PROJECT INFORMATION DOCUMENT (PID)
APPRAISAL STAGE

Report No.: AB1930

Project Name	Gas Seep Harvesting project
Region	EAST ASIA AND PACIFIC
Sector	Oil and gas (50%);Power (50%)
Project ID	P092055
Borrower(s)	TIMOR-LESTE
Implementing Agency	
Environment Category	[ ] A [ ] B [ ] C [ ] FI [X] TBD (to be determined)
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1. Country and Sector Background

Country Context

Timor-Leste, the world's newest country shares the island of Timor with the Indonesian province of East Nusa Tenggara. It has an area of 14,652 square kilometers and a population of around 925,000. Its post-conflict economy is still recovering from severe destruction of infrastructure which accompanied the Indonesian withdrawal in 1999. With a per capita GDP of under US$400, it is among the poorest countries in the world.

Currently more than 49,500 households have access to electricity, amounting to an overall electrification rate of 32 percent. Nearly half of these households are located in the capital, Dili, or its surrounding area. Only five percent of rural households have access to electricity. Power generation entirely depends on imported diesel oil, resulting in one of the most costly electricity supplies in the world. The high cost and limited access to electric power are key constraints to economic growth and poverty alleviation.

Sector Context

The power systems in Timor-Leste were owned and operated by Indonesia's national power corporation (PLN) up until 1999. Following the violence and destruction that preceded the departure of the Indonesians, much of the power system especially outside Dili was badly damaged. Most of PLN technical staff and management departed at this time. All data and consumer records were lost. Following the departure of the Indonesians, the United Nations Transitional Administration for East Timor (UNTAET) set up Electricidade de Timor-Leste (EDTL) from the remnants of the old power system with assistance of various donors such as Australia, Japan, Portugal and Norway. However, it was not until June, 2001 that EDTL's relationship to the East Timor Public Administration was legally defined, and not until August 2001—immediately prior to the end of the UN administration—that EDTL gained the right to charge Dili consumers for electricity. Until then, no customers paid for electricity.

Until recently, The Ministry of Transport, Communications and Public Works (MTCPW) administered the power sector. From July 1, 2005, responsibility for the power sector was transferred to the Ministry of Natural Resources, Minerals and Energy Policy (MNRMEP). EDTL is responsible for supply of electricity to Dili and 11 district capitals of which only Liquica is connected to Dili. The number of households with electricity has been estimated to be about 26,500 in Dili, about 11,700 in the districts outside Dili and about 5,150 in the sub-district towns. This means that the electrification rate in Dili is about 85% while in the districts and rural areas this is only 18% and 5% respectively. In Dili, electricity is generated by the 19 MW Comoro diesel power plant. Customers in the districts outside Dili are connected to one of the about 60 isolated small power grids with a total generation capacity (mainly using diesel) of about 16 MW. In addition there is a captive diesel generation capacity with large consumers of about 10 MW.

In Indonesian times, the electricity utility also had responsibility for power supply to sub-district load centers. However, under the United Nations Transitional Authority in Timor Leste (UNTAET) led emergency rehabilitation, it was decided to adopt a community management model for most of these systems. There are currently 39 sub-district systems with installed capacities ranging from 50kW to 900 kW that were rehabilitated by donors at a cost of about $6.8 million. It is estimated that about 7,000 households were connected by June 2005. Under the community management model, Village Management Committees (VMC) were responsible for collecting fees from consumers to pay for operational expenses and for deciding on hours of operation. EDTL was expected to provide maintenance support. It is now clear that these arrangements do not work. Only about 5 stations are currently operating on a daily basis, primarily because of a lack of funds to pay for fuel.

The Government has established four key principles to guide the development of the power sector. The first is that a sound administrative, legal, and regulatory framework for the power industry should be established. The second is that the vast majority of the population should have access to electricity. The third is that imported diesel fuel, currently the main fuel for power generation, should be replaced with domestic sources of energy. The fourth is that consumers should pay for the electricity services that they receive but that certain groups of consumers may require targeted subsidies.

The Government attaches a particularly high priority to the replacement of imported fuels with cheaper domestic alternatives. Fuel imports currently cost Timor-Leste over US$ 10 million annually for the power sector alone. This import bill places a large burden on the country's limited budgetary resources. Possible domestic alternatives to imported oil are a large hydropower project that has been studied at feasibility level and onshore oil and gas which, based on preliminary prospecting appears promising. On a smaller scale, over 30 gas seeps and some other renewable resources have been identified. The development of the large scale hydropower project and the onshore oil and gas require significant financial commitments and the establishment of legal and regulatory arrangements, such that the development of such projects is not possible in the short to medium term. In the interim, harvesting of gas offers the prospect of a much cheaper power supply to some rural population centers especially those in close proximity to the gas seeps. Another factor favoring the harvesting of gas is that the major

component of the gas seeping into the atmosphere is methane, a greenhouse gas (GHG) that is far more damaging than CO2. If this gas could be used for power generation, it would substantially reduce Timor-Leste's GHG emissions.

Government Initiatives in the Electricity Sector

Significant progress has been made in the power sector since the independence of Timor-Leste. In addition to the significant rehabilitation effort discussed above, the government has been able to:

- proceed with legal and regulatory development;
- develop a Power Sector Development Plan (PSDP) covering a 20 year period;
- develop a Sector Investment Plan (SIP) outlining priority investments for the short and medium term;
- employ a management contractor to operate EDTL; and
- improve collections for electricity bills through the installation of 24,000 pre-payment meters among EDTL customers in Dili (total customers: 26,500). The Norway Government will contribute an additional 11,000 pre-payment meters that will be distributed in Dili and other districts.

In its Sector Investment Program for Power Sector (SIPPS) published in April 2005, the GoTL explicitly listed the proposed Gas Seep Harvesting Project as one of the country's priority investments in power sector in the medium term. Also, there is substantial scope for replicating this demonstration project given that there are at least 30 gas seeps spread throughout the country.

2. Objectives

The development objective of the proposed project is demonstration of the technical and economic viability of harvesting gas seeps to produce efficient, reliable, and affordable power for isolated rural communities in south eastern part of Timor-Leste, while at the same time reducing GHG emissions.

3. Rationale for Bank Involvement

There is a strong rationale for Bank involvement based on its role in the development of the power sector and the priorities for its assistance to Timor-Leste. Since independence, the Bank has stepped up its assistance to the development of the power sector. The Bank's FY06-08 Country Assistance Strategy (CAS) includes the delivery of sustainable key services for growth and development as one of its three pillars for its lending and advisory programs in the country. Recognizing the key role of access to energy services for growth and poverty reduction, and taking into account the paucity of development partners in the energy sector, the CAS proposes the project as part of the Bank's assistance program in Timor-Leste's energy sector.

In addition, the Bank has extensive experience in providing rural electricity services using indigenous least cost energy resources including renewable energy. In particular, the Bank is

very strong in assisting host countries in establishing innovative and sustainable business models to run small rural power systems, which is extremely important and relevant to the situation in Timor-Leste.

4. Description

This project will be financed by a grant from the Trust Fund for East Timor (TFET) administered by IDA and it is proposed to be co-financed by a Medium Sized Project (MSP) GEF grant.

Expected outcomes

The proposed project would have three major outcomes. One would be the successful completion of the demonstration project at the Aliambata site and the resolution of major concerns and uncertainties regarding the sustainability of such an operation. The second would be detailed data on the viability of the five other gas sites and their potential for power generation and other uses. The third would be the operation of a viable institutional and financial model for sustainable operation of the small scaled gas-fired power systems, including the use of prepaid meters to reduce the financial risk. The combined outcomes would form a pre-investment package that would reduce the perceived risks that would likely prevent public or private investment in the development of the gas seeps for energy use.

Key performance indicators

- Electricity generated from gas seep harvesting in Aliambata gas site (kWh);
- The number of households newly connected to the power system using the gas from the Aliambata gas site and the number of households with improved electricity services as a result of connecting the Aliambata production plan to the existing Uatulari distribution system;
- Revenue collection rate;
- The net amount of GHG reduction resulting from the use of gas seeps for power generation and gas flaring (tones CO_2 equivalent); and
- The resources identified for the five other gas sites and a survey of potential markets.

Project components:

The project, two components:

Component A: **A demonstration project in Aliambata to demonstrate the technical feasibility and economic viability of gas seep for power generation in Timor-Leste**.

This component will be implemented by EDTL. Its major activities would include:

- Construction of a dual-fuel power plant at Aliambata, using the gas from the seeps and diesel oil for power generation. The capacity of the proposed power plant will be 3x125 kW. One of the generators would be new and the other two would be existing units operating on diesel oil and the proposed project would modify them to operate on

indigenous gas. All three generators would have engines that would automatically adjust the gas/diesel oil ratio, which would vary depending on gas quality, quantity available and local ambient conditions. However about 70-80 percent the fuel would come from gas. The 20-30 percent would come from diesel oil only to ensure the capability of the system to meet peak demand.

- Building of 20 kV distribution lines to connect the proposed power plant to the existing EDTL systems at Uatolari and Uatocarabau and to new consumers in the rural communities near the proposed power plant, including Aliambata, Babula and Borolalo. This connection would increase the availability of power supply at Uatulari and Uatucarabao from 6 hours to 24 hours per day. Overall, the gas-based power generators at Aliambata would supply electricity to 1,000 households currently connected to the power system and about 2,000 new households as well as some small commercial customers.

- Testing of a system of revenue collection using cost effective prepaid metering system to ensure the financial sustainability of the project. The system would apply the standard tariffs that EDTL charges and, as in the case of the Dili system, consumers would receive prepaid meters, free of charge. New customers also would pay EDTL standard connection charges, less the cost of the prepayment meter.

The total cost of this component is US$ 1.45 million.

Component B: National gas seep survey study and gas sampling and testing program: This component will be implemented by the Oil, Gas and Energy Directorate (OGED) of the Ministry of Natural Resources, Minerals and Energy Policy (MNRMEP) and it would include a national gas seep survey study and a gas sampling, testing program to test around five major gas seeps to be identified during the national survey, and a Feasibility Study for one or two sites. The total cost of this component is US$ 0.40 million.

5. Financing

Source:	($m.)
BORROWER	.00
SPECIAL FINANCING	.85
GEF	.60
Total	1.45

Note: final financing plan needs to be confirmed by GEF and the Government of Timor Leste.

6. Implementation

On behalf of the GoTL, the Ministry of Natural Resources, Minerals and Energy Policy (MNRMEP) will be the executing agency for the proposed project. MNRMEP has formally designated EDTL as the implementing agency of Component 1 and the Oil, Gas and Energy Directorate (OGED) as the implementing agency of Components 2 and 3. Both EDTL and OGED fall under the MNRMEP.

To implement the project, a special account under the Ministry of Planning and Finance (MOPF) will be established (a separate special count will be established for the GEF grant if necessary). Initially, an agreed amount will be transferred to the special account. Additional transfers can be requested by MOPF when the special account drops below an agreed level. EDTL and OGED can request MOPF to make payments directly to contractors for supply of goods, works and services. EDTL and OGED will keep appropriate records and will make sure that procurement and payment are in accordance with the World Bank rules and procedures.

7. Sustainability

Supporting OGED and EDTL to implement the project instead of establishing a new project entity would ensure the sustainability of the project. The training of district personnel in the operation and maintenance of the gas-based power facilities would promote the sustainability on the technical side and the use of prepaid meters and appropriate institutional arrangements would help ensure the financial viability of the power systems.

8. Lessons Learned from Past Operations in the Country/Sector

The proposed project will be successful if consumers actually pay for the delivered electricity. Because existing consumers used to pay very little under the Indonesian administration and nothing under UNTAET, payment of the full charges for electricity will constitute a major change. From other rural electrification projects in the region, and in the pre-payment meter installation program in Dili, it has been learned that such change is only possible with active involvement of the affected communities from the start. Therefore, extensive end-user awareness creation and consultation was carried out during preparation. This will be continued during implementation.

Another lesson learned from rural electrification projects in the region is that consumption based payments instead of a flat rate irrespective of consumption will increase awareness on the cost of electricity and encourage efficient use of electricity. A pre-paid system was selected to improve and simplify collection of fees. This is possible because suitable a low cost pre-paid meters are available on the market. These meters need to be installed at all connected households and a rural infrastructure for pre-payment needs to be established.

9. Safeguard Policies (including public consultation)

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment (OP/BP/GP 4.01)	[Y]	[ ]
Natural Habitats (OP/BP 4.04)	[ ]	[N]
Pest Management (OP 4.09)	[ ]	[N]
Cultural Property (OPN 11.03, being revised as OP 4.11)	[ ]	[N]
Involuntary Resettlement (OP/BP 4.12)	[ ]	[N]
Indigenous Peoples (OD 4.20, being revised as OP 4.10)	[ ]	[N]
Forests (OP/BP 4.36)	[ ]	[N]

Safety of Dams (OP/BP 4.37)	[ ]	[N]
Projects in Disputed Areas (OP/BP/GP 7.60)*	[ ]	[N]
Projects on International Waterways (OP/BP/GP 7.50)	[ ]	[N]

10. List of Factual Technical Documents

- Report on Gas Seep Sampling Study, SKM, 20 September, 2005
- Technical Study on Use of Natural Gas Seep, SKM, 26 September, 2005

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* *By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas*