During August, the 9<sup>th</sup> and 10<sup>th</sup>, three members of BUN-CA participated in a workshop in Honduras organized by Central American Bank for Economic Integration-CABEI, on financing for renewable energy projects.



- 8.k. On May 7 and 8, 2001, Ismael Sánchez and Patricia Panting, BUN-CA's representatives for El Salvador and Honduras, respectively, visited the office of BUN-CA in Costa Rica for their introduction on BUN-CA's activities, business plan and to prepare the work plan for these countries within FENERCA.
- 8.l. Exclusive work sessions for BUN-CA with E&Co-USA and E&Co-LAC were held on January 20-24, 2001, in Guatemala, on June 12 in Costa Rica and on October 11, 2001 in Bloomfield, NJ. The different participants on these meetings were on behalf of BUN-CA, José María Blanco, Gilbert Masís, Joost Siteur, Leonel Umaña and the 6 in-country representatives.
- 8.m. Thanks to the efforts at the national and regional levels, today BUN-CA is considered to be a primary information source by the communications media, thus interviews have been given to newspapers and magazines such as:

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- Notimex, Mexican News Agency (Carlos Sandí)
- Acan-Efe, Central America-Spain News Agency (Juan Ramón Rojas)
- France Press, News Agency (Isabel Sánchez)
- La República, Costa Rican Newspaper (María José Nuñez)
- Reuters, News Agency (Daniel Brenes)
- Actualidad Económica, Central American Magazine on Business
- Radio Eco (a Costa Rican radio news program that divulged information about BUN-CA and FENERCA work in the region this past March 6, 2001 and September 20, 2001).
- Electronic Newsletter “El Semillero” which published information on BUN-CA’s activities on September 17, 2001
- Costa Rican TV News Programs (Telenoticias –July 5, 2001 and September, 20, 2001 and Noticias Repretel on September 20, 2001)
- La Prensa Libre in El Salvador published an article about FENERCA’s activities on June 26, 2001.

In Appendix N°13 copies of some of the printed information are found.

- 8.n. Supported by FOCER, in conjunction with Fundación Solar from Guatemala and Sandia Laboratories from New Mexico, BUN-CA organized a Photovoltaic Systems Workshop, held in Guatemala on June 19-20, 2001. This workshop provided training to NRECA and San Marcos Municipal Utility, both from Guatemala, ANCON and ADEMIPP from Panama, TECNOSOL and SUNISOLAR from Nicaragua and PRODER, the Honduran Program for Rural Electrification

**9. Tasks XC1, XC2, XC3, XC3a and MME: Activities Related to the Training Manuals and the Monitoring & Evaluation**

- 9.a. BUN-CA has provided continuous feedback to FENERCA's task coordinators on the different materials which are under preparation (XC1: Off-grid Manual, XC2: Manual for Carbon Transactions, XC3: Project Evaluation and Monitoring, XC3a: Business Plan Manual), as well as for monitoring and evaluation of the overall execution of the Initiative (MME task).
- 9.b. Follow-up has been done on the work performed by BUN-CA and its representatives as spokespersons for E&Co, both in the local office in Costa Rica as well as its headquarters in Bloomfield. This follow-up has taken the form of personal meetings, conference calls, and via electronic means.
- 9.c. Within the evaluation actions for the FENERCA Program implemented by BUN-CA, these bear mentioning:
- i. Internal session carried out by BUN-CA on January 16, 2001.
  - ii. Follow-up meetings with E&Co Officers in Guatemala on January 20, 21, and 24, and February 26 and 27 in Tegucigalpa, Honduras.
  - iii. On January 24, 2001, in Guatemala a planning session for FENERCA was held for the year 2001, wherein the FENERCA team, with the exception of PA Consulting Group, was present.
  - iv. Working session meeting between E&Co and BUN-CA held in Costa Rica on June 12, 2001 and in Bloomfield, NJ on October 11, 2001.
  - v. The respective quarterly reports have been prepared during this period on the activities under BUN-CA's responsibility and the reports on Tasks CA3, CA4, CA9 and others received BUN-CA's collaboration.
- 9.d. During the months of June and July of 2001, BUN-CA coordinated the translations for the documents XC1, XC2 and CA7.
- 9.e. Currently BUN-CA is coordinating the editing and printing of the Spanish versions of the XC1 and XC2, which are under review by E&Co.
- 9.f. The dissemination of the documents will be made by the in-country representatives, through meetings with the stakeholders.

**10. Mission Trips Carried Out During this Period by BUN-CA**

The table contains a summary list of field trip missions to Central America carried out by BUN-CA officers jointly with in-country representatives for FENERCA:

**Table 14**  
*Field Missions carried out under the FENERCA Initiative*  
*June 2000 – October 18, 2001*

<b>Country</b>	<b>Quantity of Travels to each country</b>	<b>BUN-CA Personnel</b>
Honduras	11	José M. Blanco, Leonel Umaña, Gilbert Masís, Joost Siteur, María E. De Trinidad
El Salvador	8	José M. Blanco, Leonel Umaña, Gilbert Masís, Joost Siteur, Orlando Aguilar, María E. De Trinidad, Ana C. Zepeda, Jorge Galindo
Guatemala	8	José M. Blanco, Leonel Umaña, Gilbert Masís, Joost Siteur, Orlando Aguilar, María E. De Trinidad, Ana C. Zepeda, Ana M. Gonzalez, Luis Aké
Nicaragua	8	José M. Blanco, Leonel Umaña, Joost Siteur
Panamá	7	José M. Blanco, Leonel Umaña, Gilbert Masís, Joost Siteur
Costa Rica	4	Ismael Sánchez, Patricia Panting, Luis Aké, Ana C. Zepeda, Ana M. González, Jorge Galindo, Orlando Aguilar
USA	3	José M. Blanco, Leonel Umaña, Gilbert Masís
<b>TOTAL TRAVELS</b>	<b>47</b>	

## **11. Annexes**

**List of Participants in the National Seminar on  
Small-Scale Renewable Energy in Panama  
held in Panama City on November 8, 2000**

N°	Name	Charge	Entity
<b>Expositores</b>			
1	Michael Mihalitsianos	Director Ejecutivo	Comisión de Política Energética de Panamá (COPE)
2	Bolívar Santana	Jefe Departamento de Planeación y Proyectos	Oficina de Electrificación Rural-Fondo de Inversión Social (OER/FIS)
3	Eliécer Ching Prado	Director de Investigación y Desarrollo	Universidad Tecnológica de Panamá (UTP)
4	Ligia Lobo	Jefa de Estudios	Empresa de Transmisión Eléctrica, S.A. (ETESA)
5	Fernando Vargas de León	Coordinador Grupo Rec. Hidroeléctricos	Empresa de Transmisión Eléctrica, S.A. (ETESA)
6	Eduardo Reyes		Empresa de Transmisión Eléctrica, S.A. (ETESA)
7	Gonzalo Menéndez	Sub-Administrador	Autoridad Nacional del Ambiente (ANAM)
8	Fernando Alvarado	Director para Latinoamérica y El Caribe	E&Co-LAC
9	Arnoldo Lombardo	Gerente de Microcrédito	Banco de Desarrollo Agropecuario (BDA)
<b>Patrocinadores</b>			
10	Felipe Frederick	Encargado Proyectos	Agencia de Desarrollo Internacional de los Estados Unidos (USAID)
11	Lars Klassen	Director	Agencia de Desarrollo Internacional de los Estados Unidos (USAID)
12	Lee Roussel	Jefa Desarrollo Sostenible	Agencia de Desarrollo Internacional de los Estados Unidos (USAID)
13	Jéssica Faieta	Representante Residente Adjunta	Programa de las Naciones Unidas para el Desarrollo (PNUD)
14	Maribel Landau	Oficial de Proyectos	Programa de las Naciones Unidas para el Desarrollo (PNUD)
<b>Instituciones Gubernamentales</b>			
15	Manuel Banites	Encargado de Ingeniería y Servicios Industriales	Autoridad del Canal de Panamá (ACP)
16	Juan Carlos Navarro	Alcalde de Panamá	Alcaldía de Panamá
17	Lesbia Alves	Proyectos Especiales	Autoridad de la Región Interoceánica (ARI)
18	José Díaz	Representante	Ministerio de Educación- MEDUC
19	Manuel Castrillo	Coordinador de FADER	Proyecto Pobreza Rural Ministerio de Desarrollo Agropecuario (MIDA)
20	Armando Aspin	Director	Secretaría Nacional de Ciencias, Tecnología e Investigaciones. (SENACYT)
<b>ONG's</b>			
21	Lider Sucre	Director Ejecutivo	Asociación Nacional para la Conservación de la Naturaleza (ANCON)
22	Adonái Ríos	Director Ejecutivo	ADEMIPP – Asoc. para el Desarrollo del Micro y Pequeño Productor
23	Francisco Rivas	Asesor	Asociación para la Promoción de Nuevas Alternativas de Desarrollo-APRONAD
24	Isel Rojas	Representante	Asociación, para el Fomento del Turismo Autosostenible (AFOTUR)
25	Esther Kwai Ben	Administradora	Caritas Arquidiocesana
26	Carlos Garido		Eco Darien Development Foundation
27	Rosario De Silvera	Gerente General	Fondo de Modernización Tecnológica (FOMOTEC)
28	Mariela Fruter	Representante Legal	Fundación de Acción Social por Panamá- FAS Panamá

29	Yolanda Jiménez	Representante	Fundación NATURA
30	Enidd Sopalda	Coord. Técnica	Fundación Panameña de Servicios Ambientales (FUPASA)
31	Paine Castañeda		Fundación Pro Niños Del Darién
32	Eliécer Paredes	Gerente	IEM
33	Isabelom Isarama	Presidente	Kundra Eüari Embera
34	Samuel Marcial	Director	Naturaleza y Sociedad-NASO
35	Yariela Gallegos	Directora Administrativa	Patronato del Servicio Nacional de Nutrición.
36	Julio Rodríguez	Administrador	Proyecto Bio Darién
37	Loyda Sánchez	Directora	Sociedad Audubon de Panamá (SAP)
38	Carlos Rothery	Director	SOLARPAN
39	Glenda Bonamico	Gerente Capacitación	SONDEAR
40	Mirei Endara	Directora	The Nature Conservancy (TNC)
<b>Instituciones Financieras</b>			
41	Maribel Vergara	Gerente General	Banco Continental
42	Jaime Torres	Subgerente General Ejecutivo de crédito	Banco de Desarrollo Agropecuario (BDA)
43	Jorge Vallarino	Gerente	Global Bank Corporation
44	Heriberto Garay	Supervisor Electricidad	Grupo MELO, S.A.
<b>Empresas Privadas</b>			
45	Eduardo de la Guardia	Gerente General	Compañía Petroeléctrica de Panamá , S.A. (COPESA)
46	David Sundstrom	Gerente General	Empresa de Generación AES Panamá, Energy, S.A.
47	Alejandro Arango	Gerente	Energía Renovable de Panamá
48	Vicente Puga	Director General	Pass Panamá
49	Jaime Arosemena	Gerente	Petro Eléctrica S.A.
50	Salvador Sánchez	Presidente	Refinería Panamá
<b>Centros de Educación</b>			
51	Silvestre Díaz	Director Ejecutivo	Centro de Investigación y Docencia de Panamá -CIDPA
52	Benigno Vargas	Decano	Facultad de Ingeniería Mecánica /UTP
53	Ramón Argote	Vice-rector Invest., Posgrado y Extensión	Universidad Tecnológica de Panamá
<b>Organizadores</b>			
54	Rosa Montañez	Directora Ejecutiva	Centro Internacional para la Capacitación Ambiental (CICA)
55	Roxana Segundo	Asistente	Centro Internacional para la Capacitación Ambiental (CICA)
56	José María Blanco	Director Regional	Biomass Users Network, Centroamérica (BUN-CA)
57	Leonel Umaña	Oficial de Proyectos	Biomass Users Network, Centroamérica (BUN-CA)
58	Orlando Aguilar	Consultor para Panamá	Biomass Users Network, Centroamérica (BUN-CA)

**List of Participants in the  
Financial Engineering Workshop for Financial Institutions  
held in Guatemala on January 23, 2001**

N°	Name	Charge	Entity
<b>Invitado de honor</b>			
1	Rodolfo Santizo	Viceministro de Energía	Ministerio de Energía y Minas
<b>Participantes</b>			
2	Victor Hugo Hernández	Analista, representante	BCIE – Guatemala
3	Cesar Tampan	Subgerente Banca Corporativa	Banco de Exportación, BAÑES
4	Horacio Leiva Madrid	Subgerente de negocios	Banco Reformador
5	Celso Rolando Molina	Analista	BANRURAL
6	Cesar Rios	Analista	Corporación de Occidente
7	Guillermo Rodas Santos	Asesor Financiero	COOPEDERU
8	David Kittelson	Director Regional (C.A.)	NRECA
9	Marta de Rivera	Gerente General	SD Río Hondo
10	Orlando Aguilar	Representante Panamá	BUN-CA
11	María Engracia de Trinidad	Representante Nicaragua	BUN-CA
12	Ana Cristina Zepeda	Representante Honduras	BUN-CA
13	Ana María González	Representante El Salvador	BUN-CA
14	Luis Aké	Representante Belice	BUN-CA
15	Jorge Luis Galindo	Representante Guatemala	BUN-CA
16	Gilbert Masis	Director Operaciones	BUN-CA
17	Joost Siteur	Oficial de Proyectos	BUN-CA
18	Sergio Guillén	Oficial de Inversiones	E&CO/LAC
19	Deborah McGinn	CFO	E&CO/USA
<b>Organizadores</b>			
20	José María Blanco	Director Regional	BUN-CA
21	Leonel Umaña	Oficial de Proyectos	BUN-CA
22	Fernando Alvarado	Gerente Regional	E&CO/LAC
23	Gina Rodolico	Program Manager	E&CO/USA
24	Johanna Hjerthén	Directora Latinoamérica	E&CO/USA

**List of Participants in the  
Financial Engineering Workshop for Financial Institutions  
held in Honduras on February 27, 2001**

N°	Name	Entity	Charge
<i>Participantes Instituciones Financieras</i>			
1	Margie Godoy de Casanova	Banco Credomatic	Oficial de Crédito
2	Claudia M. Zelaya	Banco de la Producción	Oficial de Crédito Corporativo
3	Julio Perdomo	Banco de la Producción	Analista de Crédito Corporativo
4	Ana Maria Matamoros	Banco Hondureño del Café	Jefe de Crédito
5	Carlos Borjas	Banco Capital	Oficial de Crédito
6	Enrique Ponce	Banco Futuro	Gerente de Crédito
7	Jorge A. Villalobos	Banco Nacional de Desarrollo Agrícola	Supervisor de Crédito
8	Melissa Stefan	Banco Mercantil	Asistente Gerencia de Crédito
9	Juan J. Mourra	Banco Mercantil	Finanzas
10	Jony Rodríguez	Banco de los Trabajadores	Oficial de Crédito
11	Flavio E. García	Banco Atlántida	Asistente Estudios Economicos
12	Marco A. Pérez	Grupo BGA Ahorro Hondureño	Gerente Analisis Financiero
13	Pedro Emilio Banegas	BCIE	Analista de Proyectos
14	Ernesto Berganza	BCIE	Jefe Depto. SEPCO- Infraestruct
15	Jorge Chain Reyna	Banco Sogerin	Jefe de Mercadeo y Negocios
<i>Participantes Organizaciones Micro crédito</i>			
16	Ricardo Membreño	Solaris S.A.	Gerente General
17	Marco T. Banegas	FONAPROVI	Consultor
<i>Expositores</i>			
18	Suyapa Zelaya	OICH	Director Energético
19	Diana Solís	Soluz Honduras	Directora Enlace Institucional
20	Jorge Morales	BCIE	Analista Financiero
<i>Organizadores</i>			
21	Ana Cristina Zepeda	BUN-CA	Consultora para Honduras
22	Johanna Hjerthén	E&Co-USA	Directora para Latinoamérica
23	Fernando Alvarado	E&Co-LAC	Director Regional para Latinoamérica
24	Lorna Li	E&Co-LAC	Oficial de Inversiones
25	José María Blanco	BUN-CA	Director Regional
26	Leonel Umaña	BUN-CA	Oficial de Proyectos

**List of Participants in the  
Financial Engineering Workshop for Financial Institutions  
held in Panama on April 3, 2001**

N°	Name	Entity
<b>Participantes</b>		
1	Augusto Tejeira	Banco Continental
2	Abey Saied	Banco Continental
3	Jaime Torres	Banco de Desarrollo Agropecuaria BDA
4	Arnoldo Lombardo	Banco de Desarrollo Agropecuaria BDA
5	Idalia Sáenz	Banco del Istmo
6	Evelyn Acosta	Banco General
7	Carlos Becerra	Banco Nacional de Panamá
8	Juan Cárdenas B.	Banco Nacional de Panamá
9	Raúl Guizado	BIPAN
10	Carlos Arjona	METROBANK
11	Errol Alvarez	MULTICREDIT BANK INC
12	Gorge Jaen	GLOBAL BANK
13	Edison Jaen	UNION FENOSA
14	Román Ricord	UNION FENOSA
15	Carmen Lay	Autoridad Nacional del Ambiente
16	Roberto Carrillo	PNUD
17	José María Quintero	CREDIFUNDES
<b>Organizadores</b>		
18	José María Blanco	BUN-CA
19	Leonel Umaña	BUN-CA
20	Fernando Alvarado	Director Regional, E&Co-LAC
21	Lorna Li	Oficial de Inversiones, E&Co-LAC
22	Johanna Hjerthen	Directora para Latinoamérica, E&Co-USA
23	Orlando Aguilar	Representante BUN-CA Panamá
24	Elmer González	Asistente Logístico

**List of Participants in the  
Financial Engineering Workshop for Financial Institutions  
held in Nicaragua on April 6, 2001**

N°	Name	Entity
<b>Instituciones Financieras</b>		
1	Paola Ley	BDF
2	Gustavo Largaespada Beltrand	Banco Clay Dognall
3	Cristóbal Silva	BID
4	Roeger Mendieta	BANCENTRO
5	Luis E. Morales L	BANEXPO
6	Mayra López Munguía	BANIC
7	Rosa Matilde Tablada	FNI
8	Julio Ramírez Arguello	BANPRO
9	Marco A Narváez B	ASOBANP
<b>Agencias Cooperantes</b>		
10	Efraín Laureano	USAID
<b>Expositores</b>		
11	Vladimir Delagneau	TECNOSOL S.A
12	Freddy Oporta	FADES
<b>Organizadores</b>		
13	Leonel Umaña	BUN-CA
14	Joahana Hjerthen	E&Co
15	Kathya Fajardo	E&Co
16	José María Blanco	BUN-CA
17	Fernando Alvarado	E&Co
18	María Engracia de Trinidad	BUN-CA NI

**List of Participants in the  
Financial Engineering Workshop for Financial Institutions  
held in El Salvador June 14, 2001**

N°	Name	Charge	Entity
<i>Instituciones Financieras</i>			
1	Eugenia Bonilla Velásquez	Ejecutiva de Créditos	Banco Americano
2	Francisco Segovia	Jefe Departamento de Mantenimiento	Banco Cuscatlán
3	Gilma Teresa Saravia de Pleitez		Banco De Fomento Agropecuario
4	Roger Rafael Alfaro Araujo	Gerente de Desarrollo Financiero	Banco Multisectorial De Inversiones
5	Jéssica de Cabezas		Banco Salvadoreño
6	Luis Alberto Sánchez Avelar	Gerente	Caja De Crédito De La Libertad
7	Daniel Calderón Martínez	Gerente	Caja De Crédito De Sonsonate
8	Oscar Eduardo Lindo	Gerente	Valores Cuscatlán
<i>Otros financistas</i>			
9	Alcides Hernández		CAESS
10	Luis Montesinos		CAESS
11	Manuel Saavedra		CAESS
12	Mirna Márquez	Asesora	CAESS
13	Balmore Amaya	Unidad Ambiental	Comisión Ejecutiva Hidroeléctrica Río Lempa
<i>Otros participantes</i>			
14	Mauricio Ayala	División Desarrollo Limpio	MARN
15	Carolina de Dreykon	Oficial Programa de Medio Ambiente	PNUD
<i>Expositores</i>			
16	Ana María González	Proyecto "Energización con Base en Recursos de Energía Renovable"	MARN
17	Arturo Solano	Gerente	Tecnosolar

**List of Participants in the Workshop  
on Financial Engineering for Development Organizations  
held in Guatemala on January 23, 2001**

N°	Name	Charge	Entity
<b>ONG's (de desarrollo y microcrédito)</b>			
1	Rafael Valladares	Gerente Unidad M.A.	Fondo de Inversión Social, FIS
2	José Manuel Larios	Coordinador Org. Comunit.	Fundación Guacamaya
3	Flor de Mayo Pacheco	Directora Ejecutiva	Fundación Guacamaya
4	Leonor Rodríguez	Oficial de Créditos	Fideic. para la Conservación de Guat.
5	Mynor David Maldonado	Gerencia de proyectos	FUNRURAL
6	Marcel Clement	Consultor de Proyectos	FUNRURAL
7	Julio Adán Paz	Técnico de Proyectos	ADESFA-PPS
8	Amilcar Laparra	Presidente CBUB	Asociación Guatemala Maya Tacaná
9	Homero Morales	Vicepresidente	Asociación Guatemala Maya Túcana
10	Oscar Coto	Coordinador programa SAs	Fundación Solar
11	Joost Siteur	Oficial de Proyectos	BUN-CA
12	Gilbert Masis	Director Operaciones	BUN-CA
13	Deborah McGinn	CFO	E&CO/USA
14	Sergio Guillén	Oficial de Inversiones	E&CO/LAC
<b>Sector Privado</b>			
15	Carlos Manuel Galich	Presidente	TEDEP
16	Raúl Aguilar	Gerente	DEESA
17	David Kittelsen	Director Regional (C.A.)	NRECA
18	Hugo Arriaza	Director de Proyectos	NRECA
19	Azucena Porras	Gerente	Dintersa
20	Erick González	Gerente	Hidroxsol
21	Marta de Rivera	Gerente General	SD Río Hondo
22	W.B. Smith	Presidente	HISINC, L.L.C.
23	Carlos Tschen	Presidente	DEESA
24	Marco Antonio Santizo	Gerente General	SELMECA
<b>Sector Público</b>			
25	Benjamín Solórzano	Coord. Electrificación Rural	Dirección General de Energía; MEM
26	Rosa María Ordóñez	Asesor	Dirección General de Energía, MEM.
27	Raymundo Velásquez	Consejal IV	Municipalidad de Tacaná
28	Rudy Bravo	Gerente Operativo	Empresa Eléctrica Munich. de Sn Marcos
<b>Patrocinadores</b>			
29	Ana Victoria Rodríguez	Directora de Proyecto	Proyecto Promoción en Prod. más limpia
30	Ricardo Rivera	Asesor de Proyectos	Programa Pequeños Subsidios a ONGs
31	José Luis de Francisco	Oficial de programas	PNUD - Guatemala
32	Zoila Aurora Letona	Asistente Programa	USAID
<b>Representantes BUN-CA en Centroamérica (capacitación)</b>			
33	Orlando Aguilar	Representante Panamá	BUN-CA
34	María Engracia de Trinidad	Representante Nicaragua	BUN-CA
35	Ana Cristina Zepeda	Representante Honduras	BUN-CA
36	Ana María González	Representante El Salvador	BUN-CA
37	Luis Aké	Representante Belice	BUN-CA
38	Jorge Luis Galindo	Representante Guatemala	BUN-CA

<b>Organizadores</b>			
39	José María Blanco	Director	BUN-CA
40	Leonel Umaña	Oficial de Proyectos	BUN-CA
41	Gina Rodolico	Program Manager	E&CO/USA
42	Johanna Hjerthén	Directora Latinoamérica	E&CO/USA
43	Fernando Alvarado	Gerente Regional	E&CO LAC

**List of Participants in the Workshop  
on Financial Engineering for Development Organizations  
held in Panama on April 2, 2001**

N°	Name	Entity
<b>ONG's</b>		
1	Adonai Rios	ADEMIPP
2	Ingrid Schreiber	AFOTUR
3	Lanay de Boza	ANCON
4	Francisco Rivas	APRONAD
5	Maruquel Castellero	CATHALAC
6	Luis Torres	CATHALAC
7	Celedonio Moncayo	Centro para la Promoción del Desarrollo Sostenible
8	Araceli Rodríguez	CIDPA
9	Israel Ruíz	Compañía Azucarera La Estrella, S.A.
10	Omar E. Roca	Energía Renovable de Panamá
11	Anne Brunia	FAS Panamá
12	Nelsón Caballero	FEDISPAN
13	Martín Valdés	FOMOTEC
14	Yolanda Jiménez	Fundación Natura
15	Carlos R Bryan	Hidro Panamá
16	Jaime Contreras	ICIESA
17	Detlev T. Umbach	INTERGEO
18	Anabella Morales	INTERGEO
19	Vicente Puga	Pass Panamá
20	Reynaldo Bermúdez	PROCOSOL
21	Carmen Hidalgo	PRODESO
22	José Espinoza	SENACYT
23	Carlos Rothery	SOLARPAN
24	Raúl Núñez	ALAP
25	Itzel Rojas	AFOTUR
26	Reynaldo Bermudez	PROCOSOL
<b>Sector Gubernamental</b>		
27	Michael Mihalitizianos	Comisión de Política Energética (COPE)
28	Armando De Gracia	Oficina de Electrificación Rural (OER)
29	Ana Cecilia Fuentes	Patronato Nacional de la Nutrición
30	Carlos Iglesias	Comisión de Política Energética (COPE)
<b>Sector Universitario</b>		
31	Félix Henríquez	Facultad de Ingeniería Mecánica (UTP)
<b>Organizadores</b>		
32	José María Blanco	BUN-CA
33	Leonel Umaña	BUN-CA
34	Fernando Alvarado	E&Co-LAC
35	Loma Li	E&Co-LAC
36	Johanna Hjerthen	E&Co-USA
37	Orlando Aguilar	Representante BUN-CA, Panamá
38	Elmer González	Apoyo Logístico

**List of Participants in the Workshop  
on Financial Engineering for Development Organizations  
held in Nicaragua on April 5, 2001**

N°	Name	Entity
<b>ONG's</b>		
1	Julio Cardenas	AGRODERSA
2	José Angel Martínez	ASOJNCA
3	Aleyda Morales	ATDER-BL
4	Gabriel Pasos	CADIN
5	Martha Azucena Gutiérrez	CARUNA
6	Karina Augever	Centro Girasoles Proceso
7	Mercedes Escorcía	CEPRODEL
8	Aldo Palacio	Comunicadores Ambientales
9	Luis Taraga	ECAMI
10	Bo Ekstrand O	Eficontrol
11	Juan Izaga	ENES
12	Freddy Oporto Reyes	FADES
13	Danilo Sánchez	FUNISDECI
14	Ronald Medina D	FUNPROTECA
15	Mavela Mejía	Grupo FENIX
16	Ricardo Arias Zamora	INE
17	Irving Larios	INGES
18	Domingo Bolaños Vega	INTA
18	Noel Sacasa A	NSEL
20	Enrique Pérez	Programa Bolívar
21	Serafín Filomeno	PROLEÑA
22	Virgilio Bravo	Proyecto FADES
23	Susan Kinne	Proyectos fuentes Alternativas
24	Francesco Rezzonico	SEEIMZO
25	Elizabeth Rizo	UNICAFE
<b>Sector Gubernamental</b>		
26	Ricardo Mendoza	CNE
27	Jorge Teran G	CNE
28	Augusto Teran	Instituto de Desarrollo Rural
29	José Antonio Viteri	Cambio Climático
<b>Sector Privado</b>		
30	Federico Barrios	ENISA
31	Miguel Barrios	ENISA
32	Berta de León	Privado
33	Francisco Mojica	Privado
34	Araceli Hernandez	SUNI SOLAR
35	Vladimir Delagneau	TECNOSOL S.A
36	Jorge López	TECSOL S.A
37	Anabel Moncada	Tipitapa Power Co.
38	René Arce	Union Fenosa
<b>Agencias Cooperantes</b>		
39	Adolfo Castrillo Q	PNUD
40	Fiona Blum	PNUD
41	Rosemary Vega	PNUD
42	Julio Cesar Sánchez	PNUMA

<b>Organizadores</b>		
43	Leonel Umaña	BUN-CA
44	Joahana Hjerthen	E&Co-USA
45	Katia Fajardo	E&Co-LAC
46	José María Blanco	BUN-CA
47	Fernando Alvarado	E&Co-LAC
48	María Engracia de Trinidad	BUN-CA Nicaragua

**List of Participants in the Workshop  
on Financial Engineering for Development Organizations  
held in El Salvador on June 15, 2001**

N°	Name	Charge	Entity
<i>Organizaciones de Desarrollo</i>			
1	Vladimir Bolaños		Acc Am
2	Adolfo Sánchez		Fundación Proesa
3	Rafael Granados		Fuprodeh
4	Alisha Herrick	Volunteer	Peace Corps, El Salvador
5	Matthew F. Porth	Program Manager	Peace Corps, El Salvador
6	Luz de Maria Tomasino		REDES Fundación Salvadoreña para la Reconstrucción y el Desarrollo de El Salvador
7	Israel Martínez	Gerente de Producción y Beneficiado de Café	Ucraprobex
<i>Universidades</i>			
8	César Villalta	Jefe de Departamento	Universidad Centroamericana "José Simeón Cañas"
9	Jorge Alberto Basagoitia		Universidad Don Bosco
<i>Municipalidades</i>			
10	Juan Osmin Estrada González	Alcalde	Alcaldía Municipal De Apopa
11	Rafael Antonio Monterrosa	Director Escuela de Empresas	Alcaldía Municipal De Nejapa
12	Sergio Vladimir Quijada	Concejal	Alcaldía Municipal De Nejapa
<i>Empresas Privadas</i>			
13	Alejandro Quintanilla		CASYS, S.A. De C.V
14	Mauricio Alfonso Arévalo	Gerente de Producción	Central Hidroeléctrica Sensunapan
15	Jacqueline Reyes		Cesta
16	Axel Söderberg		Dematheu & Cia
17	César Catani		Dematheu & Cia
18	Alberto J. Valdivieso		Hacienda Chaparral
19	José Mario Vásquez	Consultor	JV Consultores S.A. de C.V.
20	Juan Carlos Sol	Presidente	Servicios Solar
21	Arturo Solano	Gerente	Tecnosolar
22	Antonio Roshardt		Texma
23	Eric Roshardt		Texma
<i>Entidades Gubernamentales</i>			
24	Ana María González	Coordinadora Proyecto de Energización con Energías Renovables	MARN
25	Mauricio Ayala	División de Desarrollo Limpio	MARN
26	Jorge Rovira	Dirección de Energía Eléctrica	MINEC
27	Rigoberto Contreras	Dirección de Energía Eléctrica	MINEC
28	Salvador Rivas	Dirección de Energía Eléctrica	MINEC

## Composition of the Electrical Central American Market

Pais	Guatemala	El Salvador	Panamá	Nicaragua	Honduras	Costa Rica
<b>Mercado</b>	<b>MERCADO MAYORISTA</b>				<b>Monopolio Estatal</b>	
<b>Generación</b>	<ul style="list-style-type: none"> <li>ENRON - 13%</li> <li>INDE-41% (Instituto Nacional de Electrificación)</li> <li>Otros generadores independientes-45%</li> </ul>	<ul style="list-style-type: none"> <li>CEL-40% (Comisión Ejecutiva Rio Lempa)</li> <li>GESAL-13% (Generación Eléctrica de El Salvador)</li> <li>Nejapa Power-11%</li> <li>Otros generadores independientes-2%</li> </ul>	<ul style="list-style-type: none"> <li>Bahía Las Minas-26%</li> <li>AES Panamá -26%</li> <li>Hidro Fortuna-25%</li> <li>Otros generadores independientes-23%</li> </ul>	<ul style="list-style-type: none"> <li>ENEL-51% (Empresa Nicaragüense de Electricidad)</li> <li>Otros generadores independientes-49%</li> </ul>	<ul style="list-style-type: none"> <li>ENEE-92% (Empresa Nacional de Energía Eléctrica)</li> <li>Otros generadores independientes-8%</li> </ul>	<ul style="list-style-type: none"> <li>ICE -81% (Instituto Costarricense de Electricidad)</li> <li>CNFL-5% (Compañía Nacional de Fuerza y Luz)</li> <li>JASEC, Coopesca y otras coop-5%</li> <li>Otros generadores independientes -9%</li> </ul>
<b>Transmisión</b>	ETCEE (Empresa de Transporte y Control de Energía Eléctrica)	ETESAL (Empresa de Transmisión Eléctrica)	ETESA (Empresa de Transmisión Eléctrica)	ENTRESA	ENEE	ICE
<b>Distribución</b>	<ul style="list-style-type: none"> <li>Unión FENOSA (rural)</li> <li>Iberdrola (urbano)</li> </ul>	<ul style="list-style-type: none"> <li>Corporación AES</li> <li>Otros Distribuidores privados</li> </ul>	<ul style="list-style-type: none"> <li>Elektra Noreste</li> <li>Unión FENOSA (Metro-este)</li> <li>Unión FENOSA (Chiriquí)</li> </ul>	<ul style="list-style-type: none"> <li>Unión FENOSA (Distribuidora Norte)</li> <li>Unión FENOSA (Distribuidora Sur)</li> </ul>	ENEE	<ul style="list-style-type: none"> <li>ICE</li> <li>CNFL</li> <li>JASEC</li> <li>ESPH</li> <li>Coop. Rurales (Coopesca, CoopeGuanacaste, Coopesantos, CoopeAlfaroRuiz)</li> </ul>
<b>Población total<sup>1</sup></b>	11.385.337	6.378.000	2.839.177	5.416.000	7.022.000	3.800.000
<b>Población con acceso a electricidad</b>	8.663.177 (76%)	3.316.560 (52%)	2.311.130 (81%)	2.924.640 (54%)	3.581.220 (51%)	3.610.000 (95%)
<b>Capacidad instalada</b>	1,646 MW	1,080 MW	1,280 MW	645 MW	919 MW	1,687 MW

Fuentes: Estadística de BUN-CA, basada en datos de OLADE y contactos en Centro América. Manual para la Promoción de la Energía Renovable en Centro América: Oportunidades para la Intervención Política, FENERCA, 2001

<sup>1</sup> Datos al año 2000

## Summary of the Main Policy Barriers for Renewable Energy in Central America

Guatemala	Panamá	El Salvador	Honduras	Nicaragua	Costa Rica
<p><b>1. Restricciones en la capacidad mínima de generación</b></p> <ul style="list-style-type: none"> <li>Las leyes y regulaciones limitan la entrada directa al Mercado Mayorista para generadores con capacidad inferior a 10 MW. Esto evita la venta directa al MM de los pequeños productores, y por lo tanto reduce sus opciones de venta, aunque la ley si prevé que se puede hacer la unión de varios pequeños generadores por medio de una comercializadora.</li> </ul> <p><b>2. Restricciones para el traslado de los costos de contratación directa</b></p> <ul style="list-style-type: none"> <li>El cálculo de tarifas se basa en los precios de electricidad según el MM, más los costos de transmisión y distribución. Los costos establecidos en contratos celebrados con los distribuidores para comprar energía no pueden ser trasladados a los usuarios.</li> </ul> <p><b>3. Requisitos para permisos</b></p> <ul style="list-style-type: none"> <li>La inversión en el sector de pequeña escala es obstaculizada por estructuras de costos para la emisión de permisos que no toman en cuenta el tamaño o tipo de proyecto. Como resultado, los productores de pequeños proyectos pueden terminar pagando costos mucho mayores por MW instalado que los generadores a mayor escala.</li> </ul>	<p><b>1. Tarifas de Transmisión</b></p> <ul style="list-style-type: none"> <li>Muchos proyectos renovables están ubicados lejos del centro de carga que está localizado en la ciudad de Panamá, por lo que pagan costos más altos de transporte que los proyectos localizados mas cerca de los centros de carga (por ej.: proyectos térmicos).</li> </ul> <p><b>2. Duración de Contratos de Compra-venta</b></p> <ul style="list-style-type: none"> <li>Los procedimientos y criterios establecidos por el Ente Regulador para la contratación de energía y/o potencia establecen un plazo limite de 8 años y se especifica una penalización de 2.4% en el acto público para cada año que exceda el 4 año de contratación. Esto afecta las energías renovables porque requieren plazos más largos.</li> </ul> <p><b>3. Impuestos de importación</b></p> <ul style="list-style-type: none"> <li>Los combustibles fósiles son importados libres de impuestos, lo que beneficia a las plantas térmicas y representa una desventaja competitiva para proyectos de energía renovable.</li> </ul> <p><b>4. Dependencia del recurso</b></p> <ul style="list-style-type: none"> <li>El efecto del Niño puede reducir la producción de una planta hidro en más del 50% durante los meses críticos de verano, haciendo necesario un balance hidro-térmico que limita la participación hidro.</li> </ul> <p><b>5. Procedimientos complejos</b></p> <ul style="list-style-type: none"> <li>Los procedimientos actuales para obtener concesiones para recursos renovables son largos y complejos</li> </ul> <p><b>6. Altos costos de estudios de factibilidad</b></p> <ul style="list-style-type: none"> <li>Muchos estudios existentes para proyectos de energía renovable requieren más trabajo de campo y estudios para llevarlos a nivel de pre-factibilidad y factibilidad, lo que consume recursos financieros importantes previo a definir la viabilidad de los proyectos.</li> </ul> <p><b>7. Red de transmisión</b></p> <ul style="list-style-type: none"> <li>La Provincia de Bocas del Toro, tiene un alto potencial hidroeléctrico pero requiere inversiones importantes en la red de transmisión para lograr su integración al sistema integrado nacional.</li> </ul>	<p><b>1. Restricciones en la capacidad mínima de generación</b></p> <ul style="list-style-type: none"> <li>Las leyes y regulaciones limitan la entrada al MM a generadores con capacidad mínima de 5 MW. Esto evita la venta directa al MM de los pequeños productores, y por lo tanto reduce sus opciones de venta y participación.</li> <li>Dificultad en obtener contratos de venta de energía a largo plazo que hagan factible el desarrollo de los proyectos de energía renovable.</li> </ul> <p><b>2. Requisitos para permisos</b></p> <ul style="list-style-type: none"> <li>La inversión en el sector de pequeña escala es obstaculizada por estructuras de costos para la emisión de permisos que no toman en cuenta el tamaño o tipo de proyecto. Como resultado, los productores de pequeños proyectos pueden terminar pagando costos mucho mayores por MW instalado que los generadores a mayor escala.</li> <li>En el caso de pequeños proyectos hidroeléctricos el trámite de permisos resulta muy lento y costoso.</li> </ul>	<p><b>1. Inestabilidad de la estructura legal del sector</b></p> <ul style="list-style-type: none"> <li>Las leyes y regulaciones relevantes han sufrido cambios significativos en prácticamente en cada uno de los últimos ocho años, y los desarrolladores y financistas temen que se den nuevos cambios.</li> <li>Posible impacto de la instalación de la Planta de AES.</li> <li>Preocupación por la incorporación de 15 plantas con una capacidad total de entre 140 y 160 MW a un sistema tan pequeño, podría conducir a problemas de despacho o deficiencias del recurso</li> </ul>	<p><b>1. Impuestos de Importación</b></p> <ul style="list-style-type: none"> <li>Los proyectos privados de electrificación rural no están exentos de impuestos de importación</li> <li>Las plantas térmicas cuentan con una exención indefinida sobre la importación de combustibles.</li> <li>Los pequeños importadores actualmente están sujetos a la interpretación del oficial de aduanas que esté a cargo en el momento de declarar los equipos de energía renovable.</li> </ul>	<p><b>1. Causas de dominio público</b></p> <ul style="list-style-type: none"> <li>Permitir el acceso de productores independientes en el aprovechamiento del recurso hídrico para generación.</li> </ul> <p><b>2. Limitada capacidad de generación a los pequeños productores independientes</b></p> <ul style="list-style-type: none"> <li>Aumentar el 15% autorizado por la Ley 7200 para los pequeños productores independientes</li> </ul>