

## SAMPLE MEDIUM-SIZED PROJECT BRIEF - PARADOR

### PROJECT SUMMARY

PROJECT IDENTIFIERS	
1. Project name: <i>Parador Small Hydro Systems</i>	2. GEF Implementing Agency: <i>UNDP</i>
3. Country or countries in which the project is being implemented: <i>Parador</i>	4. Country eligibility: <i>Parador ratified climate change convention on August 27, 1996</i>
5. GEF focal area(s): <i>Climate change</i>	6. Operational program/Short-term measure: <i>OP6 - Promoting the adoption of renewable energy by removing barriers and reducing implementation costs</i>
7. Project linkage to national priorities, action plans, and programs: <i>Parador has passed a series of laws to promote rural development through funding of specific programs and the promotion of private/public enterprises in certain economic sectors, such as energy. Given the physical difficulty and economic cost of establishing electricity grid systems, the government is supporting efforts to build, operate, and maintain independent energy systems, with a particular emphasis on renewables</i>	
8. GEF national operational focal point and date of country endorsement: <i>Ministry of the Environment/Energy Conservation bureau</i>	
PROJECT OBJECTIVES AND ACTIVITIES	
9. Project rationale and objectives: <i>(1) Reduction of CO2 emissions;</i> <i>(2) Promoting innovative financing for renewable energy production</i> <i>(3) Strengthening knowledge about renewable energy</i>	Indicators: <i>(1) Lower CO2 emissions;</i> <i>(2) Increased investment in renewable energy technologies</i> <i>(3) Increased commitment to small hydro investment by all levels of government, local communities, and financial institutions</i>
10. Project outcomes: <i>(1) Investment in small hydro systems</i> <i>(2) Improved capacity for building, operating and maintaining renewable energy systems;</i> <i>(3) Replication of technologies throughout Parador.</i>	Indicators: <i>(1) Purchase of small hydro systems outside of Parador; in-country construction of small hydro</i> <i>(2) Fewer systems breakdowns; better maintenance of systems;</i> <i>(3) Investment in small hydro throughout rural communities in Parador.</i>
11. Project activities to achieve outcomes (including cost in US\$ or local currency of each activity): <i>(1) Establishing local electricity companies (\$250,000);</i> <i>(2) Financial sector mobilization and strengthening (\$700,000);</i> <i>(3) Training to strengthen local electricity companies (\$100,000).</i>	Indicators: <i>(1) Electricity companies set up in local communities; service/payment infrastructure established;</i> <i>(2) Barriers to investment in small hydro lowered; stimulation of public/private renewable energy enterprises in local communities;</i> <i>(3) In-country capacity to build, operate and maintain systems; replication of knowledge throughout Parador</i>
12. Estimated budget (in US\$ or local currency): PDF: <i>25,000</i> GEF: <i>800,000</i> Co-financing: <i>250,000 (150,000 Government of Parador; 100,000 bilateral aid)</i> TOTAL: <i>1,075,000</i>	

PROJECT SUMMARY/CONTINUED

INFORMATION ON INSTITUTION SUBMITTING PROJECT BRIEF	
13. Information on project proposer:	<i>Ministry of Economic Development/Department of Rural Communities</i>
14. Information on proposed executing agency (if different from above):	<i>Same as above</i>
15. Date of initial submission of project concept:	<i>December 7, 1996</i>
INFORMATION TO BE COMPLETED BY IMPLEMENTING AGENCY:	
16. Project identification number:	<i>RB-9703-0046</i>
17. Implementing Agency contact person:	<i>E. Woodhouse</i>
18. Project linkage to Implementing Agency program(s):	<i>Rural Electrification Project (1990-1995)</i>

## RATIONALE AND OBJECTIVES

The proposed activity is consistent with GEF operational program 6, "Promoting the adoption of renewable energy by removing barriers and reducing implementation costs." It would substitute for the development of a series of small, local utilities fueled by oil. GEF support is required to remove the identified barriers to the sustainable financing of small hydro-based electrification, build capacity to manage and sustain small hydro, and promote replication of the technology in rural communities throughout Parador.

Parador's government has been implementing a long-term strategy to decentralize a number of key economic activities, including rural electrification. A combination of factors -- including the isolation of rural communities (Parador is almost totally mountainous), the high physical difficulty and economic cost of establishing distribution networks for fossil fuels and expanding central grids to rural areas, and the government's desire to improve air quality -- has led the government to accord high priority to innovative renewable energy technologies. This is supported by government efforts to promote local financing for development activities.

This project is consistent with a GEF operational program. It includes the employment of decentralized, community level small hydro systems in some communities, capacity-building to ensure local communities can build and manage the small hydro facilities, and longer-term management of project financing to ensure sustainability. By itself, this project could reduce CO2 emissions by 20,000 tonnes in 20 years; associated projects could generate another 40,000 tonnes in potential CO2 emission reductions. By promoting a renewable energy technology, Parador is integrating protection of the global environment into national development activities.

## CURRENT SITUATION

Parador is a landlocked, mountainous republic (about 1.2 million square kilometers) located in the Western hemisphere. Its entire population of 7 million people live either in the high plateau region or in mountain valleys, where the average altitude is 3000 meters. Half the population lives in rural areas. Average per capita income is \$1000 per year, with urban dwellers earning about 25% more than rural dwellers. Given its topography and relatively low population density, towns and villages are relatively isolated, with almost all being linked by single lane mountain roads. There are few railway links.

Parador has a rich endowment of energy resources, including oil and gas, traditional fuels (fuelwood, bagasse, and animal waste), and hydroelectric power. About 95% of urban residents have access to electricity; only 25% of rural residents have electricity. Almost all the electricity is supplied by a combination of gas turbines and diesel engines; construction of electrical utilities adheres to national energy policies and programs.

Over the last few years, the government has passed a series of laws to decentralize the provision certain goods and services to (a) promote the more efficient management of certain economic activities, involving a mix of public and private sector enterprises and (b) to better serve rural communities. The affected industries and activities include energy, transportation, telecommunications, mining, agriculture, and education. The government channels one-quarter of government revenues to municipal governments for their exclusive use.

The government has also taken significant steps to promote sustainable development, including the passage of legislation to establish guidelines for environmental impact evaluations, protect the environment, conserve natural resources, and promote sustainable development. Parador has ratified several international conventions, including the UN Framework Convention on Climate Change.

### **EXPECTED PROJECT OUTCOMES, WITH UNDERLYING ASSUMPTIONS AND CONTEXT**

There is considerable interest and commitment to using renewable energy alternatives in Parador. Several demonstration projects, financed by state governments, bilateral aid agencies, and the private sector, have proven to be successful, but Parador has purchased on average only one small hydro system per year for the last few years. Because there are so few small hydro systems operating in Parador, few people know how to set up a system and properly maintain it. Financial institutions are unwilling to take risks on a relatively unknown technology. Most rural communities are familiar with running low-cost diesel fuel generators and have opted to build such units, in spite of the fact that they are inefficient and environmentally damaging.

The project is designed to remove financial and institutional barriers to investing several small hydro systems. These include buying down risk so that financial institutions will advance financing to local communities, helping offset high initial capital costs for purchasing the systems, and overcoming human resource limitations by training local people to build and maintain the system.

### **ACTIVITIES AND FINANCIAL INPUTS NEEDED TO ENABLE CHANGES**

In the baseline, there will be some investment in rural electrification, but the larger part of this investment will be in decentralized small diesel generating sets and in connection to the grid.

The global environmental objective is to reduce greenhouse gas emissions. The national objective is to increase rural electrification, decentralize financial decision-making for certain types of economic activities, including the energy sector, and develop capacity to install and maintain energy systems which are sustainable. The system boundary is the Paradoran energy sector.

Small hydro systems cost less to install than diesel generators, but they face significant barriers which affect the establishment and longer-term viability of such systems. Such barriers include: institutional; financial-institutional; and human resource limitation barriers.

In both the baseline and alternative cases, communities would have to overcome certain institutional barriers. For example, the new electricity law states that only public/private mixed enterprises can generate electricity above 300 kW. Such a requirement could preclude the establishment of small electricity companies in local communities. Yet, some form of profit-making enterprise is necessary to obtain financing, ensure long-term system maintenance, and qualify for government funding targeted to municipalities. The cost to establish and manage such local enterprises in both the baseline and alternative is US\$250,000.

Another barrier is the financial-institutional barrier, namely the long-standing policy of Parador's financial institutions to provide loans to only those enterprises which have a significant credit history; a large, existing capital base; and a limited set of known investment activities. High interest rates (20%), short payback periods (4 years) and strict collateral requirements (300% guarantees) are all deterrents to financing new enterprises, in particular those involving non-traditional technologies. The incremental cost of (a) strengthening financial institutions interested in rural electrification; (b) lengthening amortization periods for investment in small hydro; and (c) strengthening the coverage of financial institutions working on renewable energy in rural areas is US\$700,000.

Human resource limitations also are a significant barrier to rural electrification. There is little knowledge of how to build, operate, and maintain small hydro systems (at present, there are not technicians or managers). Most communities do not know how to organize or run a public/private electricity enterprise. The incremental cost of training skilled workers, semi-skilled workers, and company managers is US\$100,000.

In summary, the project involves the following activities:

- (1) Establishing local electricity companies (US\$250,000 co-financing);
- (2) Financial sector mobilization and strengthening to support investment in small hydro systems (US\$700,000 GEF financing); and
- (3) Training to strengthen local electricity companies (US\$100,000 GEF financing).

## **SUSTAINABILITY ANALYSIS AND RISK ASSESSMENT**

The project has strong government support, in particular the Ministries of Economic Development and of Energy. The Ministry of Energy will provide direct technical support for the small hydro systems and maintain a national-level database on renewable energy projects and programs. The Ministry of Economic Development will be responsible for coordinating the project in several villages and communities. The local UNDP resident representative will undertake to conduct regular reviews of the project and provide technical assistance for project-related equipment and services.

The project also has strong support in local communities, with commitment to provide a key portion of the equity in electricity supply systems and to cover operating and administrative costs of the service.

## **STAKEHOLDER INVOLVEMENT AND SOCIAL ASSESSMENT**

Key stakeholders include: the Ministries of Economic Development and of Energy; the local communities (1000 households) benefiting from the electrification project; and local electricity companies (in some of the communities).

Social assessments will analyze the costs and benefits of decentralized decision-making about the management of energy resources and the potential expansion of community services (such as enhanced potable and agricultural water supply, health services, schools, lighting of streets and market places) and economically productive activities (such as agriculture, artisan activities, and small industries). The local electricity companies will coordinate efforts to ensure that local residents understand how to use (and to not abuse) the energy systems, and that each end-user pays agreed-upon electricity usage fees.

The project will also support information dissemination activities across the country, with a particular focus on keeping energy specialists informed about key technical developments, as well as informing the public about how this technology solves practical problems.

#### INCREMENTAL COST MATRIX

	Baseline	Alternative	Increment (Alternative - Baseline)
Global environmental benefits	Emissions from diesel generators	Emissions from diesel generators avoided	Less CO2 emissions by Parador
Domestic benefits	Profitable rural electrification with diesel generators	Profitable rural electrification	Same benefits as with small hydro systems
Costs (US\$)	Baseline Costs	Alternative Costs	Incremental Costs
Activity 1: Establishing local electricity companies	250,000	250,000	- 0 -
Activity 2: Financial sector mobilization and strengthening	1,500,000	2,200,000	700,000
Activity 3: Training to strengthen local electricity companies	- 0 -	100,000	100,000

#### INCREMENTAL COST ANALYSIS

This project is substitutional; it seeks to replace conventional diesel generators (baseline) with small hydro systems (alternative) by lowering institutional, financial, and human resource barriers. Other costs include the establishment of local electricity companies and training of technical and managerial personnel, to ensure the viability and eventual replication of the project technology all over Parador.

#### PUBLIC INVOLVEMENT PLAN

### *Stakeholder identification*

Aside from GEF and UNDP, the key stakeholders are: the national government, local communities, local electricity companies, and sub-populations of vulnerable groups, such as women, indigenous communities, and poor households who are expected to benefit from the project.

### *Information dissemination*

Three local workshops were held with multisectoral representation from government, local community groups, and local electricity companies to explain the project to the affected households and communities. Village meetings, using focus groups and participatory rural appraisals were conducted over a period of two weeks.

The project structure allows for ongoing consultation with local communities. Feedback from community households will be done by the Ministry of Economic Development; it will provide semi-annual reports to the Project Management Unit on issues raised by community users.

### *Social and participation issues*

Social assessments will analyze the costs and benefits of decentralized decision-making about the management of energy resources, the participation of local households in designing and implementing the project activities, and the potential expansion of community services and economically productive activities. The assessment will also examine to what extent vulnerable groups (women, indigenous communities) have participated in developing the project.

## **BUDGET**

This budget includes the PDF; consultants and project staff; financing to enable local communities to purchase and install small hydro systems; training to establish and operate local electricity companies, and to use and maintain the systems; computers, tools and other project equipment; travel in the regions implementing the project (including by international consultants); and one evaluation mission after the project is implemented.

### **BUDGET (US\$)**

<b>Component</b>	<b>GEF</b>	<b>Other sources</b>	<b>Project total</b>
PDF:	25,000		25,000
Personnel:	320,000	100,000	420,000
Subcontracts:	300,000	115,000	415,000
Training:	100,000	10,000	110,000
Equipment:	20,000	5,000	25,000
Travel:	25,000	10,000	35,000
Evaluation mission(s):	20,000		20,000
Miscellaneous:	15,000	10,000	25,000
Project total (PDF+project costs):	825,000	250,000	1,075,000

### **PROJECT IMPLEMENTATION PLAN**

<b>DURATION OF PROJECT (IN MONTHS): 18 MONTHS</b>	
<b>ACTIVITIES</b>	<b>PROJECT-MONTHS</b>

	6	12	18	24	30	36	42
1. Establishing local electricity companies	___] (9 months)						
2. Financial sector mobilization and strengthening	_____] (12 months)						
3. Training to strengthen local electricity companies	___] (6 months)						

## MONITORING AND EVALUATION PLAN

The project will be monitored by the Ministry of Energy, the contracted project supervision firm, and by experts selected by UNDP. UNDP's extensive experience in monitoring large programs will be drawn upon to ensure that the project activities are carefully documented.

Data will be collected on the key performance indicators, including amount of investment in small hydro (and, where available, other renewable energy systems), implementation of rural electrification activities, CO2 emissions (before and after project implementation), technology replication, and strengthened training in and awareness of renewable energy technologies. Results of the monitoring and evaluation survey will be used to implement changes to the project, if necessary, and for future reference in the development of similar projects, as well as other renewable energy activities.

An initial amount of \$20,000 has been allocated for the project evaluation.

## TECHNICAL REVIEW

(To be attached upon receipt.)

## PROJECT CHECKLIST

PROJECT ACTIVITY CATEGORIES			
Biodiversity	Climate Change	International Waters	Ozone Depletion
Prot. area zoning/mgmt.:	Efficient prod. & distrib.:	Water body:	Monitoring:
Buffer zone development:	Efficient consumption:	Integrated land and water:	Country program:
Inventory/monitoring:	Solar:	Contaminant:	ODS phaseout:
Ecotourism:	Biomass:	Other:	Production:
Agro-biodiversity:	Wind:		Other:
Trust fund(s):	Hydro: x		
Benefit-sharing:	Geothermal:		
Other:	Fuel cells:		
	Other:		
TECHNICAL CATEGORIES			
Institution building: x			
Investments:			
Policy advice:			
Targeted research:			
Technical/management advice: x			
Technology transfer:			
Awareness/information/training: x			
Other:			

