

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

## **EL SALVADOR**

### **DEVELOPING A NATIONAL SUSTAINABLE MARKET FOR CLEAN RURAL ENERGY SERVICES**

**(TC-00-02-07-1)/(ATN/JF-7918-ES)**

#### **PLAN OF OPERATIONS**

Approved on June 24, 2002

<p>This document was prepared by the project team consisting of: Gonzalo Arroyo (RE2/FI2) Project Team Leader, Carlos A. Trujillo (RE2/FI2), Arnaldo Vieira de Carvalho (RE2/FI2) Consultant, Diego Belmonte (RE2/FI2), Luis Humberto Castedo (COF/CES), Dana V. Martin (LEG/OPR), and Yolanda Galaz (RE2/FI2), who was in charge of document production.</p>
---

## CONTENT

I.	FRAME OF REFERENCE .....	1
A.	Background .....	1
B.	The Bank's country and sector strategies .....	5
C.	The program strategy.....	6
II.	THE PROGRAM .....	7
A.	Objectives and description.....	7
B.	Program structure .....	7
C.	Cost and financing.....	10
III.	PROGRAM EXECUTION .....	11
A.	The Executing Agency .....	11
B.	Program execution and administration.....	12
C.	Procurement of goods and services .....	12
D.	Execution and disbursement schedule.....	12
E.	Monitoring and evaluation.....	13
IV.	VIABILITY AND RISKS .....	13
A.	Social and Environmental impact .....	13
B.	Beneficiaries .....	14
C.	Risks .....	15
V.	RECOMMENDATION .....	15

## **ANNEXES**

### **ANNEX I      Logical Framework**

## ABBREVIATIONS

CEL	Comisión Ejecutiva Hidroeléctrica del Río Lempa
COMURES	Corporación de Municipalidades de la República de El Salvador
DEE	Dirección de Energía Eléctrica/Ministerio de Economía
ETESAL	Empresa Transmisora de El Salvador, S.A. de C.V.
FINET	Fondo de Inversión Nacional en Electricidad y Telefonía
FISDL	Fondo de Inversión Social para el Desarrollo Local
FODES	Fondo de Desarrollo para los Municipios
GIS	Geographic Information System
GOES	Government of El Salvador
IDB	Inter-American Development Bank
JSF	Japan Special Fund
MARN	Ministerio de Medio Ambiente y Recursos Naturales
MINEC	Ministerio de Economía
REU	Rural Electrification Unit at MINEC/DEE
SABES	Asociación Saneamiento Básico, Educación Sanitaria y Energía Alternativa
SETEFE	Secretaría Técnica del Financiamiento Externo/Ministerio de Relaciones Exteriores
SIGET	Superintendencia General de Electricidad y Telecomunicaciones
TC	Technical Cooperation
TOR	Terms of Reference
USAID	United States Agency for International Development

## DEVELOPING A NATIONAL SUSTAINABLE MARKET FOR CLEAN RURAL ENERGY SERVICES

(TC-00-02-07-1-ES)

### EXECUTIVE SUMMARY

<b>Requester:</b>	Government of El Salvador (GOES)		
<b>Executing agency:</b>	Ministry of Economy (MINEC)/Electric Power Division (DEE)		
<b>Amount and source:</b>	IDB: (JSF) non-reimbursable TC	US\$	750,000
	Local:	US\$	150,000
	Total:	US\$	900,000
<b>Terms:</b>	Execution Period:	24	months
	Disbursement Period:	30	months
<b>Objectives:</b>	<p>The overall objective of the TC is to help the GOES to develop and promote an appropriate strategic framework allowing for market-oriented and sustainable enterprises dedicated to implementation and operation of rural energy projects in a sustainable way. This TC would also implement and test a new approach for catalyzing sustainable markets for privately operated rural energy services in smaller economies as a means of meeting social and environmental goals.</p> <p>The technologies that would be considered include rural electrification grid extensions, development of small isolated grid systems and off-grid schemes employing clean energy sources such as solar, wind, mini-hydro and biomass, as well as end-use energy efficiency improvements, such as efficient lighting and wood stoves.</p>		
<b>Description:</b>	<p>The TC funds would be used to contract international and national experts to help the GOES to create and organize the Rural Electrification Unit (REU) at MINEC/DEE and to develop the following project components: 1) Completion of the rural energy strategic framework to include off-grid solutions; 2) Preparation of a comprehensive national rural energy information system; 3) Preparation and implementation of an Action Plan to design, promote and test alternative rural energy service business models; and, 4) Consolidation of a National Rural Energy Expansion Plan.</p>		
<b>Environmental/ social review:</b>	<p>The project would not present significant direct or indirect environmental impacts. The use of renewable energy technology results in minimal environmental impact and can effectively mitigate the potential adverse effects from conventional energy</p>		

sources. The alternatives to renewable energy are diesel fuel, car batteries, kerosene, and candles, all of which have a far more negative impact.

The Committee on Social and Environmental Impact (CESI) has reviewed the project in its meeting of April 26, 2002 and the recommended actions have been incorporated in paragraphs 4.4 and 4.5.

**Benefits and beneficiaries:**

Direct beneficiaries of this project would be the 59 percent of the rural population whose energy needs have not been met in El Salvador. They would start benefiting from improved access to clean energy services, specially the poor sector of the population that is concentrated in rural areas. They spend an important portion of their income and time to cover minimal subsistence needs, receiving a low quality cooking and lighting services. It is frequent the use of traditional energy sources, such as firewood, candles, and animal or human labor and when access to kerosene and batteries is possible, the costs are even higher and basic needs are therefore compromised. Small and microenterprises would also benefit from the creation of new business markets for rural energy and for supporting services.

**Risks:**

The primary risks to the project are the innovative character of some of the project components that consider a relatively new approach for developing energy services market in the country; the disappointing results of other previous approaches employed to implement projects in this field that proved not to be sustainable; the small size of the initial market; and the uncertain willingness of the financial sector and of the private sector to adopt and finance new business schemes. These risks shall be overcome by provision of customized technical assistance to most relevant stakeholders, to be flexibly designed and implemented based on a series of technical assessments, close interaction with the beneficiaries and market actors, and incorporation of experience of other regions.

The financial risk related to imposing specific disbursement conditions for the testing of businesses models is somewhat mitigated by the manner in which the Action Plan is proposed to be designed and implemented, that is, with independent (though linked) elements. If disbursement conditions of the testing element are not met, it would not significantly affect the effectiveness of the assistance provided by other elements and the corresponding resources would be directed to alternative applications.

**Bank's country  
and sector  
strategy:**

This TC's link to the Bank's Country Strategy resides in its contribution to: a) reduce poverty, especially in rural areas; b) support projects on microenterprises and rural infrastructure; c) reduce contrasts between rural and urban areas; d) support the private sector, especially on physical and productive energy infrastructure; and, e) identify and prepare operations in the rural energy area.

The objectives of this TC conform to the Bank's Energy Strategy adopted by the Board on March 1, 2000. This TC project would also help consolidate a National Rural Energy Expansion Plan and prepare the basis for an on and off-grid rural energy loan proposal (ES-0153). It has been designed in coordination with other Bank initiatives to promote rural energy supply in the region.

**Special  
contractual  
conditions:**

The first disbursement is conditioned on the Executing Agency presenting a Plan of Execution fully agreed with the Project Team, with Terms of Reference at least for the first 12 months of activities. Prior to disbursing funds for equipment purchase for the testing of select business models planned under project component 3, the Executing Agency would present acceptable evidence to the Bank of the commitment of third parties of an equivalent amount for equipment purchase. In addition to a complete project review within three months after the completion of the project, a mid-term evaluation would be carried out immediately before completion of the first year of activities with the objective of identifying necessary adjustments based on the progress of the project.

**Exceptions to  
Bank policy:**

The project would be carried out according to Bank policies and procedures.

**Delegation of  
Authority to the  
President of the  
Bank and  
Regional  
Departments:**

This document is approved by the Chief of Finance and Basic Infrastructure Division (RE2/FI2) and the Country Division Chief (RE2/OD3) of the Regional Operations Department II, by virtue of Board Resolution DE-47/93 delegating to the President the authority to approve technical cooperation operations funded exclusively by the JSF for an amount not exceeding US\$750,000 and aimed at project preparation; and (ii) the 31 October 1994 memorandum by the President further delegating this authority to regional operations departments.





## I. FRAME OF REFERENCE

### A. Background

- 1.1 El Salvador has the smallest geographic area in Central America (21,000 km<sup>2</sup>) and one of the highest population densities of the continent (almost 300 inhabitants/km<sup>2</sup>). Despite this high concentration, electricity remains unavailable for 26% of the population in El Salvador. Since urban areas have high electricity coverage (99%), most of the unserved population is located in rural areas, where the coverage is only 41%. That means that more than 300,000 families, or about 1.5 million inhabitants, do not have access to electricity services, most of them poor, once in El Salvador the poverty incidence in rural areas is 60% higher than in urban areas<sup>1</sup>.
- 1.2 The GOES recognizes that the availability of electricity services is extremely relevant for the country social and economic development, providing means for increasing productivity, competitiveness, health and education levels and family income generation to reduce poverty, especially in rural areas. Therefore, the GOES is increasingly directing efforts to accelerate the rural energy coverage in the country, meeting social, economical and environmental goals.
- 1.3 One of the most relevant indications of this effort has been the creation in the beginning of 2001 of the Electric Power Division (DEE) at the Ministry of Economy (MINEC) for establishing electric power policies, including specifically rural electrification. Despite the relatively short period since its inception<sup>2</sup>, DEE has already developed different initiatives and channeled several external donor support to overcome existing barriers for increasing rural energy coverage. DEE is planning to implement a structured expansion of the rural energy infrastructure and for that purpose has recently<sup>3</sup> prepared an on-grid rural electrification draft strategy for El Salvador for wide discussion with the several market stakeholders.
- 1.4 DEE is presently designing a Rural Electrification Unit (REU) that would be dedicated to implement the rural electrification strategy and deal with the provisions for the required infrastructure financing. This Unit is planned to count on a coordinator and several technical assistants, who also would be in charge of defining yearly indicative plans for rural energy expansion, interface with the

---

<sup>1</sup> According to Country Paper - El Salvador, 2001 (pages 1 and 7 of Annex VI) most of the poor population are living in rural areas despite the fact that the national population is mostly urban:

	Population distribution (%)	Below Poverty level (%)	Poor population distribution (%)
Urban	54.6	38	21
Rural	45.4	62	28
Total	100.0	49	49

<sup>2</sup> Through Acuerdo Ejecutivo N° 27 dated January 11, 2001

<sup>3</sup> "Desarrollo de la Estrategia de Electrificación Rural para El Salvador"; prepared by MINEC/DEE and PA Consulting Group, sponsored by USAID, February 2002

distribution companies and other service providers and project execution follow-up.

- 1.5 DEE is considering support from other international donors, besides the Bank's support, such as the Canadian International Development Agency (CIDA). CIDA's support would be provided through its regional project on electric power for Central America (Proyecto Regional de Energía Eléctrica del Istmo Centroamericano - PREEICA) for technical assistance on the implementation of a national on-grid rural electrification plan.
- 1.6 El Salvador has been a leader in implementing structural reforms in the electric power sector. The integrated electric power system formerly belonging to the state-owned electric utility CEL has been divided. Its distribution and part of its generation businesses have been privatized, the interconnected electric system operator and wholesale market manager has been created and is operative as an autonomous private institution (UT). A regulatory entity (SIGET) is active, as well as a transmission company (ETESAL) responsible for transporting electric power from the power generators to distribution nodes. A particular characteristic of the country's regulatory framework is that unlimited vertical and horizontal reintegration is allowed and the distribution concession is not geographic, i.e., more than one distribution company can operate in the same geographic area, overlapping their grids.
- 1.7 As part of the reforms, a rural electrification and telecommunications development fund (FINET) has been created to facilitate access from rural and low-income sectors of the population to electricity and telephone services. FINET uses resources gathered from the exploitation of natural resources and telecommunications concessions to the private sector. However, the characteristics of these financial resources have proven to be difficult to reliably assess amounts for infrastructure expansion planning.
- 1.8 FINET has been created to act more as a support fund for electrification and telecommunications than as an institution to promote activities in these areas. It is administered by FISDL (the local development fund supporting community development through municipalities), which has several other responsibilities. The law that created FINET established auctions as the process for assigning projects to rural energy services providers registered at SIGET for extending the services to new customers. Despite the fact that FINET was created in 1998, the first auction announcement was only published in October 2000 and encountered only one bidder – the distribution company operating the existing distribution line in the area.
- 1.9 Other market actors are still active in this market, such as SETEFE and the municipalities. SETEFE, the Technical Secretariat of the Foreign Relations Ministry, has become involved in the rural electrification market to assure the fulfillment of existing bilateral agreements, especially with USAID. SETEFE counts with its own rural electrification unit formed by ex-CEL staff, developing

projects supported by USAID and other international donations and relying on independent contractors for its implementation.

- 1.10 The municipalities continue improving their population conditions counting on the support from FISDL, that includes financial resources provided by FODES, a fund partially administered by FISDL and partially funded by the IDB (Project ES-0109 – Local Development Program – Loan No. 1067/OC-ES). According to COMURES (the municipalities association), about one third of the municipalities are developing rural grid extension projects without cost sharing with the distribution utilities. In this case the new infrastructure belongs to the municipality posing an important restriction related to its long-term operation and maintenance and, therefore, its sustainability. SIGET is actively working in this field through organizing several technical assistance and maintenance agreements between the market actors, including the distribution companies, COMURES and SETEFE.
- 1.11 Before the energy sector reforms in El Salvador, the GOES through CEL managed to increase both the urban and rural energy coverage at relatively high rates. During the period from 1988 until 1998 (the year the distribution companies were privatized) the number of electricity customers doubled at national level and tripled at rural level. As result, the urban electricity coverage increased from 80% to 99% and the rural coverage from 17% to 41%, but still well below the country's needs.
- 1.12 An official national rural electrification plan is not available yet, but preliminary studies indicate that a relatively high number of unserved clients are very close to the existing grid and that a US\$50 million-investment would be enough to reach a 90% national electrification level, providing electricity access to almost 1 million inhabitants. This task would correspond to reaching 76% rural energy coverage, but would be equivalent to more than double the growth attained by the state-owned CEL in its last effort in the 90's, before it stopped its action in this field.
- 1.13 El Salvador now is no exception among countries experiencing reductions in the growth of rural electrification activities after structural reforms are implemented in energy sector. While the government pulls out, the newly privatized electricity distribution utilities do not have regulatory obligations to make unattractive investments to provide services to new customers. Therefore, distribution utilities consider investments in this area as lower priority when compared to other opportunities, such as reducing distribution losses and improving the quality of the service for existing customers.
- 1.14 Catalyzing the private sector to deliver off-grid rural energy services in areas far from the existing distribution grids has proved even more difficult because, in general, off-grid energy services appear to be too small to sustain a profitable business proposition.

- 1.15 On the other hand, El Salvador has reached an advanced level of reforms in the energy sector, providing new investment opportunities for its private sector, which counts with a high degree of entrepreneurship. Therefore, the country is in a privileged condition for the launch of innovative approaches to deal with the challenge of developing and implementing new mechanisms to increase the energy coverage in rural areas, especially for off-grid solutions.
- 1.16 The off-grid experience in El Salvador employing renewable energy, such as solar energy, wind power, biomass and small hydro constitutes an excellent starting point for energy services provision for the population situated far from the existing grid. SETEFE, FISDL/FINET and private sector services providers have been involved in these projects. There are about 2,500 solar photovoltaic (PV) systems in operation in the country, mostly used for home lighting and about 300 PV systems in schools, health centers and community centers<sup>4</sup>. These installations have been implemented employing several alternative business schemes, including a modest fee-for-service model application by a private sector entrepreneur. During the 90's the Universidad Centroamericana José Simeón Cañas (UCA) identified the most promising small hydropower sites. There are some initiatives such as the 17 kW La Chácara small hydro project that provides electricity for this small community in Carolina, Departamento de San Miguel, through SABES.
- 1.17 Other efforts on promoting renewable energy are being carried out on a regional basis, such as the GEF/UNDP project "The Creation and Strengthening of the Capacity for Sustainable Renewable Energy Development in Central America/Creación y Fortalecimiento de la Capacidad para el Desarrollo Sostenible de la Energía Renovable en Centro América - FOCER", currently being executed by the regional organization BUN-CA (Biomass Users Network/Central America), where MARN (the Environment and Renewable Resources Ministry of El Salvador) acts as local counterpart. The Program "Financing Renewable Energy Enterprises in Central America/Financiamiento de Empresas de Energía Renovable en América Central – FENERCA" sponsored by USAID and carried out by E&Co, BUN-CA and PA Consulting also includes El Salvador in its scope and has provided pioneering support to innovative rural renewable energy enterprises.
- 1.18 It is also to be noted that a GEF/UNDP PDF Block B project entitled "Electrification through Renewable Energy Resources" is about to be initiated by MARN, in preparation for a future full-size GEF project. The global objective of the project is to reduce the growth of greenhouse gas emissions resulting from electricity generation in El Salvador. This project would rely on a board committee consisting of MARN and DEE to advise the project coordination and integrate with other initiatives in the country.

---

<sup>4</sup> One example is the project installed in the El Higueral community in the San Francisco Morazán municipality, Chalatenango providing services for 120 persons.

- 1.19 An important issue that needs to be considered when dealing with rural energy is biomass, especially fuel wood, which represents 40% of the country's energy consumption and 80% of the residential energy consumption. Fuel wood is not solely responsible for the deforestation - agriculture development has been responsible for most of it, leading to a situation where only 2% of the primary forest coverage were left in the country – the worst situation in the region. It is noticeable that relevant experience exists in El Salvador on the design, construction and commercialization of efficient stoves that can be used as starting point to drastically increase the efficiency of fuel wood utilization in a sustainable way.
- 1.20 Under the context presented, this TC to be financed by the Japan Special Fund (JSF) would help DEE to develop, consolidate, integrate and promote an appropriate strategic framework allowing for market-oriented and sustainable enterprises dedicated to the implementation and operation of rural energy projects, not limited to electricity, and considering both on and off-grid solutions. This TC would design and test new approaches for off-grid systems that would improve the environment for private enterprises for delivering market-driven energy services in rural markets using renewable energy technologies, integrating it in the process and methodologies for providing on-grid solutions.
- 1.21 The results of this TC would be replicated in the future for expanding this strategy for other countries in Central America. This region is moving towards a restructured competitive energy market, with increasing private sector participation, combined with a regionally integrated power grid, for what regional regulatory and operation institutions are being established.

## **B. The Bank's country and sector strategies**

- 1.22 This TC's link to the Bank's Country Strategy resides in its contribution to: a) reduce poverty, especially in rural areas; b) support projects on microenterprises and rural infrastructure; c) reduce contrasts between rural and urban areas; d) support the private sector, especially on physical and productive energy infrastructure; and, e) identify and prepare operations in the rural energy area<sup>5</sup>.
- 1.23 The objectives of this TC conform to the Bank's Energy Strategy adopted by the Board on March 1, 2000. The strategy calls the institution to support the provision of "modern energy alternatives to all on affordable terms." In particular, the focus of the Energy Strategy calls to close the "energy gap" between the urban population and inhabitants of rural sectors in Latin America and the Caribbean. This TC project would also help consolidate a National Rural Energy Expansion Plan and define and prepare the basis for project components of a rural energy loan proposal to implement this National Plan (ES-0153), for both on and off-grid solutions.

---

<sup>5</sup> Page vi and paragraphs 2.12, 2.20, 2.23, 2.32 and 2.38 of Country Paper - El Salvador, 2001

- 1.24 This TC project has been designed in coordination with other Bank initiatives to promote rural energy supply in the region. Its design has also considered similar recent Bank experiences in other regions, such as: (i) the PRODEEM project<sup>6</sup> in Brazil to restructure and decentralize the present governmental program on off-grid rural renewable energy at the Ministry of Mines and Energy (MME), developing a strategy to catalyze private sector involvement and support the testing of several business models to deliver rural renewable energy services – this project is also receiving financial resources from the JSF, as well as from the Multilateral Investment Fund – MIF and the European Commission Consulting Services Fund at IDB; (ii) the Teotonio Vilela Foundation (FTV) project<sup>7</sup> to help create microenterprises in Brazil to provide modern rural energy services to remote communities based on solar panels, which is receiving Bank support through its microenterprises program; and, (iii) the Intermediate Technology Development Group (ITDG) project<sup>8</sup> in Peru to promote small energy service providers based on micro and small hydro power plants and productive uses of energy in rural areas, which is also receiving Bank support through its microenterprises program.
- 1.25 This project was prepared considering the recommendations of a study carried out in 2001 by FI2, with financial support from USAID, on how to increase rural energy coverage in four countries of the region, stimulating public and private investment in rural energy infrastructure. This TC project would seek to complement activities sponsored by other institutions in the same field and is intended to serve as a model that would enable the approaches taken to be replicated and integrated into IDB operations throughout the region.

### **C. The program strategy**

- 1.26 The GOES is implementing actions to speed up the energy coverage in the country under the new market conditions imposed by the energy sector reforms. This program would complement the initial GOES efforts, which were mainly focused on on-grid solutions, improving the conditions for delivering energy services in rural markets using off-grid renewable energy technologies.

---

<sup>6</sup> IDB project number ATN/MT-6697-BR, ATN/JF-6630-BR and ATN/EA-7191-BR

<sup>7</sup> IDB project number ATN/SF-6102-BR and SP9802415

<sup>8</sup> IDB project number ATN/EM-6922-PE and SP9903010

## II. THE PROGRAM

### A. Objectives and description

- 2.1 The overall objective of the TC is to help the GOES to develop and promote an appropriate strategic framework allowing for market-oriented and sustainable enterprises dedicated to implementation and operation of rural energy projects in a sustainable way. This TC would also implement and test a new approach for catalyzing sustainable markets for privately operated rural energy services in smaller economies as a means of meeting social and environmental goals.
- 2.2 The technologies that would be considered include rural electrification grid extensions, development of small isolated grid systems and off-grid schemes employing clean energy sources such as solar, wind, mini-hydro and biomass, as well as end-use energy efficiency improvements such as efficient lighting and wood stoves.

### B. Program structure

- 2.3 The TC funds would be used to help GOES to create and organize the Rural Electrification Unit (REU) at MINEC/DEE and to develop the following project components: 1) Completion of the rural energy strategic framework to include off-grid solutions; 2) Preparation of a comprehensive national rural energy information system; 3) Preparation and implementation of an Action Plan to design, promote and test alternative rural energy service business models; and, 4) Consolidation of a National Rural Energy Expansion Plan.
- 2.4 **Component 1: Completion of the rural energy strategic framework to include off-grid solutions (US\$112,500).** This task would support hiring consulting services for the completion of the rural energy strategy being developed by the GOES through DEE, integrating the processes and methodologies for on and off-grid solutions. A new strategy for off-grid solutions to be developed would be oriented to eliminating market barriers, increasing opportunities for private sector-led provision of sustainable rural energy services. The activities include defining sources for financing of the infrastructure for rural energy coverage increase, both on and off-grid, and a review of activities carried out by other entities, or planned, to avoid any duplication.
- 2.5 This component would also provide for improvements in the regulatory framework and in the institutional capacity of the government agencies responsible for rural energy project promotion. It would develop basic support information, such as a characterization of the rural energy market in El Salvador, both on and off-grid, including information on the local market of fuel wood. Environmental variables would be considered in the new rural energy strategic framework allowing for the use of the best environmentally sustainable technologies. The activities performed under this component would help understand the current conditions of the rural energy market in El Salvador and

allow for feedback from the major stakeholders to establish the basis to guide the activities of the other components of this project.

- 2.6 The characterization of the rural energy market would include a review of the results of previous efforts on project implementation and operation, in El Salvador and elsewhere, to guide an assessment of the rural energy market, covering existing energy resources and demand; market participation of different market actors; specific needs and recommendations regarding the demand and supply of rural energy services; ability/willingness to pay for energy services; potential productive energy applications to increase family income; availability of financing for rural energy projects; regulatory and governmental policy conditions; and identification of relevant market barriers, as well as mechanisms being used by stakeholders to overcome these barriers.
- 2.7 **Component 2: Preparation of a comprehensive national rural energy information system (US\$162,500).** This task would develop and implement a complete mapping allowing for maintaining an updated electronic file of the served and unserved population on a national basis, to be used for project design and monitoring, and made accessible to all market stakeholders. The objective of this component is to collaborate with ongoing initiatives for the utilization of rural energy information systems, such as geographic information systems (GIS), to help the GOES prioritize and monitor the areas where rural electrification activities would be conducted, for both on and off-grid solutions.
- 2.8 International and national consultants would be hired to assess existing demographic information and database structure to identify means to improve it and apply it to the project design and monitoring. Resources would be made available for the specification and acquisition of the necessary hardware and software to complement the existing ones. The consultants would help incorporate the information generated in component 1, including fuel wood prices, supply and demand and additional information from other databases. Finally, the consultants would write a user's guide and provide training to local end-users, for both on and off-grid solutions.
- 2.9 **Component 3: Preparation and implementation of an Action Plan to design, promote and test alternative rural energy service business models (US\$229,000).** The objective of this activity would be the design of concept business models and provide technical assistance to off-grid rural energy services providers to implement and test them in actual projects, under real market conditions involving local communities. The candidate business models to deliver energy services using renewable energy would be designed by consultants, based on the local market condition present in El Salvador and would consider existing initiatives and alternate financial schemes for its implementation. After the design of the draft models, the consultants would submit them to review by government and private stakeholders for feedback and improvement of most promising ones.



- 2.10 Using the preliminary results from the information system developed by component 2, market segments, geographic areas and specific sites would be selected as candidates for testing some of the business models. A criterion would be developed to select combinations of (i) business models, (ii) energy services provider, and, (iii) sites, considering factors such as the distance to the nearest distribution line, available energy resources, access to services (availability of equipment, expertise and end user ability/willingness to pay), level of community or political organization, long term sustainability, economic and financial pre-feasibility.
- 2.11 The consultants would then provide specific technical assistance to complete final project preparation for at least 4 projects employing different business models and service providers – providing on-the-job training as necessary. This assistance would include: preparation of business plans, fundraising, capacity building, billing systems, marketing, financial management, maintenance, etc. The consultants would work directly with these 4 projects to bring about at least 2 projects to actual implementation, including support to biomass projects, such as the commercialization of efficient wood stoves and the economic feasibility of fuel wood production.
- 2.12 The criterion to select the projects that would receive financial support for their implementation, including part of the necessary resources for equipment acquisition, would take into consideration the financial commitment of the corresponding service provider. Specific disbursement conditions would be developed and applied. Support for the implementation, monitoring and evaluation of the projects would be provided for the remaining of the TC duration.
- 2.13 A replication plan would be developed and incorporated in a guidebook for delivery of rural energy services as a general orientation for country policymakers and other stakeholders, including rural cooperatives, NGOs and potential private providers of rural energy services. Based on the experience from this component, the guidebook would be directed to help entrepreneurs and other service providers develop businesses that serve rural populations in other areas. The document would address how to assess the market for energy services, how to meet rural energy needs, methodologies to assess the several rural energy options, addressing the social, economic, financial, technical, environmental, legal, regulatory and market aspects. It would include information on how to design a management structure, structure operations, administer personnel, conduct maintenance, and collect tariffs.
- 2.14 A regional workshop on sustainable rural energy services would be organized to stimulate market actors, discuss the results of the assessments and tests and disseminate best practices to meet rural energy needs. Parties from other Central American countries and other regions would be invited to the event to share experiences and generate consensus on recommendations for future action.

- 2.15 **Component 4: Consolidation of a National Rural Energy Expansion Plan (US\$79,000).** Building upon the results of component 1 and the progress of component 2, this task would consolidate a National Rural Energy Expansion Plan for increasing the energy coverage, with its corresponding Investment Plan, specific geographic coverage targets and justification for both on and off-grid projects. It will also prepare a series of studies to help GOES define the components of a loan proposal to finance the implementation of the rural energy infrastructure defined by this National Expansion Plan (project ES-0153).
- 2.16 The current institutional and property arrangements, regulation, procedures and methodologies would be reviewed, as well as the results of the actual rural energy projects implementation so far. Existing projects would be evaluated to gather information on incurred costs of infrastructure, operation and maintenance, commercialization, energy purchase/sales and administration and other indicators to help establish the basis for a project loan. A review of the tariff structure and methodologies for definition of subsidies levels and project selection criteria would also be carried out to evaluate their effectiveness when applied to actual projects and their impact in the program sustainability. Recommendations would be presented to further improve the existing arrangements, regulation, procedures and methodologies to help define and prepare project components of a loan proposal. Special attention would be given to mechanisms used for achieving effective participation of the poor population that would be benefited by the projects.

### **C. Cost and financing**

- 2.17 As indicated in the following table, the overall project cost of the proposed activities (not counting resources from IDB's related loans or eventual contribution from other agencies) is US\$900,000, of which US\$750,000 would be financed by the JSF. In-kind counterpart resources would come from the Executing Agency. Additional resources would be seek from end-users, national government, municipalities, vendors and services providers, trade associations, local banks and other market stakeholders.

### Developing a National Sustainable Market for Clean Rural Energy Services - Preliminary Budget

	JSF	Counterpart <sup>9</sup>	Total
<b>Component 1: Completion of the rural energy strategic framework to include off-grid solutions</b>	<b>\$112,500</b>		<b>\$112,500</b>
International experts	\$ 65,000		\$ 65,000
Local experts	\$ 28,000		\$ 28,000
Travel	\$ 19,500		\$ 19,500
<b>Component 2: Preparation of a comprehensive national rural energy information system</b>	<b>\$162,500</b>		<b>\$162,500</b>
International experts	\$ 80,000		\$ 80,000
Local experts	\$ 39,000		\$ 39,000
Hardware/software	\$ 20,000		\$ 20,000
Travel	\$ 23,500		\$ 23,500
<b>Component 3: Action Plan to design, promote and test alternative rural energy service business models</b>	<b>\$229,000</b>		<b>\$229,000</b>
International experts	\$112,500		\$112,500
Local experts	\$ 30,000		\$ 30,000
Equipment for testing business models	\$ 55,000		\$ 55,000
Travel	\$ 31,500		\$ 31,500
<b>Component 4: : Consolidation of a National Rural Energy Expansion Plan</b>	<b>\$ 79,000</b>		<b>\$ 79,000</b>
International experts	\$ 55,000		\$ 55,000
Local experts	\$ 10,000		\$ 10,000
Travel	\$ 14,000		\$ 14,000
<b>Other Direct Costs (Project Manager, Admin. &amp; Fin. Asst., office, office supplies, telecommunications)</b>	<b>\$110,000</b>	<b>\$150,000</b>	<b>\$260,000</b>
<b>Evaluations (mid-term and final)</b>	<b>\$ 26,500</b>		<b>\$ 26,500</b>
<b>Audit</b>	<b>\$ 20,000</b>		<b>\$ 20,000</b>
<b>Contingencies</b>	<b>\$ 10,500</b>		<b>\$ 10,500</b>
<b>Total</b>	<b>\$750,000</b>	<b>\$150,000</b>	<b>\$900,000</b>

### III. PROGRAM EXECUTION

#### A. The Executing Agency

- 3.1 The Executing Agency would be the Ministry of Economy (MINEC) through its Electric Power Division (DEE), which was created through the Acuerdo Ejecutivo N° 27 of January 11, 2001 for establishing electric power policies, including rural electrification.

<sup>9</sup> The counterpart resources would be in-kind contributions.

**B. Program execution and administration**

- 3.2 The Executing Agency (MINEC/DEE) would be responsible for: (a) maintaining adequate financial, accounting, and internal control systems that allow the identification of the sources and uses of project funds, provides documentation to verify transactions, and permits the timely preparation of financial statements and other financial reports; (b) submitting disbursement requests to the Bank and the corresponding justification of expenditures; and (c) maintaining an adequate disbursements supporting documentation filing system for eligible project expenditures.
- 3.3 The Executing Agency (MINEC/DEE) would manage day to day project implementation and oversee the project tasks, with technical support from appropriate public and private institutions. A Project Manager funded by this TC would be located at MINEC/DEE. Relevant regional and international expertise and experience would be accessed as needed.
- 3.4 Project reporting would be responsibility of the MINEC/DEE, which would prepare progress reports with support from the Project Manager, in which activities undertaken during the previous four months would be documented. These reports would be submitted to the IDB within 30 days after completion of each four-month period.
- 3.5 The Executing Agency shall submit to the Bank a final financial statement of expenditures regarding the use of the Bank's contribution, within 90 days after the date of last disbursement of the project. This statement shall be audited by a firm of independent public accountants acceptable to the Bank, based on the terms of reference previously approved by the Bank.

**C. Procurement of goods and services**

- 3.6 Goods and services, as well as consultant selection and hiring, would be procured and contracted in accordance with the corresponding usual Bank procedures.

**D. Execution and disbursement schedule**

- 3.7 The execution period would be 24 months and the disbursement period would be 30 months. These periods would be counted from the date the project agreement is signed by the GOES and the Bank.
- 3.8 The Bank would set up a Revolving Fund of 5% of the JSF contribution from which disbursements would be made.
- 3.9 The first disbursement is conditioned on the Executing Agency presenting a Plan of Execution fully agreed with the Project Team, with Terms of Reference (TOR), at least for the first 12 months of activities.

- 3.10 The total equipment expenditures for hardware and software under project component 2 and for testing of select business models under project component 3 would be limited to 10% of the JSF contribution (i.e., US\$75,000) and its financing would follow Bank's policies and procedures. Prior to disbursing funds for equipment purchase for the testing of select business models planned under project component 3, the Executing Agency would present acceptable evidence to the Bank of the commitment of third parties of an equivalent amount for equipment purchase. In this way, the TC contribution to equipment acquisition for purposes of testing business models under project component 3 would be limited to 50% of the resources actually spent in this specific task. If these disbursement conditions are not met, project resources planned for this activity could be used for hardware and software acquisitions under project component 2 and/or for hiring additional consulting services to complement other planned activities, upon the non-objection from the Bank.

#### **E. Monitoring and evaluation**

- 3.11 The project would engage the consulting services of third-party specialists acceptable to the Bank to conduct and present a complete project review within three months after the completion of the project, guided by the logical framework presented in Annex I.
- 3.12 In addition, due to the innovative character of some project activities, a mid-term evaluation would be carried out immediately before completion of the first year of activities with the objective of identifying necessary adjustments based on the actual progress of the project. The Executing Agency would also engage the consulting services of third-party specialists acceptable to the Bank to conduct this mid-term evaluation.

### **IV. VIABILITY AND RISKS**

#### **A. Social and Environmental impact**

- 4.1 Greater access to energy resources usually results in improved social benefits including lighting for education, improved health, public safety, sanitary services and new sources for income generation.
- 4.2 The use of renewable energy technology results in minimal environmental impact and can effectively mitigate the potential adverse effects from conventional energy sources. The alternatives to renewable energy are diesel fuel, gasoline, kerosene, car batteries and candles, all of which have a far more negative environmental impact.
- 4.3 Therefore, the project would not present significant direct or indirect environmental impacts. On the contrary, it would help reduce uncontrolled deforestation and the destruction of important carbon sinks caused by traditional

energy uses such as native wood or charcoal in low-efficiency stoves. It would also decrease emissions from poorly operating and maintained diesel generators and improve environmental and health standards by replacing the domestic use of kerosene, candles, and car batteries and related indoor emissions.

- 4.4 Nevertheless, the project will contemplate specific measures to assure that an environmental management plan is considered in developing and implementing the new mechanisms and strategies to be used to increase the energy coverage, and that all activities are environmentally feasible. In this regard, the environmental international consultant that would be hired to support the project development, would particularly insure that the National Rural Energy Expansion Plan to be developed in component 4 would include: (i) an environmental review of existing rural energy projects; (ii) an environmental sustainability evaluation of planned projects and the corresponding institutional framework; (iii) the consideration of environmental and social variables in the project selection criteria; and, (iv) environmental conclusions and findings as part of the recommendations and methodologies, to help prepare project components of the loan proposal.
- 4.5 The environmental measures presented above constitute the environmental management plan of the operation. The draft Plan of Execution includes the corresponding terms of reference, time schedule and budget for its implementation.

## **B. Beneficiaries**

- 4.6 Direct beneficiaries of this project would be the unserved targeted rural communities in El Salvador since they would benefit from improved access to clean energy services, specially the poor sector of the population that is concentrated in rural areas. They spend an important portion of their income and time to cover minimal subsistence needs receiving a low quality cooking and lighting services. It is frequent the use of traditional energy sources, such as firewood, candles, and animal or human labor and when access to kerosene and batteries is possible, the costs are even higher and basic needs are therefore compromised.
- 4.7 The provision of modern and sustainable clean energy services would replace the present low quality services and allow for improvements in family income reducing poverty, increasing educational and health levels, economic productivity, competitiveness, quality of life and an overall rural development, enabling the use of modern agriculture and other productive techniques.
- 4.8 Small and microenterprises would also benefit from the creation of new business markets for rural energy and for supporting services.

## **C. Risks**

- 4.9 The primary risks to the project are the innovative character of some of the project components that consider a relatively new approach for developing energy services market in the country; the disappointing results of other previous approaches employed to implement projects in this field that proved not to be sustainable; the small size of the initial market; and the uncertain willingness of the financial sector and of the private sector to adopt and finance new business schemes. Recent Bank experiences with similar projects in Brazil, as mentioned in paragraph 1.24, have shown a relatively slow disbursement schedule.
- 4.10 These risks shall be overcome by provision of customized technical assistance to most relevant stakeholders, to be flexibly designed and implemented based on a series of technical assessments, close interaction with the beneficiaries and market actors, and incorporation of experience of other regions.
- 4.11 The financial risk related to imposing specific disbursement conditions for the testing of businesses models is somewhat mitigated by the manner in which the Action Plan is proposed to be designed and implemented, that is, with independent (though linked) elements. If disbursement conditions of the testing element are not met, it would not significantly affect the effectiveness of the assistance provided by other elements and the corresponding resources would be directed to alternative applications, upon non-objection of the Bank.

## **V. RECOMMENDATION**

- 5.1 Gonzalo Arroyo (RE2/FI2), designated Team Leader for the project in reference, recommends the approval of this operation and the use of resources from the Japanese Special Fund totaling up to US\$750,000, in order to finance the project.

## **VI. CERTIFICATION**

- 6.1 I certify that resources from the Japanese Special Fund are available for up to US\$750,000 in order to finance the activities described and budgeted in the present Plan of Operations.

## **VI. APPROVAL**

- 7.1 The Chief of Finance and Basic Infrastructure Division (RE2/FI2) and the Country Division Chief (RE2/OD3) of the Regional Operations Department II approve the present Plan of Operations and the use of resources equivalent to US\$750,000 from the Japanese Special Fund in order to finance the project.