

GUINEA  
RURAL ENERGY PROJECT

**Project Appraisal Document**

Africa Regional Office  
AFTEG

<p><b>Date:</b> August 27, 2001  <b>Country Manager/Director:</b> Mamadou Dia  <b>Project ID:</b> P042055  <b>Focal Area:</b> G</p>	<p><b>Team Leader:</b> Noureddine Bouzaher  <b>Sector Manager/Director:</b> M. Ananda Covindassamy  <b>Sector(s):</b> PP - Electric Power &amp; Other Energy Adjustment  <b>Theme(s):</b> Rural Development  <b>Poverty Targeted Intervention:</b> N</p>
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**Program Financing Data**

Loan       Credit       Grant       Guarantee       Other: This is a Learning and Innovation Loan (LIL)

**For Loans/Credits/Others:**

**Amount (US\$m):**  
 US\$5.0m IDA loan  
 US\$2.0m GEF grant

**Proposed Terms (IDA):** Standard Credit

**Grace period (years):** 10

**Commitment fee:** 0%

**Years to maturity:** 40

**Service charge:** 0.75%

Financing Plan (US\$m):	Source	Local	Foreign	Total
BORROWER		0.15	0.95	1.10
IDA		1.20	3.80	5.00
GLOBAL ENVIRONMENT FACILITY		0.00	2.00	2.00
LOCAL SOURCES OF BORROWING COUNTRY		0.00	8.90	8.90
<b>Total:</b>		1.35	15.65	17.00

**Borrower/Recipient:** REPUBLIC OF GUINEA

**Responsible agency:** BUREAU D'ELECTRIFICATION RURALE DÉCENTRALISÉE (BERD)

**Address:** Conakry

**Contact Person:** Directeur of BERD

**Other Agency(ies):**

Ministère de l'Hydraulique et de l'Energie

**Address:** Conakry

**Contact Person:** M. Abdoulaye Barry, Directeur National de l'Energie

**Tel:** 224-11 2148 21

**Fax:** 224-452559

**Email:** NA

<b>Estimated disbursements ( Bank FY/US\$m):</b>								
<b>FY</b>	2002	2003	2004	2005	2006			
<b>Annual</b>	0.50	1.00	2.00	1.00	0.50			
<b>Cumulative</b>	0.50	1.50	3.50	4.50	5.00			

**Project implementation period:** 5 years

**Expected effectiveness date:** 01/31/2002 **Expected closing date:** 12/31/2006

<b>Estimated disbursements ( GEF FY/US\$M):</b>								
<b>FY</b>	2002	2003	2004	2005	2006			
<b>Annual</b>		0.6	0.8	0.4	0.2			
<b>Cumulative</b>		0.6	1.4	1.8	2.0			

## A. Project Development Objective

### 1. Project development objective: (see Annex 1)

The key development objective of the Learning and Innovation Loan is to support the Government in implementing its strategy for increasing access to electricity in rural and peri-urban areas. In support of that objective, the Project seeks to:

- (a) Establish national mechanisms to deliver increased access to electricity and mobilize private sector financing for energy projects in rural communities;
- (b) Establish regulation and institutions to develop community-based, decentralized and affordable village electrification schemes;
- (c) Support independent commercial credit sources and technical support structures; and
- (d) Promote renewable energy technologies (RETs) whenever justified.

**The Project's global environmental objectives are to:**

- (a) Remove barriers to the adoption of RETs; and
- (b) Reduce greenhouse gas (GHG) emissions through the substitution of RETs for candles, kerosene, and other fossil fuels in rural energy applications.

### 2. Key performance indicators: (see Annex 1)

The key performance indicators for monitoring achievement of the project objectives are: (a) The decentralized electrification financing mechanism (*Fonds pour l'Electrification Rurale Décentralisée, FERD*) has a sustainable source of government financing and financial support from donors; (b) Some 20,000 households have electricity by the end of the project; (c) CO<sub>2</sub> emissions reduced by about 30,000 tons by the end of the project, as a result of photovoltaic, and micro-hydro electricity use; and (d) customer timely repayment rates as an indicator of customers' satisfaction with their SHS systems and the extent of cost recovery; (e) number of dealers as a measure of market development; and (f) individual loan collection rates, as a measure of the extent to which the project has been successful in establishing a sustainable delivery mechanism, do not fall below 75 % at the end of the project:

## B. Strategic Context

### 1. Sector-related Country Assistance Strategy (CAS) goal supported by the project: (see Annex 1)

**Document number:** 17183

**Date of latest CAS discussion:** 10/27/97

The key objectives of the CAS are to: (i) alleviate poverty, (ii) create an environment attractive to private sector investment; and (iii) employment generation. The project supports the main goal of improving the quality of life of low income population by increasing low income household access to affordable electricity services. Educational benefits would accrue through better lighting and household income can be supplemented by productive activities day or night. There are also health benefits through the electrification of clinics and better information through the use of telephones and other modern communication equipment. The CAS progress report (report number 22451)

which was discussed on 07/24/01 also emphasized the need for rural energy as part of the Government's strategy to fight poverty.

The project is a community driven development relying on local initiative to mobilize private sector investment by (i) establishing a new rural electrification (RE) program, with strong incentives for private sector involvement, and (iii) removing cost and administrative barriers to the development of renewable energy sources. The private delivery mechanism adopted by the project is similar to that used in other sectors and particularly in the water supply sector.

### **1a. Global Operational strategy/Program objective addressed by the project:**

The proposed project is fully consistent with GEF Operational Program Number 6 (OP 6); *Climate Change: Promoting the Adoption of Renewable Energy by Removing Barriers and Reducing Implementation Costs*. Removal of barriers will make it attractive for the private sector to start investing in decentralized rural electrification schemes, and operate these on a fully commercial basis. Specifically, the Project would (i) initially buy down the relatively high investment costs of RETs; (ii) raise public awareness of the advantages of using RETs, and (iii) reduce initial high transaction costs that result from lack of market knowledge, small market size, and dispersed consumer base. It is expected that by completion, the Project would have demonstrated RETs to be viable business opportunity in Guinea.

### **2. Main sector issues and Government strategy:**

Electric power facilities in Guinea consist of a number of separate isolated systems. The power company, SOGEL, supplies the capital, Conakry, and a number of smaller towns. Mining companies and some other large consumers generate electricity for their own use. In addition there are 24 small diesel and run-of-the-river hydro stations in several towns whose operation is sporadic, inefficient and unreliable. In most rural areas, however, there is no electricity.

ENELGUI is the holding company of all public power sector assets. System operations have been contracted out for 10 years to a foreign private operator, SOGEL, under an "Affermage" contract. SOGEL's mandate is to operate in urban areas, leaving rural and peri-urban areas essentially without service.

The quality of urban electricity service has improved significantly and consumption increased substantially although mainly through illegal connections. The Government's tariff policy allows operators a reasonable return on net revalued fixed assets. Tariffs are automatically adjusted when objective parameters show significant changes in the cost of operation. Tariffs are also fairly high but because of rampant fraud, the financial situation of the sector is disastrous, despite repeated attempts to address this situation (addenda 1 and 2 to the leasing agreement), SOGEL has experienced difficulties in balancing its accounts and ENELGUI does not have adequate resources to properly carry out the maintenance and expansion of the sector facilities. The *affermage* (or lease) agreement has fallen through because of disagreements between SOGEL and the Government over tariff adjustments and other cost recovery measures that could not be resolved to the satisfaction of the private partner. The government has reiterated its commitment to reform and to launch a new reform process in the power sector. The proposed LIL that focus essentially on the rural areas is not affected by the problems affecting the formal sector.

Guinea had a population estimated at 6.8 millions in 1996, of which 70 percent (about 435,000 households equivalent) live in rural areas. Overall, less than 5% of the population has access to electricity: about 35% of urban households (the capital and large prefectures) and less than 1% of

rural households (district or “*sous-prefectures*” level localities). Rural households have no prospects of receiving electricity services based on conventional solutions in the foreseeable future. In peri-urban areas, there are still thousands of potential consumers who are not connected to the grid for technical and/or financial reasons, who use batteries to run their TVs and lights.

Private pico generators are being used by few wealthy and small businesses. At least 10 different types of generators below 5 kVA can be found in Conakry's hardware stores. Small distribution systems at the sous-prefecture level have been observed: entrepreneurs were able to arrange financing mostly for second hand diesel generators and low-cost distribution networks. Consumers are mainly boutiques and small businesses. These operators generally do not provide electricity to households. There are no statistics showing how many of these grids exist and how many of the isolated network operators there are. However, with better sector regulation and some technical and financial assistance, this market opportunity can be developed.

### **Government Strategy**

The Government's strategy for the power sector that was endorsed by the Bank, is aimed at:

- (a) Ensuring a reliable electricity supply to support economic activities;
- (b) Adopting economic tariff policies;
- (c) Mobilizing private sector financing for the production, transmission, and distribution of electricity;
- (d) Promoting decentralized electricity supply based on the use of new technologies ; and
- (e) Limiting the Government's activities to policy making and regulation of the energy sector.

In June 1998, the Government promulgated Law 97/012/AN, which allows the financing, construction, management, and operation of infrastructure assets by the private sector. With the assistance of the Energy Sector Management Assistance Program (ESMAP), the GoG has also conducted several surveys to develop a framework for a national decentralized electrification program. The results of these surveys are similar to what was found in other West African countries:

- (a) Rural consumers and institutions only use small quantities of electricity for lighting, communication, water pumping, and refrigeration. Typically, a rural family uses the equivalent of 20 kWh/month, a load that is too small to justify grid extension over a long distance. Currently, households not connected to the national grid use kerosene lamps and dry cell batteries for radios, flash lights, etc., and pay a fairly significant amount for this use (\$5-8 per month). If one considers Guinea 1998 GNP per capita of US\$540, this expenditure on fuels represents between 11 and 17% of households' average annual income; and,
- (b) individual systems (SHS and solar lanterns) or collective systems (pico-hydro - systems with a capacity not exceeding 100 kW, and hybrid diesel-generator sets) could provide an intermediate solution that would be affordable for large parts of the peri-urban and rural households.

Taking into account the findings of the surveys, the Government has adopted a deregulated approach to Decentralized Rural Electrification (DRE). This was reflected in a sector policy letter that calls for:

- (a) Establishing a regulatory framework for the DRE (applying to power plants with up to 250 kW of installed capacity), including the liberalization of tariffs on DRE delivery and services, and the elimination of import taxes and VAT on specific DRE equipment;
- (b) Creating a small rural electrification office *Bureau d'Electrification Rurale Décentralisée (BERD)*, that is administratively autonomous and technically independent; and
- (c) Creating a financing mechanism (*Fonds d'Electrification Rurale Décentralisée*), to be managed by a local financial institution.

The Government has demonstrated its willingness and commitment to decentralized electrification and to address the required reform issues of the power sector head-on. The Government has in particular demonstrated its commitment to the project by requesting and obtaining a Project Preparation Facility (PPF) to help prepare the project. Furthermore, it committed itself to create the regulatory and the institutional environment (establish the Bureau d'Electrification Rurale Décentralisée, BERD) conducive to private participation.

### **3. Learning and Development issues to be addressed by the project:**

A stand-alone sector investment operation was initially envisaged. However, because of the complexity of the rural electrification issues and lack of technical, financial and institutional experience in this sector in Guinea, it was decided to first carry out a Learning and Innovation Loan. This will allow time to explore all issues and to gain more experience for the future development of sustainable mechanisms. Scaling up rural electrification services to the national level would therefore be addressed in a follow-up operation.

The main issues to be dealt with concern the barriers that need to be removed before private investors can effectively provide rural and peri-urban energy services. This LIL concerns itself with four main barriers: (1) lack of technical capacity to develop and implement decentralized electrification activities; (2) lack of capacity to finance such activities; (3) prospective beneficiaries are unaware of the opportunities and alternatives for receiving such services; and (4) the high up-front cost of rural electrification equipment, and particularly of renewable energy technologies (RETs).

Lessons to be learned include: (i) how to create as quickly as possible sufficient technical capacity to develop and implement rural electrification projects, and how to make this a sustainable process; (ii) how to increase the participation of local commercial banks in the financing of private rural electrification projects, what levels of subsidy to apply over time, and how to make this a sustainable process (payment terms for energy services/products in case of SHS e.g. outright or credit based sales, pay-for-service. How will credit terms impact on increased access); (iii) how to best inform the rural population of the opportunities created to develop rural electrification projects, and how to best channel any demand through potential providers; and (iv) appropriate regulation/rules for decentralized supplies; terms and condition of licenses (including

'non-exclusive' licenses) and how these could be issued/administered.

The need to develop institutions for decentralized rural electrification as well as a need to create a minimum level of technical and financial capacity before launching a wider effort provide a justification for a LIL.

**4. Learning and innovation expectations:**

- Economic       Technical       Social       Participation
- Financial       Institutional       Environmental       Other

It is expected that this LIL will pave the way for developing institutions allowing for scaling-up rural access to electricity in Guinea. To this effect, it will put in place mechanisms that, by the end of the project, will have demonstrated their effectiveness in providing rural and decentralized electrification services. This should provide sufficient information and experience to launch a larger program. The project will establish and test how best to use private participation in decentralized rural electrification (DRE), develop financing mechanisms, raise awareness, and reduce the up-front cost of DRE equipment.

**C. Project Description Summary**

**1. Project components** (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown):

The proposed Project will supply electricity services to some 20,000 households in more than 75 villages through photovoltaic, pico-hydro, and diesel (or hybrid) systems. These systems will be paid for by the beneficiaries through a financing mechanism that will be managed by a local commercial bank (BICIGUI). Environmental benefits will result from the use of renewable energy technologies. The three components of the decentralized rural electrification LIL to overcome the barriers to more widespread use of DRE activities, are:

- (a) **Capacity and Rural Infrastructure Building.** Technical assistance will be provided to BERD that will include staff training, monitoring and evaluation and, dissemination and replication activities. Private providers will be assisted in the identification and setting up of electricity service delivery in rural areas under concession arrangements. They will also be trained in installation and maintenance of equipment. Village associations will be encouraged to organize service delivery through an operator.
- (b) **Financing Mechanism.** A *Fonds d'Electrification Rurale Decentralisée* (FERD) will be put in place to respond to the lack of long-term credit and the high up-front cost of renewable energy systems. Access to credit by providers of decentralized electrification services (PDESs) will be effected through the following: (a) a line of credit that would provide them with the necessary resources and incentives to undertake RE operations. This line of credit would also facilitate access to capital to a sufficiently large number of PDESs and thus promote competition and emulation in the sector; and (b) the establishment of a DRE Grant Facility to promote DRE activities. The facility would provide: (i) a subsidy to help fund the feasibility study of PDESs projects. To show his/her commitment, the PDES will pay a retainer in a bank account at BICIGUI that will go toward his/her contribution to the project, if his/her project is accepted. If the project is rejected, the full amount deposited is reimbursed; (ii) a reimbursable advance at no interest. This is a subsidy to the PDES. It is variable and will depend on the technology, power delivered, geographical setting, the quality of the borrower, etc. Other criteria

may be added and/or the current ones modified or changed by BERD. The eligibility criteria are defined in the manual of procedures of BERD; and (iii) a subsidy of 50% to the individual consumer for house wiring; and

- (c) **Project Coordination and Management** The project will support and strengthen the operation and the capacity of BERD, to coordinate, supervise and monitor the execution of the project through the provision of training of its personnel, studies, advisory services, and the acquisition of vehicles and equipment.

Private local investors and beneficiaries are expected to contribute an amount of about US\$8.9 million.

Component	Sector	Indicative Costs (US\$M)	% of Total	Bank financing (US\$M)	% of Bank financing	GEF financing (US\$M)	% of GEF financing
1. Capacity & Rural Infrastructure Building; technical assistance to promote and evaluate DRE proposals, monitoring and evaluation of the activities. Assistance to BERD for dissemination/replication, and staff training. Training of PDES staff. Desing of simple environmental guidelines for safe handling and disposal of waste (engine oil, batteries, etc.)	Other Power & Energy Conversion	3.00	17.6	1.00	20.0	0.50	25.0
2. Financing mechanism and technical and financial assistance to implement the five- year DRE program.		12.00	70.6	2.00	40.0	1.50	75.0
3. Project coordination and management.		2.00	11.8	2.00	40.0	0.00	0.0
<b>Total Project Costs</b>		17.00	100.0	5.00	100.0	2.00	100.0
<b>Total Financing Required</b>		17.00	100.0	5.00	100.0	2.00	100.0

## 2. Institutional and implementation arrangements:

A summary of the implementation arrangement is presented below:

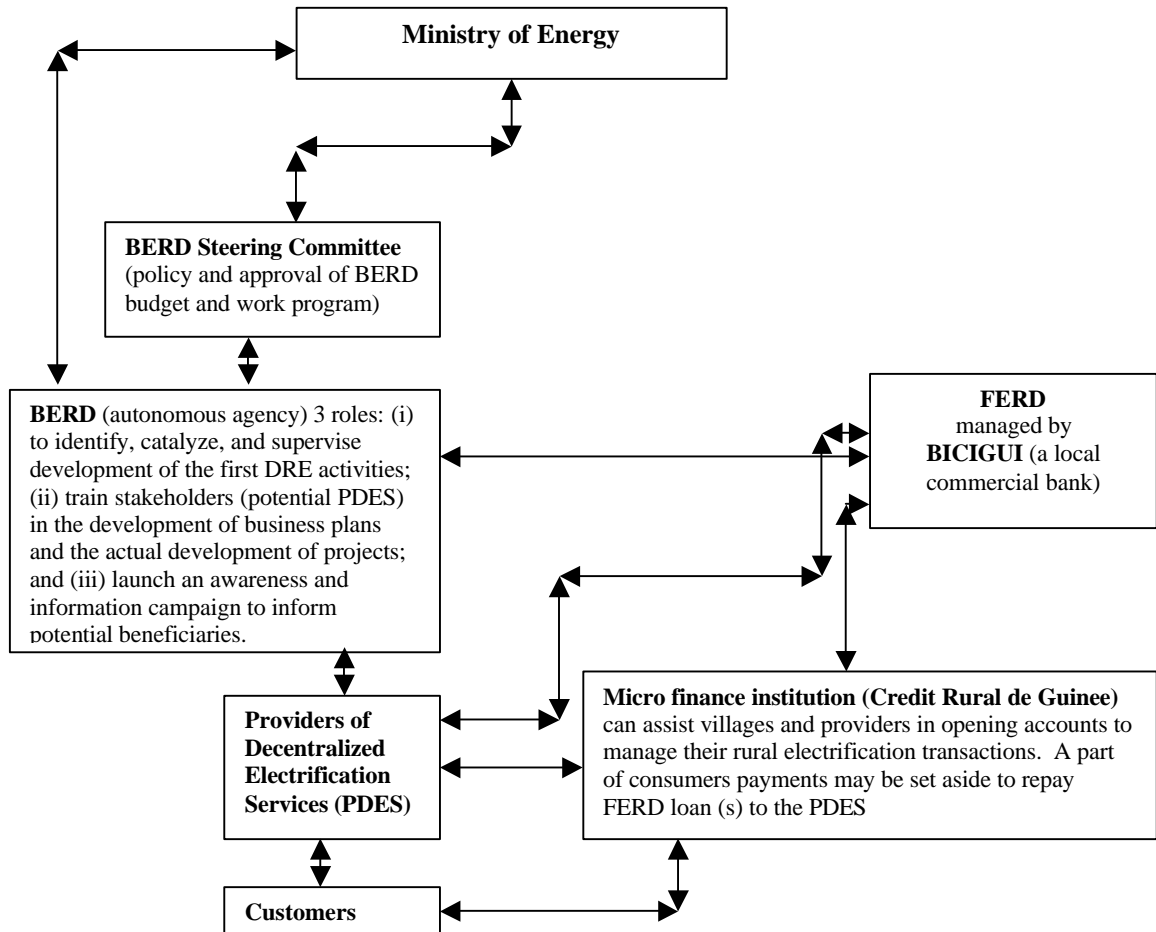
**Implementation period:** 5 years: 2002-2006

**Executing agencies:** Ministry of Energy, BERD and BICIGUI

**Project Management:** The proposed institutional arrangements rely on: (i) the "*Bureau d'Electrification Rurale Décentralisée*" (BERD); (ii) the financing mechanism (FERD) managed by a private commercial bank; and (iii) a micro finance institution that may assist villages and providers in opening accounts to manage their rural electrification transactions. Other important players are MHE and the private sector. The project will be implemented over a five-year period. Since this is a Learning and Innovation Loan operation, it is expected that a follow-up operation



will be developed to expand rural electrification services on a wider scale. The following diagram illustrates the relationships of the various DRE actors. The Institutional responsibilities are detailed in Annex 2.



**A. The "Bureau d'Electrification Rurale Décentralisée" (BERD).** The BERD will be an autonomous entity. Its role will be three-fold: (i) manage the project and identify, catalyze, and supervise development of the first DRE activities; (ii) train stakeholders (potential PDES) in the development of business plans and the actual development of projects; and (iii) launch an awareness and information campaign to inform potential beneficiaries. It is expected that BERD will ultimately be replaced by the *Agence Guinéenne d'Electrification Rurale (AGER)*.

A Steering Committee will be created to oversee BERD's functioning and will act as its Board.

**The Steering Committee** (*Comité de Pilotage, CP*) will comprise at least six representatives: the National Director of Energy (Chairman), SOGEL (or its successor), the commercial bank in charge of the FERD (BICI-GUI), the BERD manager, and representatives of

private firms (preferably a representative of an association of firms such as solar importers, PDES, etc). The CP will approve BERD's annual work program and budget. Day to day operations are the responsibility of the management of BERD.

Only one commercial bank has expressed an interest (BICI-GUI, *Banque Internationale pour le Commerce et l'Industrie de Guinée*) in financing DRE activities. It should be noted that other commercial banks in Guinea have not shown an interest in becoming involved at this time. Existing experience with rural credit will be used as much as possible, in particular that of the CRG (*Crédit Rural de Guinée*) and the Bank's water project (PACV, *Projet d'Appui aux Communautés Villageoises*).

Support to PDESs: BERD would contract with specialized non-governmental and local organizations to provide training to beneficiary PDESs. BERD would, either directly or through a contract with specialized organizations, provide assistance to PDESs in preparing project and grant applications. BERD would be responsible for assuring that the specialized organizations that are hired are qualified, verifying that their work program is consistent with the project output, monitoring the interventions and evaluating their effectiveness.

**B. A decentralized rural electrification financing mechanism (FERD):** The FERD will be managed by a commercial bank with funds that would come from the general budget, bilateral/multilateral donors, and at a later date, with improvements and the privatization of the power sector, from a kWh levy, – to provide “smart” subsidies . This ensures the long term sustainability of the financing mechanism which will be the key instrument for achieving an equitable access to electricity. The commercial financial sector would normally be expected to provide debt financing on commercial terms for RE investments. However, given the current status of Guinea’s financial sector, this will only happen gradually. Nevertheless, PDESs would be required to contribute significantly to the financing of their project which they could either borrow from commercial lending institutions or contribute out of their own funds. The project funds would therefore not supplant the financial sector in providing financing for RE activities.

The line of credit under this component would be made available to eligible PDESs through BICIGUI. The line of credit would be tied to DRE activities. The participating PDESs would apply for the loans through the usual procedures of BICIGUI, which would review these applications using prevailing standard policies and procedures. The signing of a subsidiary loan agreement between BICIGUI and the government defining the functions and responsibilities of BICIGUI, under terms and conditions satisfactory to IDA, would be a condition of effectiveness of the credit. The relationship between IDA and BICIGUI would be defined in a separate agreement. BICIGUI would maintain a lending policy, i.e. prudential and solvency, norms, quality of loan analysis, and distribution of risks, acceptable to the Association and BERD, and suitable procedures, as well as an adequate number of suitably qualified staff to enable it to effectively appraise the financial feasibility of DRE activities for which PDESs would be applying for sub-loans.

Access to the line of credit by PDESs would be on a declining basis, in order to attract PDESs who have the willingness and are in a position to mobilize resources to finance DRE activities

beyond the lifetime of the project. Hence the contribution of individual PDESs to the cost of their projects that are funded under the line of credit would increase with the frequency of their use of the line of credit. In other words, PDESs would contribute a minimum of 30% of the cost of their first project under the line of credit, 45% for the second, and 60% of the cost of the third. The minimum contribution to the cost of the fourth and any subsequent project would be 75%. The use of the frequency of utilization as the basis for calculating the level of contribution by PDESs to the cost of their projects ensures that the contribution does not represent a significant barrier to entry. This is because first time entrants face the same conditions (i.e. 30% contribution), regardless of whether they start their project in the first, second, etc. year of the project. This would encourage competition as it would keep the door open for new entrants until the end of the project.

In order to buy down the high cost of renewable technologies, grants would be provided under the DRE Grant Facility to PDESs to encourage their use and dissemination. The facility will also provide a subsidy to individual subscribers to lower the high up-front cost of house wiring. The adoption by the Ministry of Energy of a manual of procedures detailing the criteria, procedures and guidelines applicable to the provision of such grants is a condition of effectiveness.

Since the current rate of rural electrification in Guinea is low, it is expected that it will be many years before a majority of the rural population gets access to electricity; the implication is that there is likely to be a need for subsidies for a long time to come, particularly as rural electrification spreads to more remote areas. In this situation it is essential that the subsidy system contains a mechanism for getting high returns from the subsidies while minimizing the overall need for subsidies.

The main principles underlying the calculation and payment of subsidies are:

- **Subsidies should be well-targeted for the intended beneficiaries.** The overall objective of a subsidy support is to assist rural transformation, and the specific objectives, in order of importance, are:

- Satisfy the productive demand for energy (economic development objective to reduce income poverty)
- Satisfy the public demand for electrification (social development impact of poverty reduction)
- Satisfy the need for household lighting and other essential uses (household welfare)

Further, for purposes of geographic targeting, the non-electrified areas will be divided into:

- peri-urban, where the needs for subsidies is relatively low,
- rural, where the need for subsidies is higher, and these higher subsidy rates signal the Government's commitment to regional equity.

- **The subsidies system should include a built-in mechanism for that evoke an efficient supply response.** A well-established system for reducing the need for subsidies is a process of

“bidding for minimum subsidies, given fixed tariff levels.” Under this system, the tariffs to be paid by consumers are pre-determined, and potential project developers are required to specify the level of subsidies they would need to undertake the project, with the lowest qualified bidder being the winner. A variant of this system– “bidding minimum tariff, given fixed subsidy levels” – is more appropriate for Guinea. In this variant, the level of subsidy is pre-determined, and potential project developers are required to specify the level of average tariff they would charge, with the lowest qualified being the winner. This system makes it easier to determine the overall subsidy budget required in a particular year or longer. In the initial stages of the project where the objective is to demonstrate that decentralized rural electrification is a viable activity and to test various institutional and financial arrangements, the level of the subsidy would be determined on a case-by-case basis. In a follow-up scaled-up version of this project a bidding process for DRE concessions will be introduced .

- **The procedure for calculating subsidies payable for particular projects should be objective and transparent.** The calculation of subsidies payable for particular projects will be based on an assessment of the capital costs of the project, with alternate mechanisms – principally the average cost per connection – to provide a check on the level of subsidies payable.
- **The manner of payment of subsidies should promote performance/output, instead of being linked to inputs.** This type of linkage of payments directly supports the overall goal of the RE program. It also avoids the problem that when subsidies are linked to inputs, this often sends wrong signals to developers about the relative prices of various inputs. For example, “soft” interest loans linked to input purchases tend to encourage a capital-intensive approach, such as maintaining higher levels of inventories.
- **Subsidies should facilitate financing of RE projects.** Subsidies paid at project initiation or during project construction function as equity, in the sense that they reduce the need for the developer’s own equity and/or debt finance from commercial lenders. 70% are paid by the time of project commissioning, while the remaining 30% are paid over the first three years, provided that the project performance meets agreed output criteria.

The FERD will:

- (a) Demonstrate, over time, the feasibility of financing rural electrification activities, and create a momentum among commercial banks to provide financing for such activities.
- (b) Provide two different financial contributions: (i) a medium-term commercial credit (maximum five years) at prevailing "best" interest rates. It is expected that the interest rate will be around 14 percent, excluding tax. This part may initially be financed from FERD, but should gradually become the contribution of local banks; and, (ii) a targeted subsidy to buy down the high first cost of renewable energy technologies.

To obtain a financial contribution under the FERD, PDESs must submit business proposals to

BERD in two phases:

**a)** First, the PDES will submit project ideas accompanied by a draft business plan. BERD will pre-assess the feasibility of the proposal and indicate the possible level of financial contribution (medium-term concessional loan plus a subsidy if applicable). If the stakeholders agree to continue with the project, they have to prepare a final business proposal. BERD may assist in this preparation with the financing of studies.

**b)** Second, once BERD reviewed the final business proposal, BICIGUI will evaluate the credit worthiness of the candidate. Before the project can become active, the PDES will need to obtain financial closure with the bank of his choice and/or finance his share of the investment with his own money. Once financial closure is obtained, BERD will ask DNE to sign the concession contract covering the project.

The regulatory rules and procedures have not yet been tested, and their feasibility will need to be verified. In general, most regulations only apply to the urban electricity supply, simply because there is no significant rural supply. The *Direction Nationale de l'Energie* agrees that:

- (a) Priorities of rural electrification: specific projects will be developed on a purely commercial basis, according to business opportunities as seen by the PDES. DNE or any other government agency will not be involved in establishing priorities;
- (b) Sound electricity tariffs: to be set by the PDES, reflecting economic costs. Initially, however, the tariff proposal will have to be accepted by BERD, at the time of business plan analysis, in order for the PDES to benefit from the financing mechanism advantages. Over time, tariff regulation will be done by a regulatory agency;
- (c) No State intervention on PDES selection: this will be left to the appreciation of BERD and the commercial banks financing the PDES's projects; and
- (d) The responsibilities of the Government are to: (a) define the area where DRE concessions can be promoted (urban/peri-urban, geographical, level of installed power), (b) define the rules applicable to the PDES, in terms of regulations and contracting; (c) develop fiscal incentives and provide technical and financial support, and (d) once BERD approves a financial contribution to the closure of a particular subproject, MHE will automatically award the concession.

**C. Micro finance institutions** could assist PDES and villages in establishing appropriate payment procedures, if they wish to. Initially BERD will work only with *Crédit Rural de Guinée* (CRG) although over time other MFIs may be associated. CRG assisted in the preparation of the project, and was the only MFI that has, from the start, shown a keen interest in rural electrification. CRG will *not* provide funds, but it will manage different accounts that are opened at its local branches by villages with a DRE activity - if desired by the PDES. Villages, if they wish to, can organize themselves in many ways. They may, for example, form a new association or use an existing one, such as a water committee, to open an "electricity account" at CRG. Once

electricity service starts, part of consumers payments may serve to reimburse the loan(s) FERD has made to the PDES. Thus, the MFI only serves as a channel for the payments from the end-user to the PDES and FERD.

**D. Ministère de l'Hydraulique et de l'Energie (MHE)** main role, through its *Direction Nationale de l'Energie* (DNE) is to ensure that a proper regulatory framework and sector policies exist, to evaluate their impact and, as necessary, fine-tune these. MHE will create BERD and its Steering Committee and, award DRE concessions for each project on a non-objection basis, on BERD's recommendation. Finally, it should assist in developing mechanisms that will make decentralized rural electrification a sustainable activity, including a search for funds from donors and a surcharge on electricity consumption.

**E. Private enterprises, NGO's, and local community organizations.** There are several possible ways for the private sector, NGOs and local community organizations to get involved: (i) PDESs; (ii) investors who contract service delivery out to a technical operator; (iii) villages that enter directly into a contract with a technical operator on their behalf; (iv) an NGO that takes the initiative to arrange for service delivery. For example, The French Volunteers for Progress (AFVP) have expressed an interest in submitting projects, other NGOs may be interested as well..

**F. Private management:** the development and operation of the DRE schemes are entirely left to the private sector, in terms of ownership and management. This is an important political option of the Government included in the "*Lettre de Politique Sectorielle de l'Electrification Décentralisée*" and confirmed by Law 97/012/AN "*autorisant le Financement, la Construction, l'Exploitation, l'Entretien et le Transfert d'Infrastructures de Développement par le Secteur Privé*" (June 1. 1998). The chosen formula for private participation is the Build-, Own- and Operate (BOO), which is regulated by the 1998 BOT Law. This includes the creation of small private utilities in peri-urban and rural areas. This approach allows the possibility that a local association agrees to take over the operation after installation, or even developing the whole activity itself, as long as it abides by the rules.

**G. Tariffs:** tariffs evidently are crucial for the efficient development of DRE on a commercial basis. GoG has decided not to interfere in tariff setting, and this is an important starting point. Tariffs will be based on the business plans submitted by the PDES. BERD will verify that these tariffs are appropriate in terms of economic and financial criteria and such as to provide a reasonable return to the investor. As a proof of its commitment to the objectives of the project, the GoG has decided to promote DRE by exempting DRE services and equipment from VAT and/or import taxes.

**H. Primary target group and duration of concessions:** In order to mobilize private investment for decentralized rural electrification there is a need to establish an attractive investment environment. A concession is a time bound arrangement whereby a PDES commits to provide certain services in a certain geographical area (for example, 1- 20 villages). It is the project's goal to develop as many village level concessions as possible. Concessions of 10 years appear a lower limit, for three reasons:

- (a) The stakeholder needs a prospect of a sufficient return on its investment, and this requires a long enough period;
- (b) 10 years provide a reasonable goal to have a PDES reinvest in the project area; he needs to have some secure footing in his business before he starts to expand;
- (c) 10-15 years duration is also the average lifetime of DRE equipment.

Each project will give rise to a concession to serve a given area. The concession is a contract between MHE and the provider and transfers the rights for providing electricity services in the project area to the PDES. This is done to give a sense of certainty to the providers, who otherwise may not be interested in investing in a particular area. Given the focus of the project, priority would initially be accorded to concessions in the rural areas. However, in the event these do not provide sufficient incentives to attract private investors, peri-urban areas could be included, as necessary, in the concession to be served by the PDES.

**I. DRE and Conventional Electrification:** the geographical frontier between the program of decentralized rural electrification (PDRE) and conventional electrification has been defined by the DNE as follows:

- (a) conventional electrification through extension of existing grids (globally Conakry-Kindia, Kinkon and Tinkisso grids), as well as all prefecture capitals; electrification in these zones is delegated to SOGEL (or its successor),
- (b) PDRE concerns *Sous-Préfectures* and other similarly-sized localities without perspective of being electrified by grid extension within 10-15 years;
- (c) those places where DRE appears to be easiest and more profitable, essentially in terms of customers willingness to pay, number of potential customers, level of income, and potential use of electricity for productive purposes.

**J. Choice of solution at the village level.** The PDESs will provide energy services rather than sell electricity. Households will pay a fixed monthly fee that is negotiated up-front.

The choice of technology is at the discretion of the beneficiaries. Since they will have to bear the cost of the energy they consume. There are two solutions actively promoted under the project: (i) solar home systems (photovoltaic electricity) in case of low-density areas where it is not economic to develop a small distribution network. The choice of the size is at the discretion of the consumer; and (ii) community based generation with small distribution networks, mainly pico-hydro. Again, the choice of technology and size are left to the community concerned to decide. Under ESMAP studies, six projects were developed. Ensuing discussions with villagers showed the feasibility of the suggested approach as well as the explicitly expressed willingness to participate in the realization of such projects.

Accounting, financial reporting, and auditing arrangements: BERD will be responsible for project

financial management including the preparation and production of the annual financial statements, in accordance with internationally accepted accounting principles, as well as making arrangements for their certification by a competent and experienced audit firm under terms and conditions acceptable to IDA. BERD will also monitor all disbursements under the sub-projects and ensure that they are made in conformity with IDA requirements. BICIGUI will submit to IDA, through BERD, annual and quarterly reports on the progress of implementation of the line of credit component. A computerized financial management information system, including the manual of procedures, the accounting, budgetary, financial, and internal control systems, will be established in BERD by a reputable consultant and it would be operational at the outset of project implementation. The design of the financial management system will be based on IDA reporting requirements. BERD will be adequately staffed by competent and experienced professionals, including an administrative and financial specialist. The financial management system will allow for the proper recording of all project-related transactions as well as timely monitoring of expenditures by category and by components.

The records and accounts of all the components of the project, including the line of credit and the DRE Grant Facility would be audited annually by an independent auditor. Regarding the line of credit, the audit firm will review the performance of BICIGUI as well as of the PDESs, and provide specific opinion on the effectiveness and efficiency of the lending procedures. In addition to the audit opinion on the financial statements, the auditor will be required to express separate opinions on the SOEs and the management and utilization of the special account. Finally, the auditor will issue a management report with practical recommendations for improving the project internal control system. The establishment within BERD of a sound financial management system acceptable to IDA and the recruitment of the project auditors would be conditions for effectiveness.

### **3. Monitoring and evaluation arrangements:**

Monitoring, evaluating and permanent learning would be an important dimension of the project as RE delivery mechanisms need to be field tested to make sure that these can be applied on a sustainable basis and on a large scale. Lessons learned during this process would be immediately applied. Two performance reviews would be undertaken by independent consultants to enable the Borrower and IDA to evaluate the implementation experience.

BERD is responsible for all RE monitoring and evaluation and will complete the performance indicators as well as the mechanism for monitoring. BERD will mainly rely on local consultants and partly on its own staff to undertake the dissemination and the monitoring and evaluation tasks. For the rural electrification component there are three beneficiary groups: (i) rural households and businesses; (ii) providers and suppliers of equipment and/or investors; and (iii) the banking sector. Monitoring of project performance includes measuring economic, financial, technical, social, and environmental changes on each of these groups as applicable. Monitoring is the responsibility of BERD, with the assistance, as necessary, from other branches of Government. See A2 and Annex 1 for performance indicators.



The following table summarizes the monitoring topics:

<b>Beneficiary</b>	<b>economic</b>	<b>financial</b>	<b>technical</b>	<b>social</b>	<b>environmental</b>
Rural household		x		x	x
Rural firm (business generated because of electricity availability)		x	x		x
MFI		x			
Provider		x	x		
Investor		x			
Commercial bank		x			
Village	x			x	x
Guinea	x			x	x

The main dissemination channels are: (a) public availability of information from monitoring and evaluation activities; (b) special initiatives to engage policy and operation decision makers and program stakeholders in internalizing the lessons from experience and best practices; (c) use of lessons and best practices in the development of new policies and projects; (d) systematic action on the findings and recommendations that flow from the monitoring and evaluation program; and (e) specific dissemination programs for each implementing agency and the country focal point, including exchange of good practice with other countries.

## **D. Project Rationale**

[This section is not to be completed in a LIL PAD. Rationale should be implicit in paragraph B: 3.]

## **E. Summary Project Analysis** (Detailed assessments are in the project file, see Annex 8)

### **1. Economic (see Annex 4):**

[For LIL, to the extent applicable]

Cost benefit      NPV=US\$ million; ERR = 7.75 % (see Annex 4)

Cost effectiveness

Incremental Cost

Other (specify)

- (a) Tariff setting for DRE services and the proposed financing mechanism are flexible enough to test for the most optimal way to provide financing to local

providers (an objective of the LIL).

- (b) Non quantifiable economic benefits include health improvements, better education, income generation, and better information. The ERR for the project, excluding these benefits, was estimated at about 7.75%.

## **2. Financial (see Annex 4 and Annex 5):**

NPV=US\$ million; FRR = % (see Annex 4)

[For LIL, to the extent applicable]

The financial analysis shows that without the project, the IRR for a PDES to invest in village electrification ranges from 2% (hydro) to about 5% (diesel); and negative for solar.

With the project, the rate of return to PDES is increased to at least 18%. This provides an attractive incentive framework for dissemination of decentralized rural electrification. To facilitate this process, the financing mechanism will provide a blend of long-term concessional loans and subsidies, depending on the type of technology to be deployed. The added attraction is the security of tenure whereby a PDES obtains a long-term service "concession" in a particular area.

Cost recovery is the responsibility of the PDES. An agreement was reached with an MFI that accepted to set up project accounts for villages where the PDES is active to facilitate payments.

## **3. Technical:**

[For LIL, enter data if applicable or 'Not Applicable']

- (a) A limited set of technologies will be eligible for financing as the main issue is sustainable delivery of DRE: solar home PV systems; pico-hydro, small diesel generators or hybrids. Only renewable energy equipment will be eligible for direct subsidies from the GEF grant.
- (b) Long term sustainability of DRE systems will depend on quality of the individual components as well as on the system design (including proper assembly and installation procedures) and good management of the facilities, meeting consumer's expectations and capacity to pay. These considerations led to consider the 15 and 50 Wp PV systems, up to 100 kW of pico-hydro systems and up to 250 kW of thermal plants for broad dissemination.

## **4. Institutional:**

### **4.1 Executing agencies:**

BERD would be in charge of the day-to-day management of the project. Key areas of the project financial management have been assessed to ensure agreement with Bank procedures. BERD staffing would be adequate and would include the Director of BERD, an administrative and financial management specialist, an accountant, a technical specialist and a lawyer. BERD would: (a) coordinate individual project activities; (b) supervise the execution of the project; and (c)

prepare the annual work program, annual budget, accounts and financial statements, progress reports, disbursements applications, and procurement plans.

#### 4.2 Project management:

- (a) A major objective of this project is to develop sound institutional arrangements, particularly at the community level. A limited set of institutional arrangements will be tested.
- (b) The manual of procedures details the functions and modus operandi of the BERD's Steering Committee (the "*Comité de Pilotage*"). The BERD itself will be an autonomous agency.
- (c) MHE will address the regulatory issues created by DRE activities and help mobilize additional financing for the financing mechanism to make it a sustainable program.

#### 4.3 Procurement issues:

There are no procurement issues.

#### 4.4 Financial management issues:

Audits are required annually for the project, the special account and to FERD when it is created. These audits are financed under the project budget and submitted to the Steering Committee. A financial management system for BERD will be put in place at project effectiveness.

### **5. Environmental:** Environmental Category: C (Not Required)

5.1 Summarize the steps undertaken for environmental assessment and EMP preparation (including consultation and disclosure) and the significant issues and their treatment emerging from this analysis.

5.1.1. The project will promote the use of renewable energies and efficient appliances wherever possible. Environmental impacts are expected to be minor due to the very small scale of projects, decentralization of the energy production and use of renewable energy sources. At the global level, these impacts should be positive, as such project will reduce carbon emissions. Simple guidelines will be prepared for the safe handling and disposal of batteries and waste engine oil. The project includes (i) training to ensure that waste oil and used batteries are appropriately disposed of in an environmentally sound manner; and (ii) the preparation of an expanded set of environmental guidelines for handling and disposal .

5.2 What are the main features of the EMP and are they adequate?

This does not apply to the rural electrification component.

5.3 For Category A and B projects, timeline and status of EA:

Date of receipt of final draft: n/a

5.4 How have stakeholders been consulted at the stage of (a) environmental screening and (b) draft EA report on the environmental impacts and proposed environment management plan? Describe mechanisms of consultation that were used and which groups were consulted?

During project preparation MME staff and ESMAP staff fully prepared six pilot projects in a participatory mode. The outcome was discussed at a national workshop.

5.5 What mechanisms have been established to monitor and evaluate the impact of the project on the environment? Do the indicators reflect the objectives and results of the EMP?

A performance indicator is dedicated to environmental monitoring: CO2 emissions reduced by about 30,000 tons by the end of the project, as a result of photovoltaic, and micro-hydro electricity use;

## **6. Social:**

6.1 Summarize key social issues relevant to the project objectives, and specify the project's social development outcomes.

Community-based provision of public services is relatively new in Guinea and may face several challenges in implementation. Private supply arrangements may encounter resistance from some sections of the population due to a preference for subsidized public supplies by the power company. Resistance could also come for some Government agencies favoring a centralized approach to electrification. An information dissemination program will be carried out by BERD at the village level across the country. The project outcome are expected to lead to more social inclusion and increased equity between urban and rural areas. The project will also lead to a strengthening of organizational capacity and social capital.

6.2 Participatory Approach: How are key stakeholders participating in the project?

Representatives of consumer groups/associations, NGOs, municipalities, equipment suppliers, other private firms, SOGEL, ENELGUI, have been consulted during the ESMAP preparatory activities. Two workshops were held in Conakry to present the ESMAP survey results, and to discuss the DRE program principles. Local consultants were involved throughout. It is expected that French Volunteers for Progress and other NGOs would be instrumental in developing subprojects by assisting PDESs in preparing their business plans.

6.3 How does the project involve consultations or collaboration with NGOs or other civil society organizations?

For projects expected to receive authorization to appraise/negotiate (in principle) prior to April 30, 2000, this section may be left blank.

6.4 What institutional arrangements have been provided to ensure the project achieves its social development outcomes?

Decentralized rural electrification will involve rural communities and villages, financing institutions, representatives of consumer groups/associations, NGOs, municipalities, PDESs, other private firms, SOGEL, ENELGUI, and the Government. The project makes possible relationships between these formal and informal organizations at the local, regional and national levels to ensure access for and serve the needs of consumers in rural and peri-urban areas.

6.5 How will the project monitor performance in terms of social development outcomes?

Some formal relationships already exist such as those between the local, regional and central governments, between rural communities and villages, NGOs and decentralized branches of central Ministries, etc. New relationships will be formed such as those between the private providers of DRE and rural and peri-urban consumers and between consumers and financing institutions, etc. The main indicator of social development outcome is the expansion of decentralized rural electrification schemes to as many rural communities and villages as possible. The proliferation of these schemes should indicate that social cohesion is strong and inclusive and that Guinea is well on its way to achieving more equity between its urban and rural areas.

## 7. Safeguard Policies:

7.1 Do any of the following safeguard policies apply to the project?

Policy	Applicability
Environmental Assessment (OP 4.01, BP 4.01, GP 4.01)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Natural habitats (OP 4.04, BP 4.04, GP 4.04)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Forestry (OP 4.36, GP 4.36)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Pest Management (OP 4.09)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Cultural Property (OPN 11.03)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Indigenous Peoples (OD 4.20)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Involuntary Resettlement (OD 4.30)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Safety of Dams (OP 4.37, BP 4.37)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Projects in International Waters (OP 7.50, BP 7.50, GP 7.50)	<input type="radio"/> Yes <input checked="" type="radio"/> No
Projects in Disputed Areas (OP 7.60, BP 7.60, GP 7.60)	<input type="radio"/> Yes <input checked="" type="radio"/> No

7.2 Describe provisions made by the project to ensure compliance with applicable safeguard policies.

The project includes (i) training to ensure that waste oil and used batteries are appropriately disposed of in an environmentally sound manner; and (ii) the preparation of an expanded set of environmental guidelines for handling and disposal .

## F. Sustainability and Risks

### 1. Sustainability:

This section is not to be completed in LIL PAD.

2. **Critical Risks** (reflecting the failure of critical assumptions found in the fourth column of Annex 1):

Risk	Risk Rating	Risk Mitigation Measure
<b>From Outputs to Objective</b>		
New regulatory framework not enforced	M	1. Build ownership of DRE by the population, rural communities and political authorities. Active participation of local private sector.
Costs of decentralized electricity services and/or on non-conventional grid connection systems not affordable to the beneficiaries.	M	1. Adaptation of the design of the financing mechanism by adjusting credit terms to the providers, 2. GEF support. 3. Choose appropriate area.
Local commercial banks fail to deliver rural credit	M	1. Extensive consultations with interested local banks, 2. Progressive commitment of the commercial bank, with zero risk at start. 2. Close monitoring and annual assessment of bank activities.
Political and economic instability	M	1. Autonomous BERD with its CP 2. Direct participation of private operators and commercial bank.
Lapses in Government commitment to the project and slow adaptation of poor families and communities to self-help	S	1. Built-in public-private partnership during project implementation, 2. Internalize participation and consultation

approach Credit program fails due to shortcomings of local banks) or due to high delinquency rates.	M	among key stakeholders. 1. Ensure progressive commitment of local banks, 2. Down payment by beneficiaries and by providers based on risk levels, 3. Ensure quality assessment by BERD and bankable proposals, 4. Design credit features that would minimize this risk
Project sustainability after closing of Credit	M	1. Provide private sector financial incentives to pursue these activities, 2. Ensure GoG continue political commitment.
Political opposition to: (i) Opening up of public services to private/profit making entities. (2) Abolishing uniform pricing of electricity.	M	1. Information and communication campaigns 2. Lobbying by local communities to change perceptions. 3. GoG has indicated that DRE tariffs will be unregulated and based on delivery costs.
<b>From Components to Outputs</b> Lack of transparency in selecting DRE proposals. Insufficient local responsiveness/initiative.	M	1. Setting-up of autonomous CP, BERD 2. Reliance on private sector. 3. Large information of beneficiaries, other interested parties.
Incentives are not sufficient for development of DE village units by private operators	M	Carefully selected first activities, studies carried out in timely fashion, regulatory framework conducive to carry out such activities.
<b>Overall Risk Rating</b>	M	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N(Negligible or Low Risk)

### 3. Possible Controversial Aspects:

None

## G. Main Conditions

### 1. Effectiveness Condition

- a) Recruitment of the remaining BERD staff (a lawyer, a technical expert and a financial specialist) having qualifications and experience satisfactory to IDA;
- b) Adoption by the Ministry of Energy of a manual of procedures for BERD, including administrative and operational aspects. The manual of procedures will detail the criteria, procedures and guidelines applicable to the provision of grants to buy down the high cost of renewable energy technologies;
- c) Signing of a subsidiary loan agreement between BICIGUI and Government under terms and

conditions satisfactory to IDA;

d) Establishment of an adequate financial management system that is satisfactory to IDA which ensures proper monitoring and implementation of project activities; and

e) Appointment of the project auditor under terms and conditions satisfactory to IDA.

**2. Other** [classify according to covenant types used in the Legal Agreements.]

None

**H. Readiness for Implementation**

- 1. a) The engineering design documents for the first year's activities are complete and ready for the start of project implementation.
- 1. b) Not applicable.
- 2. The procurement documents for the first six months' activities are complete and ready for the start of project implementation; and a framework has been established for agreement on standard bidding documents that will be used for ongoing procurement throughout the life of LIL
- 3. The LIL's Implementation Plan has been appraised and found to be realistic and of satisfactory quality.
- 4. The following items are lacking and are discussed under loan conditions (Section G):

**I. Compliance with Bank Policies**

- 1. This project complies with all applicable Bank policies.
- 2. The following exceptions to Bank policies are recommended for approval. The project complies with all other applicable Bank policies.

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**Team Leader**

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**Sector Manager/Director**

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**Country Manager/Director**

**Annex 1: Project Design Summary**  
**GUINEA: RURAL ENERGY PROJECT**

<b>Hierarchy of Objectives</b>	<b>Key Performance Indicators</b>	<b>Monitoring &amp; Evaluation</b>	<b>Critical Assumptions</b>
<p><b>Sector-related CAS Goal:</b></p> <p>1. To foster rapid, broad based and private sector-led growth and increase the access to electricity in rural areas in an economically and environmentally sound manner with GEF support.</p> <p>2. Promote community based self-help in the areas of social and economic infrastructure.</p> <p>3. Promote the development of a rural private sector.</p>	<p><b>Sector Indicators:</b></p> <p>1. Improved household conditions due to provision of decentralized electricity.</p> <p>2. The financing mechanism is sustainable.</p>	<p><b>Sector/ country reports:</b></p> <p>Continuing Bank dialogue on power sector restructuring</p>	<p><b>(from Goal to Bank Mission)</b></p> <p>1.1. Lack of commitment from GoG to attract local private sector financing</p> <p>1.2. Lack of interest from villages and/or private sector.</p> <p>1.3. Political, social and economic stability.</p>
<p><b>Follow-on Development Objective:</b></p> <p>Scaling up of DRE activities</p>	<p>AGER created</p>	<p>AGER reporting</p>	



<p><b>GEF Operational Program:</b> Promote the adoption of Renewable Energy technology by removing barriers and mitigate CO2 emissions</p>	<p>1.1 Increased share of renewable energy technology in electricity generation.</p> <p>1.2 Avoided CO2 emissions: target &gt;30 kt CO2 by the end of the project.</p>	<p>BERD reporting</p>	<p>Demand for all DRE options can be generated at the village level.</p>
<p><b>Global Objective:</b> The private investment has expanded, and access to electricity services is improved in rural and peri-urban areas.</p>	<p><b>Outcome / Impact Indicators:</b> About 30% of the <i>sous-préfectures</i> have access to electricity services at the end of the DRE program.</p>	<p><b>Project reports:</b> DRE financing mechanism annual reports, Steering Committee annual reports,</p>	<p><b>(from Objective to Goal)</b> Retention of the rural electricity framework under appropriate standards, norms, and tariffs.</p> <p>Sustained willingness of stakeholders to be involved in financing and in managing electrification schemes.</p> <p>Stable inflation rate.</p> <p>Government continues its support to the financing mechanism.</p>

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
<p><b>Output from each Component:</b>  A financing mechanism for the PDES at the community level</p> <p>Sustainable replicable schemes for the provision of electricity services at community level</p> <p>The new regulatory framework for the decentralized electrification sub-sector is in place  A learning and evaluation system is established to draw lessons from the project</p>	<p><b>Output Indicators:</b></p> <p>1.1. A commercial bank manages on a sustainable commercial basis the long term DRE credits and the DRE grant facility.  1.2. Loan collection rates do not fall below 75% by the end of the project.</p> <p>2.1. At least 10 local consulting firms or NGOs and 20 providers of electricity services have received training,  2.2. Some 20,000 households in more than 75 villages have access to DRE at the end of the project.</p> <p>3.1. Independent consultants have, by the end of the first year developed indicators to measure; (i) cost-effectiveness and technical performance of BERD and FERD; (ii) technical and economical efficiency and profitability of the tested DRE schemes; (iii) sustainability of the DRE financing mechanism, and (iv) effectiveness of project and private sector involvement to improve access of the poor to electricity services.</p>	<p><b>Project reports:</b></p> <p>1.1 BERD Progress reports  1.2 Commercial bank disbursement reports,  1.3 Evaluation reports,</p> <p>2.1. BERD activity reports,  2.2. Commercial bank disbursement reports,  2.3. Periodic evaluation reports,  2.4. Final Evaluation report.</p> <p>3.1. Feedback from PDES  3.2. BERD Progress reports.</p> <p>MHE reports.</p>	<p><b>(from Outputs to Objective)</b></p> <p>1. General economic and political stability in the country  1.2 The new regulatory framework is well accepted by the private sector and creates a good business climate for successful private investment for DRE projects.  1.3 The BERD continues to be autonomous and free of political pressure.</p>

Hierarchy of Objectives	Key Performance Indicators	Monitoring & Evaluation	Critical Assumptions
<p><b>Project Components / Sub-components:</b></p> <p>1. <u>Capacity &amp; Rural Infrastructure Building:</u> technical assistance to promote and evaluate DRE proposals, monitoring and evaluation of the activities. Assistance to BERD for dissemination/replication, and staff training. Training of PDES staff. Training to ensure that waste oil and used batteries are appropriately disposed of in an environmentally sound manner and preparation of an expanded set of environmental guidelines for handling and disposal .</p> <p>2. <u>Setting up of a financing mechanism</u> and technical and financial assistance to implement the five- year DE program.</p> <p>3. <u>Project Coordination and Management:</u> The project will support and strengthen the operation and capacity of BERD, to coordinate, supervise and monitor the execution of the project through the provision of training of its personnel, studies, technical advisory and auditing services, and the acquisition of vehicles and equipment.</p>	<p><b>Inputs: (budget for each component)</b></p> <p>1. \$3.0m</p> <p>2. \$12.0 m</p> <p>3. 2.0m</p>	<p><b>Project reports:</b></p> <p>1. BERD Progress reports and disbursement reports</p> <p>2.1. BERD Progress reports</p> <p>3.1. Financial audit reports 3.2. Internal evaluation reports, 3.3. Independent evaluation missions reports</p>	<p><b>(from Components to Outputs)</b></p> <p>1.1 Counterpart funds made available in a timely manner</p> <p>2.1. Incentives are sufficient for development of DRE village units by private operators</p> <p>3.1. Timely execution of key studies, independent consultation process, and annual reviews</p>

## **Annex 2: Detailed Project Description**

### **GUINEA: RURAL ENERGY PROJECT**

#### **Objectives**

The Project's key objective is to support the Government in implementing its strategy for increasing access to electricity in rural and peri-urban areas. In order to achieve this through a maximum of private sector involvement, the project intends to create a technical and financial capacity to develop decentralized rural electrification projects at the village level.

In addition, the project's global environmental objectives are to remove barriers to application, implementation and dissemination of renewable energy technologies (RETs), and to reduce greenhouse gas (GHG) emissions. To this end RETs will be promoted.

#### **By Component:**

##### **Project Component 1 - US\$3.00 million**

Capacity Building. Technical and financial capacity needs to be created to develop village level electrification projects. Some technical capacity, mainly in urban areas, is available that need to be developed and redirected to start developing rural and peri-urban decentralized electrification projects. It is expected that this will take several years before sufficient professional operators exist that can continue to provide and expand rural electricity services without Project assistance. The same holds for financial services. Although financial services are available in urban areas, there is limited experience in rural areas.

Under the project, a framework will be created that provides the right incentives for providers to start developing rural electrification services. In the absence of Government capacity or a regulator, an autonomous agency, the "*Bureau d'Electrification Rurale Décentralisée*" will be established to develop the required capacity. This will be done in three overlapping phases:

Phase I - Initiating pilot & demonstration activities. Actively develop at least four DRE projects by bringing together the provider, financier, and village for a specific activity that addresses the village's priority energy needs and ability to pay; a typical set up requires the village to pay about 20% of the project costs, the provider about 30%, and a donor/bank of choice by the provider the remaining part; typical costs range from \$30-\$80k for a project to supply DRE services to 100 households. Electricity is likely delivered only for 3-4 hours at night and possibly to small businesses during the day; tariffs are agreed on between the different parties. Direct subsidies are transparent, limited, and at the same level for all three Phases; indirect subsidies through providing technical assistance to develop viable activities will be larger in this Phase than the other.

Phase II: Learning by doing. As under Phase I, request business proposals from providers, NGOs, and villages for the specific village-based projects, but do not take the lead in developing those. Submitted business plans are evaluated (and if needed, strengthened), and contributions from project funds are awarded. As evidence of the approach mounts, the financing mechanism should become more permanent (to be sourced from GOG, donors, WB), etc.

Phase III: Regulation. When the sector becomes more professional, less attention is devoted to developing projects – this is done by the interested parties – and more to monitoring of operations and adherence to ground rules; “ etc.

## **Project Component 2 - US\$12.00 million**

A *Fonds d'Electrification Rurale Decentralisée* (FERD) will be put in place to respond to the lack of long-term credit and the high up-front cost of renewable energy systems. Access to credit by providers of decentralized electricity services (PDESs) will be effected through the following: (a) a line of credit that would provide them with the necessary resources and incentives to undertake RE operations. This line of credit would also facilitate access to capital to a sufficiently large number of PDESs and thus promote competition and emulation in the sector; and (b) the establishment of a DRE Grant Facility to promote DRE activities. The facility would provide: (i) a subsidy to help fund the feasibility study of PDESs projects. To show his/her commitment, the PDES will pay a retainer in a bank account at BICIGUI that will go toward his/her contribution to the project, if his/her project is accepted. If the project is rejected, the full amount deposited is reimbursed; (ii) a reimbursable advance at no interest. This is a subsidy to the PDES. It is variable and will depend on the technology, power delivered, geographical setting, the quality of the borrower, etc. Other criteria may be added and/or the current ones modified or changed by BERD. The eligibility criteria are defined in the manual of procedures of BERD; and (iii) a subsidy of 50% to the individual consumer for house wiring.

1. The financing mechanism will be guided by the following basic principles:

a) foreign exchange risk of funds on-lent to the private commercial bank is supported by the government. In compensation for the risk taken, the government will add about 4 to 5% to the IDA rate and making sure that: i) the commercial bank has a margin that would keep it engaged in decentralized rural electrification; and ii) the lending rate to the provider of decentralized electricity services (PDES) is attractive;

b) promoting the economic viability of DRE operations which will be financed by a mix of loans and subsidies;

c) bringing the private commercial bank to gradually increase its financial involvement as the project progresses; and

d) follow the rules and procedures of the commercial bank to make the project sustainable and to avoid distorting the financial market.

2. The resources of the financing mechanism could be constituted in part by funds on-lent by the government of Guinea to BICIGUI. The funds would be allocated to a Credit Facility and a Grant Facility and released according to the project forecasted needs. Funds not yet disbursed by the commercial bank would be remunerated at the savings rate.

3. The role of the commercial bank: The commercial bank will manage the line of credit and the grant facility under terms and conditions defined under contract with BERD. The bank will use its own criteria for granting a loan and therefore will be solely responsible for the loan decision on projects approved by BERD. The commercial bank will gradually use its own resources to lend to PDESs . Two accounts will be open at the commercial bank:

- A line of credit facility; and
- A grant facility

The funds deposited under these two facilities will be remunerated. BICIGUI will also report on

the use of the line of credit and the Grant Facility.

4. Financing plan of a DRE operation: A typical financing plan of a DRE operation would include a personal contribution, a subsidy and a loan:

a) Self-financing

- the individual consumer will pay 50% of his/her house wiring. He/she may also be asked to contribute to connecting charges and leave a deposit with the PDES;
- the contribution of the PDES will depend on the technology used (10 to 30% but could be higher to complete the financing plan);

b) Subsidy

- a subsidy to the technical and economic feasibility study (cost of the study: about US\$10,000). To show his/her commitment, the PDES will pay a retainer in a bank account at BICIGUI that will go toward his/her contribution to the project, if his/her project is accepted. If the project is rejected, the full amount deposited is reimbursed;

- the reimbursable advance (subsidy to the PDES) is variable and will also depend on the technology, power delivered, geographical setting, the quality of the borrower, etc. Other criteria may be added and/or the current ones modified or changed by BERD; and

- the subsidy of 50% to the individual consumer for house wiring

c) Loan

- the loan size is also variable and would depend on the same parameters as the reimbursable advance above. The credit worthiness evaluation is done by BICIGUI.

5. The Grant Facility: The grant facility managed by BICIGUI will be used for:

- a) subsidy to the feasibility study of the project;
- b) reimbursable advances to PDESs . This advance will be reimbursed. A clause will be introduced permitting reinvestment of the funds into the expansion of PDES activities. The feasibility study will determine the schedule of repayment of the loan; and
- c) grants to the individual subscriber for up to 50% of his/her house wiring.

6. The Line of Credit: The line of credit managed by BICIGUI will finance DRE technology, network, and equipment. House wiring is the responsibility of the individual subscriber.

*Duration:* 2 to 5 years according to the equipment and material to be financed;

*Amount:* to be determined by the feasibility study but expected to be in the order of 40 to 45% of the investment cost;

*Interest rate:* 13 to 14% with an indexation clause;

*Repayment:* monthly and in line with payments received by the PDES;

*Safeguards:* The sustainability of the financing mechanism requires that safeguards be put in place both upstream and downstream of a loan operation: (i) support to BERD in selecting, training PDES staff and monitoring operations at the technical and management levels; and (ii) the commercial bank will request the usual guaranties related to the investment itself (mortgage, fire and other insurance, etc.) and guaranties related to the borrower (collateral, joint responsibility of investors, etc.). Involvement of financial institutions at the local level is important. They could help customers and PDESs in their financial transactions. *Credit Rural de Guinee (CRG)* has shown an interest in the DRE program. CRG could:

- manage the subsidy for in-house wiring; and
- provide banking services for PDESs and subscribers.

*Other Conditions:* official registration of the activity or authorization of the Ministry of Energy. PDES agrees to authorize his/her financial institution to transfer the amounts that are due to BICIGUI and to set aside a part of his/her revenues for the maintenance and replacement of the equipment.

*Application:* The forms for the technical application to BERD and loan application to BICIGUI will be designed jointly by BERD and BICIGUI to reduce the time necessary for the technical and loan decisions. The loan application will include: the income statement and the financing plan over the life of the project, flow of funds statement for 6 months, pro-forma bills, the balance sheets of the last three years for existing activities, assets of the applicant, his/her experience in DRE activities or other markets, his/her detailed resume and any other pertinent information that BERD and BICIGUI may require to complete their evaluation of the request.

*Disbursement:* the funds could be disbursed in one or several installments conforming the progress of the DRE operation certified by BERD.

Several agreements and contracts would be put in place:

- a) agreements between donors (incl. IDA/GEF), the government and BICIGUI;
- b) agreement between BICIGUI and BERD;
- c) agreement between BERD and the PDES;
- d) loan agreement between BICIGUI and the PDES;
- e) reimbursable advance agreement between BICIGUI and the PDES;
- f) grant agreements between BICIGUI and individual subscribers;
- g) agreement between BICIGUI and specialized financial institutions such as Credit Rural de Guinee (CRG);
- h) contracts between the PDES and its subscribers; and
- i) contracts between BERD and other service providers (consultants, training and information).

### Project Component 3 - US\$ 2.00 million

Project Coordination and Management The project will support and strengthen the operation and capacity of BERD, to coordinate, supervise and monitor the execution of the project through the provision of training of its personnel, studies, technical advisory and auditing services, and the acquisition of vehicles and equipment.

### Institutional Responsibilities

	<i>Nominates</i>	the members of the Board
<b>Ministry of Energy</b>	<i>Appoints</i>	Director of the <i>Bureau d'Electrification Rurale Decentralisee (BERD)</i>
	<i>Approves</i>	the RE Strategy & annual status report for presentation to Cabinet and Parliament
		the auditor for use of FERD funds
	<i>Awards</i>	licenses to operators
<b>BERD</b>	<i>Tasks</i>	
		Procedures for:
		- Evaluation of projects and processing of applications for DRE-funding
		- Forms for Project Presentation & Funding Application documents
		- Tendering of programs and consulting jobs with outside suppliers & contracting
		- Grants allocation
		- FERD oversight
		Identification and supervision of DRE activities
		Training of stakeholders in development of business plans and projects
		Processes DRE-funding applications and send them to BICIGUI
		Provides information to and collaborates closely with the private sector, RE businesses and with provincial and local authorities
		Prepares and publicizes RE database on projects, costs and socio-economic conditions
		Answers requests from potential investors and public for information on RE project issues
		Organizes RE awareness campaigns, collaborating with other stakeholders (NGOs, etc.)
		Organizes outreach activities to get feedback from rural population, collaborating with civil society and others
		Provides RE regulatory advice to the Ministry of Energy
		Monitors implementation progress of funded projects and prepares progress reports
		Conducts monitoring & evaluation of RE program progress and impact.
		Approves business plans for proposed subprojects
		training to ensure that waste oil and used batteries are appropriately disposed of in an environmentally sound manner and preparation of an expanded set of environmental guidelines for handling and disposal .
<b>BERD Director</b>		
	<i>Contracts</i>	FERD Auditor
	<i>Supervises</i>	BERD operation



		FERD operation
		Prepares draft for Minister's annual report on status of RE plan fulfilment
		Prepares annual budget proposals for use of FERD funds for Steering Committee approval
<b>Steering Committee</b>		Division of FERD funds among operation, investment subsidies, programs
		Eligibility Criteria for grant support and fixes annual subsidy rates
		Approves annual budget proposals for use of FERD funds
		Annual operating budget and annual work program of BERD
		Draft RE Strategies & Policies for submission to the Minister of Energy
<b>Auditor</b>	<i>Supervises</i>	The use and administration of FERD and prepares annual audit reports

**Annex 3: Estimated Project Costs**  
**GUINEA: RURAL ENERGY PROJECT**

Project Cost By Component	Local US \$million	Foreign US \$million	Total US \$million
Capacity Building	0.20	2.60	2.80
FERD	0.50	10.80	11.30
Project coordination and management	0.10	1.45	1.55
PPF	0.00	0.15	0.15
<b>Total Baseline Cost</b>	<b>0.80</b>	<b>15.00</b>	<b>15.80</b>
<b>Physical Contingencies</b>	<b>0.20</b>	<b>0.00</b>	<b>0.20</b>
<b>Price Contingencies</b>	<b>0.35</b>	<b>0.65</b>	<b>1.00</b>
<b>Total Project Costs</b>	<b>1.35</b>	<b>15.65</b>	<b>17.00</b>
<b>Total Financing Required</b>	<b>1.35</b>	<b>15.65</b>	<b>17.00</b>

Project Cost By Category	Local US \$million	Foreign US \$million	Total US \$million
<b>Goods</b>	0.50	11.30	11.80
<b>Works</b>	0.44	0.84	1.28
<b>Consultants' services, studies and training</b>	0.41	3.51	3.92
			0.00
<b>Total Project Costs</b>	<b>1.35</b>	<b>15.65</b>	<b>17.00</b>
<b>Total Financing Required</b>	<b>1.35</b>	<b>15.65</b>	<b>17.00</b>

<sup>1</sup> Identifiable taxes and duties are 0 (US\$m) and the total project cost, net of taxes, is 17 (US\$m). Therefore, the project cost sharing ratio is 41.18% of total project cost net of taxes.

**Annex 4**  
**GUINEA: RURAL ENERGY PROJECT**

**Incremental Costs and Global Environmental Benefits**

**Broad development goals and baseline**

*Development Goals*

The proposed activities are embedded in the Guinea - Policy Macroeconomic Framework Paper (1998-2000) and will support the government strategy to promote access to electricity especially in remote/rural areas by encouraging private entrepreneurs in the provision of economic village infrastructures (Decentralized Rural Electrification GoG policy letter, February 1998). The specific project objectives include promoting the development of clean, renewable energy sources.

*Baseline*

There is a very low rate of rural electrification in Guinea (about 1%) with most rural households meeting their lighting and small power needs with kerosene and dry cell batteries. Rural electrification has not been successful in Guinea for a number of reasons, principally the low density of rural population which results in an extremely high cost for grid extension, high consumer connection costs, and a lack of investment capital to expand distribution systems.

According to ESMAP- GoG survey results, kerosene represented the primary source of lighting in rural areas with an average household expenditure between 6 and 7 US\$ per month. The dry cell batteries are the second source of lighting (flashlight) and the only one for radio, with an average household expenditure between 4 and 5 US\$ per month. Guinean households have an ability to pay about US\$ 10/month for a sustainable access to electricity based upon current expenditures on modern forms of energy including SHS and pico-hydro. Thus there is good evidence to suggest that the potential for decentralized electrification is high.

Thus, the baseline scenario is that these households/communities will continue to rely on fossil fuel for their basic electricity needs.

**ENVIRONMENTAL POLICY AND RURAL ELECTRIFICATION**

Government is pursuing an overall goal of promoting rural electrification through private entrepreneurs. The government, through this project, seeks to increase rural access to electricity by providing an environmentally clean source of energy by involving the business community that is now developing decentralized energy options with SHS.

There are some SHS available within the current market though they are relatively costly as compared to some other countries, and reflect the fact that not many systems are in use resulting in high unit costs. Countries with established and competitive markets such as the Dominican Republic or Sri-Lanka have much lower system costs.

Although the SHS is likely to be best option to meet the needs of households not already connected to the

grid, most cannot afford the high start-up costs of such systems. ESMAP results show that these households are willing to spend the same proportion of their incomes (and even more) on better energy services, which improves their quality of life or enables them to become more productive. But they can only do so if they receive credit and are allowed to pay back the costs in small monthly installments over many years. The problem is that these potential customers often cannot obtain the necessary credit and there is no technical support available locally making it difficult for them to obtain better lighting.

## **Global Environment Objectives**

### *CO2 Abatement*

The global environment objective is to mitigate carbon emissions resulting from the use of kerosene for lighting by rural households in Guinea. Total CO2 emissions are expected to be reduced by about 30,000 tons by the end of the project and by about 100,000 tons over the economic life of the project. This mitigation is the rationale for the GEF grant and indicates the international community's WTP for reduced CO2 emissions.

The project supports the GEF climate change Operational Program #6 aimed at promoting the adoption of renewable energy by removing barriers and reducing implementation costs. By making it possible for private entrepreneurs to invest and manage village level electricity services, the project will open the way to a fully commercially based decentralized electrification.

## **BASELINE PROGRAM**

The current baseline is for continued use of kerosene lanterns and disposable batteries to meet the lighting needs of the rural population. All rural consumers would continue to use these two options to meet their primary lighting needs. Despite the existent of some marketing of SHSs, they cannot not successfully be introduced into rural areas due to the lack of sufficient financing and scale to facilitate a successful penetration into the targeted rural markets.

### **GEF Alternative**

The GEF alternative to the baseline scenario is the provision of “electricity services” to about 20,000 households over a five-year period through the promotion of at least 5,000 SHS in 50 villages and 80 pico-hydro associated with low-cost local grids. This objective will be reached through the creation of specific technical (BERD) and financial (FERD) institutional supports which will be to providers of decentralized electrification services (PDESs) benefit. To succeeded in this main objective, the GEF alternative will also include capacity building, markets development activities, and sub-sector policy reform which all are necessary to remove the identified barriers.

The role of the GEF funding would be to meet the incremental costs of supplying renewable energy rather than the baseline equipment and support for the market development activities.

### **Scope of the analysis**

There are two sets of project benefits, those that accrue directly to the households and those which accrue to the global environment and both of these are considered in the analysis. The analysis is made from the point of view of the country and the beneficiary households. The point of view of the concessionaire is not covered in the scope of the analysis as the nature of the concession has yet to be determined.

### *Direct benefits to households*

Households benefit in numerous ways, many of which are difficult to quantify. Generally, however, the following benefits result from the availability of electricity in the home:

- (a) Access to electricity allows the use of radio and television, connecting individuals with the social and economic mainstream of Guinea;
- (b) Improvements in lighting quality and quantity extend the working day and permit the possibility of income generating activities after dark;
- (c) Improvements in lighting quality and quantity lead to better conditions under which children are able to read and study. There is a long-term positive effect on children education and learning; and
- (d) Reduction of indoor pollution contributing to improved health.

The benefits to households can be measured by their willingness to pay (WTP) for the improved electricity service. Deriving a figure for households' WTP is complex since it is the sum of the actual payments made for the SHS or pico-hydro systems by the household plus the consumer surplus. While actual payments can be determined, it is not possible to measure the consumer surplus. Hence the project benefits will be somewhat understated.

### *Direct Benefits to the Global Environment*

Global environment benefits accrue from CO<sub>2</sub> emissions that are avoided when kerosene is replaced by renewable energy. The mitigation is the rationale for the GEF grant and indicates the international community's WTP for avoided CO<sub>2</sub> emissions. The CO<sub>2</sub> emissions resulting from the manufacture, transport, and erection of the equipment were not considered. The overall avoided CO<sub>2</sub> emissions are estimated at about 30,000 tons by the end of the project and by about 100,000 tons over the economic life of the project. Mitigation of other pollutants, such as SO<sub>2</sub> and NO<sub>x</sub>, were not evaluated.

## **BASELINE AND GEF COSTS**

### *Baseline Costs*

Current costs associated with the delivery of energy services to rural populations is based upon continued use of kerosene lanterns and disposable batteries by rural communities. It is assumed that project benefits of electrification is equivalent to the avoided baseline costs. WTP was not used because of a lack of accurate data.

For small consumers, the first cost associated with the purchase of two kerosene lanterns is \$24, total consumption of about 88 liters annually and a net present value of operating costs of about \$370 over a fifteen year equipment life. The levelized cost is about \$5/month. Energy output is equivalent to a 20 watt SHS.

Medium consumers will use both lanterns and disposable batteries. The first cost associated with the purchase of three kerosene lanterns is \$36, total consumption of about 135 liters annually and a net present

value of operating costs of about \$743 over a fifteen year equipment life. Disposable dry cell battery use is about \$28/year. The levelized cost is about \$10/month. Energy output is equivalent to a 20 watt SHS.

Rural residents without access to decentralize energy grids, (GEF Large consumers - Picohydro alternative), will still use both lanterns and disposable batteries. The average energy use of these consumers is about 40 watt with about 200 consumers per decentralized energy system. The first cost associated with an equivalent amount of energy (40 watts) is the purchase of three kerosene lanterns is \$36, total consumption of about 135 liters annually and a net present value of operating costs of about \$743 over a fifteen year equipment life. Disposable dry cell battery use is about \$28/year. Total system cost for the base case alternative of kerosene lanterns and batteries for 200 households is \$221,027. The levelized cost is about \$2,704/month. Energy output is equivalent to a 10 kW pico-hydro/diesel system with a thirty year life.

#### *GEF Costs*

The additional cost of the GEF Alternative scenario for the renewable energy technology dissemination are estimated at US\$ 2,067,355 as detailed below:

<b>Renewable energy activities</b>	<b>US\$</b>
TA for BERD	500,000
Financing mechanism for SHS buyers and Providers of Decentralized Electrification Services	1,567,355
<b>Total</b>	<b>2,067,355</b>

#### *Baseline and GEF Alternative Uses and Costs Compared*

Renewable energy solutions are more expensive than the baseline solutions and their costs are unlikely to decrease until local capacity increases and economies of scale lower the price as the market grows. A pilot program of innovative decentralized electrification schemes can help support private entrepreneurs to invest in this sector. The improved service provided by PV in comparison with kerosene and gas can be expected to increase willingness to pay of at least some buyers. Current use of energy equipment is given below.

Based on ESMAP survey data, the incremental cost of PV systems for households, as compared to baseline solutions, reveals a 15-year life cost of US\$ 245 for the 20 Wp systems, a cost of US\$ 427 for the 50 Wp systems, and a cost of US\$ 10,567 for the pico-hydro. The Table below provides a summary of incremental cost per unit

#### **Incremental Cost per System (US\$)**

	<b>Incr.Cost/Unit</b>	<b>Incremental Cost/Wp</b>
20Wp	245	12.25

50Wp	427	8.54
10kW Pico-hydro	10,567	1.06

Incremental cost was calculated using the following baseline assumptions as compared to the GEF option, as noted in the Table below.

Household type	Baseline Provision		GEF Provision
	Light	Electricity	
Small consumer	2 kerosene wick lamps	-	20Wp SHS
Medium consumer	3 kerosene wick lamps	8 R20 batteries/month	50Wp SHS
Large consumer/ Mini-grid	Lighting for 200 families (3 kerosene wick lamps per family)	Electricity for 200 families (8 R20 batteries/month per family)	10kW Pico-hydro/diesel (or hybrid) (200 families)

The concessionaire/DRE provider will be given latitude to meet the demands of the market in terms of system type and size. It is difficult to make exact comparisons between the light provided by a kerosene or LPG lamp and that from a fluorescent bulb as may be used in an SHS because quality of light and convenience are not taken into account. Incremental costs have been based on estimated prices of equipment a concessionaire might be expected to pay for equipment, and not current prices which are significantly higher because such equipment that is bought privately tends to be one-off purchases.

Levelized Monthly Cost (LMC) is used for comparison with existing levels of payment. Investment costs are expressed as sum of the up-front cost of the system and the present value of the running costs. A discount rate of 12% and a lifetime of 15 years is used.

System	LMC (\$)	LMC of baseline (\$)	NPV, Lifecycle Cost, GEF (\$)	NPV, Lifecycle Cost, Base (\$)
20Wp SHS	7.80	4.80	639	394
50Wp SHS	15.10	9.90	1,234	807
10kW Pico-hydro	2,834	2,704	231,594	221,027

#### *Incremental costs*

The incremental costs of each system can be calculated from the information in the table above. The table below presents the incremental cost and the expected rates of deployment for each type of system.

System	Annual Deployment, Year					Incremental Cost(US\$)
	1	2	3	4	5	
20Wp SHS	200	400	600	600	600	245

50Wp SHS	200	400	600	600	800	427
10kW Pico-hydro/diesel	8	12	16	20	24	10,567

The project incremental cost is derived by using the information from the table above and modifying it as discussed below. GEF would pay incremental costs in the range 75-50%. IDA would help with the remaining incremental costs for the first two years.

*Small Consumers.* These consumers will typically wish to acquire systems of 20Wp in size. The system carries a significant incremental cost at the moment because of the weakness of the market. It is expected that over the coming years, market growth will bring about a significant reduction in system cost and hence incremental cost. Reductions in system cost of the range of 10-20% can be expected over the lifetime of the project, which would bring them to the same order as those in other countries. It is thus proposed that a 'first cost grant' is used, payable to the concessionaire to absorb the incremental cost in the initial years. The first cost grant would follow a schedule of reducing payments:

<b>20Wp System</b>	<b>Year 1 (\$)</b>	<b>Year 2 (\$)</b>	<b>Year 3 (\$)</b>	<b>Year 4 (\$)</b>	<b>Year 5 (\$)</b>
First cost grant payable	184	184	123	123	123
Proportion of incremental cost (%)	75	75	50	50	50

The schedule outlined above anticipates costs being brought down to a level more comparable with those found in more mature markets.

*Medium and Large Consumers.* Medium consumers are expected to acquire systems of 50Wp. The consumers who acquire the 50Wp system will have either kerosene, gas and batteries or a gasoline generator as the alternative. As with the 20Wp systems, reductions in system cost of the range of 10-20% can be expected over the lifetime of the project, which would bring them to the same order as those in other countries. To account for the existence of a lower cost option in the 20Wp system and to avoid the subsidy benefiting those who obtain a larger system (and who will tend to be better off) it is proposed that the first cost grant cover 75% of the incremental costs in years 1, declining thereafter as shown in the table.

<b>50Wp System</b>	<b>Year 1 (\$)</b>	<b>Year 2 (\$)</b>	<b>Year 3 (\$)</b>	<b>Year 4 (\$)</b>	<b>Year 5 (\$)</b>
First cost grant payable	320	320	320	214	214
Proportion of incremental cost (%)	75	75	75	50	50

Large consumers will be decentralized providers who will provide energy services through a 10 kW mini-grid to an average of about 200 rural households (50Wc demand/household). The grant will cover 75% of the incremental cost in the first year, falling to 50% by the fifth year.



*Technical Assistance and Startup Costs for BERD.* Technical assistance to BERD to promote and evaluate of DRE proposals , monitoring and evaluation of DRE activities, dissemination/replication and staff training, training of PDESs staff and preparation of guidelines for the safe handling and disposal of batteries and waste engine oil, and other hazardous materials. TA is required over 2 years for about \$500,000. The TA components are as follows:

	<u>\$/year</u>
- Promote/evaluate DRE proposals	\$75,000
- Monitoring and Evaluation	\$50,000
- Dissemination and Staff training	\$40,000
- Training of PDESs	\$50,000
- Training and Environmental guidelines	\$35,000
<b>Total</b>	<u>\$250,000</u>

Total GEF grant is thus determined as follows:

<b>Item</b>	<b>GEF grant</b>
	<b>(\$)</b>
TA for BERD	500,000
20Wp SHS	366,765
50Wp SHS	682,818
Pico hydro	517,771
<b>Total</b>	<b>2,067,355</b>

The GEF alternative to the baseline scenario is expanding new renewable technology, principally SHS and pico-hydro-generators associated wherever needed with low cost distribution grids and innovative tariff systems. Additional technical assistance (such as methodological and operational assistance, training and monitoring, independent evaluation, etc.), which would contribute to the removal of barriers resulting from inexperience with high penetration of such DE systems, is included in the GEF alternative.

#### **Incremental Cost Calculation Matrix**

	<b>Baseline</b>	<b>GEF Alternative</b>	<b>Incremental Savings</b>
<b>Domestic Benefit</b>	Lighting and small power needs provided by fossil fuels	Lighting and other services provided by renewable sources	

<b>Global Environment Benefit</b> 2000-2029 2000-2004	109,122 tons/CO2	7,858 tons/CO2	101,264tons/CO2  29,858 tons/CO2
<b>Costs (US\$):</b> SHS 20 Wp SHS 50 Wp Pico-hydro grid systems Market Development Activities	\$394 \$807 \$221,027	\$639 \$1,234 \$231,594	\$245 \$427 \$10,567

Economic Rate of Return: The project's ERR is 7.75%.

### **Process of Agreement**

The incremental cost parameters described here have been derived by Bank staff in consultation with the Government of Guinea. The information has been gained from market studies and modeling developed in the course of project preparation.

**Annex 5: Financial Summary**  
**GUINEA: RURAL ENERGY PROJECT**  
**Years Ending**

**STAP Review and Responses**

Overall, STAP has fully endorsed the Project stating that it will not only bring rural energy services to an area where electrification is almost entirely absent ( 1 % rural service rate), but if properly implemented could build a new clean-energy infrastructure that could become self-sustaining. Further, the potential to initiate in Guinea a rural energy sector dominated by decentralized energy service providers as opposed to an unrealistic and cost-ineffective grid-extension program makes this project doubly attractive.

Against the backdrop of this endorsement, the STAP has raised a number issues, which are presented below along with the Bank's response.

1. The PCD identifies uncertainty over government commitment to the project to be a significant risk. This can not be overstated, and every effort needs to be made to secure this commitment.

Response: The Power Sector Reform Workshop in late 1999 demonstrated the willingness and commitment of the Government to address the required reform issues head-on. There is no real uncertainty as the Government's responsibilities - for decentralized electrification - are simply to create the regulatory environment (law was promulgated), to create the institutional environment (establish BERD and the Steering Committee which is now done), and to raise more bilateral financing when the decentralized electrification program shows progress. The commitment of the Government to decentralized electrification as part of its strategy to fight poverty is real. This is supported by the recently approved Country Assistance Strategy (CAS) Progress Report and the Structural Adjustment Credit (SAC IV). The Government has taken important steps to foster decentralized electrification by putting in place the institutional environment (establish BERD and the Steering Committee for decentralized electrification), and committed to raise more bilateral financing when the decentralized electrification program shows progress.

2. Primary concerns in the successful implementation of this project focus on the available project and Government of Guinea resources to support decentralized concessionaires and to insure that they provide rural energy services beyond the termination of the formal project.

Response: The concern is valid and we fully agree with it. The project is designed as a Learning and Innovation Loan specifically with the intent of identifying approaches that would eventually make rural energy services financial self-sustaining and measures that would be required to insure that decentralized concessionaires continue to provide such services. Key to project success and sustainability is the functioning of BED. BED acts as Project Implementation Unit on behalf of the Government, and it is supposed to become a

self-financing unit as early on as possible. BED's base costs are supported by the project; once the increasing workload requires contracting more staff, this should be fully paid for by the beneficiaries. BED is fully autonomous, and interference by third parties (government entities included) should be limited as financing decisions to implement sub-projects are made on a commercial basis: future providers of energy services need to obtain loans from the bank that manages DEF. BED initially will bring together potential partners (providers, beneficiaries,

3. A potential source of problem for the combination of sustained growth, access to new services across socioeconomic classes, and profitability of the DE p~ is the exclusion of the new concessionaires from operating in the largest urban areas of the nation. A superior arrangement would be to permit concessionaire activity in these areas that are already served by the existing energy supply infrastructure.

Response: The arrangement of allowing new concessionaires to operate in areas that are already served by the existing energy supply infrastructure is indeed a superior arrangement et the law allows for it, provided of course that the area sought has not already been awarded. Actual awards would therefore depend on the demand for such concessions and their availability.

4. The reliance on a single, purely local, financial institution such as BICIGUI to support DE effort seems unrealistic.

Response: The comment is valid. However, as noted in the PCD other avenues will also be explored including the prospects of involving NGOs. The suggestion to use the Solar Bank to become active in Guinea to develop the financing mechanisms should be kept in mind. Once the local bank has demonstrated that it is feasible to provide financing for DE activities and it is time to scale-up, the Solar Bank can play a useful role.

5. The PCD calls for the implementation of several Pico-hydro projects to provide DE services. This is a logical resource to exploit, and pico-hydro technology has a good prospect for sustainable applications and commercialization in Guinea. The PCD, however, does not provide a sufficiently clear program to support commercial growth.

Response: The lessons learned from this LIL will serve as the basis for developing a longer-term program of support not only for sustainable applications and commercialization of pico-hydro but also for other RETs.

6. The Guinea DEP project will offset some greenhouse gas emissions, to be sure. However, the greatest benefit of the project will through the provision of rural services to the initial households, and - ideally - through the growth of a rural renewable energy service market that his program may initiate.

Response: We agree. However, the market will only grow if the barriers are removed and implementation costs reduced, which is the rationale for GEF involvement.

7. By a conservative estimate based on the photovoltaics-related total project costs.(\$1,000,00001/(80,000 tons, of C02) =\$12.s/t cot. On a carbon only basis, (44/12)\*125/TC

= \$45.8/TC. This value slightly high compared to other carbon-offset opportunities, however it is also perfectly respectable *given the* range of additional important social benefits from the program.

8. Response: The comment is valid over the short term. Once the barriers are removed, it would not be unreasonable to assume that over the longer-term the number of households using SHS will increase by multiples of what is envisaged under the project, with its attendant consequences for reductions in GHG emission and cost-effectiveness of the intervention. Operational Program. Number 6' subsumes such a longer term perspective. The Incremental Cost Analysis was revisited to take into account the sustainability and market transformation issues (See Annex 4 for revised Analysis). This resulted in a considerably more favorable cost of CO2 abatement in the short term.

9. In many settings where new renewable energy technologies have been introduced into rural settings the overall consumption of the previous fuel (in this case dung, wood and charcoal) did not decrease at all.

Response: SHS will displace kerosene, candles and batteries not dung, wood and charcoal.

10. To set the context of the cost/month of rural energy services (primarily kerosene), it would be useful to include the per capita income to put this value in comparison.

Response: Agreed

	IMPLEMENTATION PERIOD						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
<b>Total Financing Required</b>							
<b>Project Costs</b>							
<b>Investment Costs</b>	1.3	3.5	5.1	5.2		0.0	0.0
<b>Recurrent Costs</b>	0.4	0.4	0.5	0.6	0.0	0.0	0.0
<b>Total Project Costs</b>	1.7	3.9	5.6	5.8	0.0	0.0	0.0
<b>Total Financing</b>	1.7	3.9	5.6	5.8	0.0	0.0	0.0
<b>Financing</b>							
<b>IBRD/IDA</b>	0.5	1.0	2.0	1.5		0.0	0.0
<b>Government</b>	0.2	0.2	0.3	0.4		0.0	0.0
<b>Central</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Provincial</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Co-financiers</b>						0.0	0.0
<b>GEF</b>		0.6	0.8	0.6		0.0	0.0
<b>Others</b>	1.0	2.1	2.5	3.3		0.0	0.0
<b>Total Project Financing</b>	1.7	3.9	5.6	5.8	0.0	0.0	0.0

**Main assumptions:**

## **Annex 6: Procurement and Disbursement Arrangements**

### **GUINEA: RURAL ENERGY PROJECT**

#### **Procurement**

Procurement of works, goods and services financed by the IDA credit will be carried out in accordance with the *Guidelines for Procurement under IBRD Loans and IDA Credits* (January 1995, revised in January and August 1996, September 1997, and January 1999). Consultants services contracts financed by IDA will be procured in accordance with Bank's *Guidelines for the Selection of Consultants* by the World Bank Borrowers, published in January 1999. Agreement (*was obtained*) during negotiations that the Bank's Standard Bidding Documents (SBD) for goods or works under ICB and the Standard Request for Proposals Package for Consultant's Services will be used.

The procurement methods for items to be financed by IDA are summarized in Table A. Four types of procurement under IDA financing would be carried out under the project: (i) for consulting and training services; (ii) for supporting a credit & subsidy mechanism, (iii) for supporting operational costs, and (iv) for works. Business and financing plans for subprojects will be proposed by private providers, NGOs, or village associations. IDA will initially only finance a maximum of 50%, gradually to be reduced to some 30% of the total costs of these subprojects after a review by the BERD. The remaining costs will be financed by the Provider (30%), beneficiaries (20%), and eventually a local bank or donor (10 - 20%) of choice (to be determined by the Provider). Concession contracts for these subprojects would be awarded by MHE to the PDES once the financing package is assured. Procurement of the equipment required to realize subprojects is the responsibility of the Provider, NGO, or village association. The conditions for providing such IDA financing are: (i) decent business plan (verified by BERD); (ii) solid financing plan (existence of own contribution, contribution of beneficiaries, a bank or donor identified that provides co-financing). An operational manual was discussed during Appraisal; a condition for Negotiations is the finalization of this Manual.

Procurement for IDA financed services and goods will be handled by BERD. BERD's capacity to handle procurement will need to be duly assessed during the first supervision mission. A condition for Negotiations is approval of the action plan for a Financial Management system, creation of BERD, identification and hiring of its Director and Accountant, and a plan to train BERD staff to properly handle procurement and financial management.

## Procurement methods (Table A)

Civil Works. The total cost for civil works is estimated at US\$1.28 million for the whole five-year program. IDA will finance US\$0.28 million. This concerns construction of, or improvements to an existing office for the BERD and for minor civil works for the installation of the energy equipment to be acquired under the project. Civil works contracts will be financed by IDA and procurement will be carried out in accordance with national procedures acceptable to IDA.

Goods and Equipment. The total cost for goods and equipment is estimated at US\$11.80 million, including equipment, supplies, vehicles, etc, of which IDA will finance US\$2.72 million and GEF US\$1.00 million. Procurement of small equipment, furniture and vehicles costing less than US\$20,000 equivalent per contract up to an aggregate of US\$100,000 will be spread over time and is not suitable for ICB and NCB. It may be procured through prudent local shopping, or up to US\$100,000 through international shopping on the basis of quotations obtained from at least three reputable suppliers. Spare parts, operating expenditures, minor off-the-shelf items, and other proprietary items costing less than US\$5,000 equivalent per contract up to an aggregate of US\$50,000 equivalent, may be procured directly from manufacturers and authorized local distributors.

Consultants' Services and Training financed by IDA would be for: (i) studies, preparation of business plans, data collection, accounting systems, monitoring, audit and impact analysis; and (ii) long term technical assistance, short term consultancies on specific technical matters and training. Consultants financed by IDA, totaling US\$2.0 million (out of US\$3.92 million) and by GEF for US\$1.00 million would be hired in accordance with the Bank's *Guidelines for Selection and Employment of Consultants* by World Bank Borrowers dated January 1999. It will be addressed through competition among qualified short-listed firms in which the selection will be based on **Quality- and Cost-Based Selection (QCBS)** by evaluating the quality of the proposal before comparing the cost of the services to be provided. For audits of a standard nature, the **Least Cost Selection (LCS)** will be the most appropriate method--the firm with the lowest price will be selected, provided its technical proposal received the minimum mark. Contracts for foreign consultants services estimated at less than US\$100,000 per contract up to an aggregate of US\$0.8 million would be based on **Consultants' Qualifications (CQ)**, taking into account the consultants' experience and competence relevant to the assignment. Services for specific interventions which can be delivered by **Individual Local Consultants** for less than \$30,000 per incidence will be selected through comparison of qualifications against job description requirements among those expressing interest in the assignment or approached directly.

Short-lists for contracts estimated under US\$50,000 may be comprised entirely of national consultants if a sufficient number of qualified firms (at least three) are available at competitive costs. However, if foreign firms have expressed interest, they will not be excluded from consideration. The standard request for proposal as developed by the Bank will be used for appointment of consultants. Simplified contracts will be used for short-term assignments i.e., those not exceeding six months, carried out by individual consultants. The Government will be



briefed during negotiations about the special features of the new guidelines, in particular with regard to advertisement and public bid opening.

**Table A: Project Costs by Procurement Arrangements**  
(US\$ million equivalent)

Expenditure Category	Procurement Method <sup>1</sup>			N.B.F.	Total Cost
	ICB	NCB	Other <sup>2</sup>		
<b>1. Works</b>	0.00 (0.00)	0.00 (0.00)	1.28 (0.28)	0.00 (0.00)	1.28 (0.28)
<b>2. Goods</b>	0.00 (0.00)	0.00 (0.00)	3.72 (3.72)	8.08 (0.00)	11.80 (3.72)
<b>3. Services</b>	0.00 (0.00)	0.00 (0.00)	3.00 (3.00)	0.92 (0.00)	3.92 (3.00)
	0.00 (0.00)	0.00 (0.00)	()	()	0.00 (0.00)
<b>Total</b>	0.00 (0.00)	0.00 (0.00)	8.00 (7.00)	9.00 (0.00)	17.00 (7.00)

<sup>1/</sup> Figures in parenthesis are the amounts to be financed by the Bank Credit/Grant. All costs include contingencies.

<sup>2/</sup> Includes civil works and goods to be procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project, and (ii) re-lending project funds to local government units.

Numbers are rounded.

**Prior review thresholds (Table B)**

Because BERD is a new entity with no experience in procurement, the first ten (10) contracts will be subject to prior review. Thereafter, all contracts for construction of civil works and purchase of goods above the threshold value of US\$100,000 will be subject to IDA's prior review procedures. The use of IDA's Standard Bidding Documents would considerably expedite the prior review process as IDA review would primarily focus on invitation to bid, the bid data sheet, contract data, technical specifications, bill of quantities/schedule of requirements and other contract-specific items. Selective post-review of contracts awarded below the threshold levels will apply to about one in three contracts after prior review of the first five contracts. Draft standard bidding documents for goods or works under ICB and the Standard Request for Proposals Package for Consultant's Services will be reviewed and agreed upon with IDA during negotiations. Prior review will include the review of selection procedures, proposals, evaluation reports and draft contracts. Except for the first ten (10) contracts, prior IDA review will not apply to contracts for the recruitment of consulting firms and individuals estimated to cost less than US\$100,000 and US\$50,000 equivalent, respectively. However, the exception to prior IDA review will not apply to the Terms of Reference of such contracts, regardless of value, to single-source hiring, to assignments of a critical nature as determined by IDA (such as audits), or to amendments of contracts raising the contract value above the prior review threshold.

For consultant contracts subject to prior review, opening financial envelopes will not take place prior to receiving the Bank's no-objection to the technical evaluation. Documents related to procurement below the prior review thresholds will be maintained by the Borrower for ex-post review by auditors and by IDA supervision missions. BERD will be required to maintain all relevant procurement documentation for subsequent review by IDA. BERD will submit to IDA periodic procurement schedules detailing each procurement in progress and completed as part of the normal project reporting exercise.

All thresholds stated in this section shall be reviewed by the Borrower and IDA on an annual basis.

**Table B: Thresholds for Procurement Methods and Prior Review** <sup>1</sup>

<b>Expenditure Category</b>	<b>Contract Value Threshold (US\$ thousands)</b>	<b>Procurement Method</b>	<b>Contracts Subject to Prior Review (US\$ millions)</b>
<b>1. Works</b>	100	other	NA
<b>2. Goods</b>	100	other	NA
<b>3. Services</b>			All TORs or sole source contracts are subject to IDA prior review
<b>3a. Individuals</b>	above 50,000 below 50,000	other other	prior review post review
<b>3.b. Firms</b>	Above 100,000	Other	Prior review and review of technical evaluation report before opening financial

	below 100,000	Other	proposal Post review. Short list may comprise of entirely local firms if available
<b>4. Miscellaneous</b>			
<b>5. Miscellaneous</b>			
<b>6. Miscellaneous</b>			

**Total value of contracts subject to prior review:** \$600,000

### **Overall Procurement Risk Assessment**

#### **Average**

**Frequency of procurement supervision missions proposed:** One every 12 months (includes special procurement supervision for post-review/audits)

<sup>1</sup>Thresholds generally differ by country and project. Consult OD 11.04 "Review of Procurement Documentation" and contact the Regional Procurement Adviser for guidance.

## **Disbursement**

### **Allocation of credit/grant proceeds (Table C)**

The closing date of the proposed credit will be June 30, 2006. The proposed IDA credit would be disbursed against the categories shown in Table C.

Disbursements will be made in accordance with procedures and policies outlined in the Bank's *Disbursement Handbook*. A special account for BERD covering four months of eligible expenditures will be established at a commercial bank acceptable to IDA. Half of the initial deposit will be made available to the special account upon credit effectiveness, and the remaining balance will be made available as needed. Replenishments of the special account should be made every month or when needed and must be fully documented, except for operating costs and training expenditures and for contracts valued at less than (i) US\$50,000 for consultants (firms); and (iv) US\$30,000 for individual consultants. BERD will maintain all supporting documents in its office for review by visiting supervision missions and external auditors.

**Table C: Allocation of Credit/Grant Proceeds**

<b>Expenditure Category</b>	<b>Amount in US\$million</b>	<b>Financing Percentage</b>
Works	0.28	100%
Goods	3.72	100% of foreign 90% of local
Services	3.00	100%
<b>Total Project Costs</b>	7.00	
<b>Total</b>	7.00	

### **Use of statements of expenditures (SOEs):**

#### **Use of statements of expenditures (SOEs)**

Withdrawal applications shall be fully documented for all expenditures against which loan disbursements would be made, except for the following contracts for which loan disbursement would be based on SOEs certified by the Project Manager: (a) goods under contracts costing less than US\$50,000 equivalent each; (b) contracts of consulting firms costing less than US\$100,000 equivalent each or with individuals costing less than US\$50,000 each. Documents supporting SOEs shall be retained by the BERD and made available for review as requested by auditors (including technical audits) and by the World Bank supervision missions.

### **Special account:**

#### **(a) Special account under Traditional Disbursements Procedures**

To facilitate disbursements, the Government would open an IDA Special Account at a commercial bank for IDA and GEF's share of eligible expenditures. The authorized allocation

of this account would amount to US\$500,000. The authorized allocation shall be limited initially to an amount of US\$250,000 until the aggregate amount of withdrawals from the Credit account plus the total amount of all outstanding commitments entered into by the Association shall equal or exceed the equivalent of US\$ 7.0 million. Each replenishment request will be accompanied, as necessary, by an up-to-date bank statement and a reconciliation statement.

**(b) Special account for Withdrawals made on the basis of Project Management Reports**

Upon receipt of each application for withdrawal of an amount of the Credit, the Association shall, on behalf of the Borrower, withdraw from the Credit Account and deposit into the Special Account an amount equal to the lesser of: (a) the amount so requested; and (b) the amount which the Association has determined, based on the Project Management Report accompanying said application, is required to be deposited in order to finance Eligible Expenditures during the six-month period following the date of such report; provided, however, that the amount so deposited, when added to the amount indicated by said project Management Report to be remaining in the Special Account, shall not exceed the amount of one million Dollars (US\$1,000,000).

**Annex 7: Project Processing Schedule  
GUINEA: RURAL ENERGY PROJECT**

<b>Project Schedule</b>	<b>Planned</b>	<b>Actual</b>
<b>Time taken to prepare the project (months)</b>		30
<b>First Bank mission (identification)</b>		01/10/1997
<b>Appraisal mission departure</b>	02/01/2000	05/07/2000
<b>Negotiations</b>	11/05/2001	
<b>Planned Date of Effectiveness</b>	01/31/2002	

**Prepared by:**

Willem Floor, Robert van der Plas, Nouredine Bouzaher

**Preparation assistance:**

Dawit Yohannes

**Bank staff who worked on the project included:**

<b>Name</b>	<b>Speciality</b>
René Massé	Rural Energy Specialist
Willem Floor	Senior Energy Planner
Robert van der Plas	Energy Planner
Nouredine Bouzaher	Sr. Energy Economist
Philippe Durand	Sr. Energy Specialist
Dawit Yohannes	Language Team Assistant
Hassane Cisse	Sr. Counsel
Serigne Omar Fye	Sr. Environmental Specialist
Abdoulaye Yero Balde	Economist
Bella Lelouma Diallo	Financial Management Specialist
Bhanoumatee Ayoung	Sr. Procurement Specialist

**Annex 8: Documents in the Project File\***  
**GUINEA: RURAL ENERGY PROJECT**

**A. Project Implementation Plan**

Was discussed during appraisal and will be a condition for negotiations.

**B. Bank Staff Assessments**

Guinea, household Energy Strategy, ESMAP, 1994

**C. Other**

Définition et mise en oeuvre d'un mécanisme financier durable, Horus, février 2000

Decentralized Rural Electrification - institutional and operational Scheme, Marge, Feb 1999.

Electrification Rurale Décentralisée en Guinée, Avancement du programme MNRE - ESMAP, Oct 1998

Enquêtes sur la demande solvable d'électrification rurale hors réseau, en Basse Guinée et en Moyenne Guinée, SN.A.P.E. jan 1998

Etude d'électrification rurale par centrale hydraulique et mini-réseau de la sous préfectuyre de Konkouré, APAVE, nov 1997

Pico Hydro & Diesel Electrification of Konkouré-Médina, Harvey Associates, Nov 1997

Rapport synthèse programme pico thermique (GECO), sep 1997

Atelier électrification rurale décentralisée - document de travail, Direction Nationale de l'Energie, Oct 1997

\*Including electronic files

**Annex 9: Statement of Loans and Credits**  
**GUINEA: RURAL ENERGY PROJECT**

Project ID	FY	Purpose	Original Amount in US\$ Millions					Difference between expected and actual disbursements <sup>a</sup>		
			IBRD	IDA	SF	GEF	Cancel.	Undisb.	Orig	Frm Rev'd
P001068	1993	AGR EXPORT PROMOTION	0.00	20.80			0.00	9.35	8.81	2.36
P001081	1996	AGRIC SERVICES	0.00	35.00			0.00	5.91	1.76	0.00
P049716	2000	CAPACITY BUILDING SD	0.00	19.00			0.00	18.56	0.00	0.00
P001087	1995	EQUITY AND SCHOOL IM	0.00	42.50			0.00	16.86	14.64	0.00
P001070	1994	HEALTH/NUT.SCTR.	0.00	24.60			0.00	8.64	5.23	5.23
P001090	1996	HIGHER EDUCATION MAN	0.00	6.60			0.00	3.04	3.29	2.85
P050731	1998	MICROFINANCE	0.00	5.00			0.00	5.11	1.14	0.00
P001077	1996	MIN SECT INV PROMOT	0.00	12.20			0.00	1.70	1.33	0.00
P041568	1999	POP & REPROD HEALTH	0.00	11.30			0.00	9.63	-0.52	0.00
P057188	1999	PRE-SRV TEACHER EDUC	0.00	4.10			0.00	2.43	1.00	0.00
P001075	1997	THIRD WATER SUPPLY	0.00	25.00			0.00	21.04	6.56	0.00
P001074	1999	URBAN III	0.00	18.00			0.00	16.90	1.21	0.00
P050732	1999	VILLAGE COMMUNITY SUPPORT PROGRAM	0.00	22.00			0.00	20.67	-0.45	0.00
<b>Total:</b>			0.00	246.10			0.00	139.84	44.00	10.44



GUINEA  
STATEMENT OF IFC's  
Held and Disbursed Portfolio

In Millions US Dollars

FY Approval	Company	Committed				Disbursed			
		IFC				IFC			
		Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
1988	Aurifere	0.00	0.00	4.59	0.00	0.00	0.00	4.59	0.00
1994	Ciments Guinee	0.30	0.00	0.00	0.00	0.30	0.00	0.00	0.00
1998	SEF Agro	0.13	0.00	0.00	0.00	0.13	0.00	0.00	0.00
1999	SEF Alex	1.17	0.00	0.00	0.00	1.17	0.00	0.00	0.00
1993/98	SGHI	0.00	0.00	0.44	0.00	0.00	0.00	0.44	0.00
	Total Portfolio:	1.60	0.00	5.03	0.00	1.60	0.00	5.03	0.00

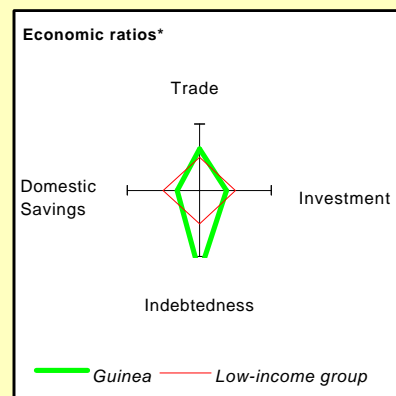
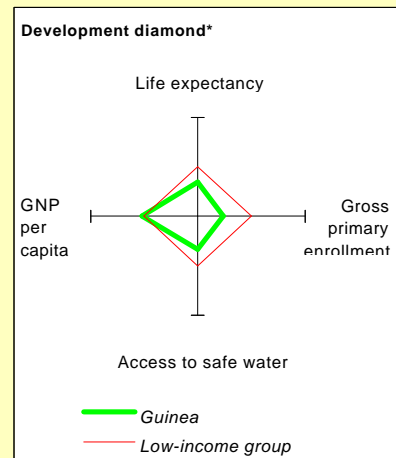
  

FY Approval	Company	Approvals Pending Commitment			
		Loan	Equity	Quasi	Partic
	Total Pending Commitment:	0.00	0.00	0.00	0.00

## Annex 10: Country at a Glance

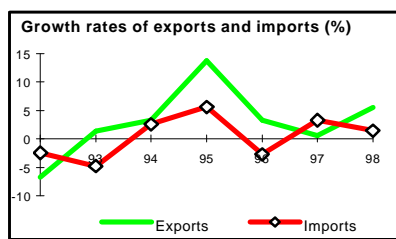
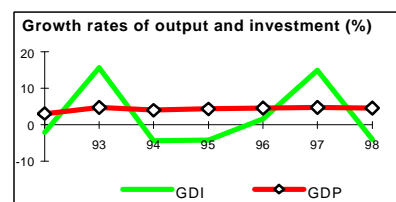
### GUINEA: RURAL ENERGY PROJECT

POVERTY and SOCIAL	Guinea	Sub-Saharan Africa	Low-income		
<b>1998</b>					
Population, mid-year (millions)	7.1	628	3.515		
GNP per capita (Atlas method, US\$)	540	480	520		
GNP (Atlas method, US\$ billions)	3.8	304	1.844		
<b>Average annual growth, 1992-98</b>					
Population (%)	2.9	2.6	1.7		
Labor force (%)	2.4	2.6	1.9		
<b>Most recent estimate (latest year available, 1992-98)</b>					
Poverty (% of population below national poverty line)	..	..	..		
Urban population (% of total population)	30	33	31		
Life expectancy at birth (years)	44	51	63		
Infant mortality (per 1,000 live births)	128	91	69		
Child malnutrition (% of children under 5)	18	..	..		
Access to safe water (% of population)	49	47	74		
Illiteracy (% of population age 15+)	76	42	32		
Gross primary enrollment (% of school-age population)	51	77	108		
Male	65	84	113		
Female	37	69	103		
<b>KEY ECONOMIC RATIOS and LONG-TERM TRENDS</b>					
	<b>1977</b>	<b>1987</b>	<b>1997</b>	<b>1998</b>	
GDP (US\$ billions)	..	2.2	3.9	3.6	
Gross domestic investment/GDP	..	15.2	21.6	22.2	
Exports of goods and services/GDP	..	29.6	19.7	22.5	
Gross domestic savings/GDP	..	16.1	19.3	19.3	
Gross national savings/GDP	..	7.8	15.3	15.0	
Current account balance/GDP	..	-7.4	-6.3	-7.2	
Interest payments/GDP	..	1.9	2.0	1.7	
Total debt/GDP	..	95.1	79.6	90.3	
Total debt service/exports	..	25.2	15.8	97.6	
Present value of debt/GDP	..	..	63.1	..	
Present value of debt/exports	..	..	313.5	..	
	<b>1977-87</b>	<b>1988-98</b>	<b>1997</b>	<b>1998</b>	<b>1999-03</b>
<i>(average annual growth)</i>					
GDP	..	4.0	4.7	4.6	5.7
GNP per capita	..	1.8	1.2	1.4	2.7
Exports of goods and services	..	3.0	0.5	5.5	6.5



#### STRUCTURE of the ECONOMY

	1977	1987	1997	1998
<i>(% of GDP)</i>				
Agriculture	..	24.7	22.2	22.3
Industry	..	32.3	35.0	35.3
Manufacturing	..	..	4.3	4.1
Services	..	43.0	42.8	42.4
Private consumption	..	72.7	73.7	73.8
General government consumption	..	11.2	6.9	6.9
Imports of goods and services	..	28.8	22.0	25.4
	<b>1977-87</b>	<b>1988-98</b>	<b>1997</b>	<b>1998</b>
<i>(average annual growth)</i>				
Agriculture	..	4.3	5.1	5.2
Industry	..	3.7	4.1	3.4
Manufacturing	..	4.0	4.5	5.0
Services	..	3.4	3.7	5.3
Private consumption	..	3.7	4.0	7.0
General government consumption	..	2.2	4.0	-7.3
Gross domestic investment	..	3.1	15.0	-4.0
Imports of goods and services	..	0.7	3.3	1.4
Gross national product	..	4.7	4.2	4.3

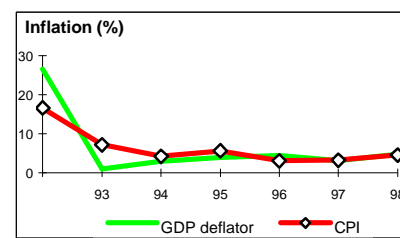


Note: 1998 data are preliminary estimates.

\* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

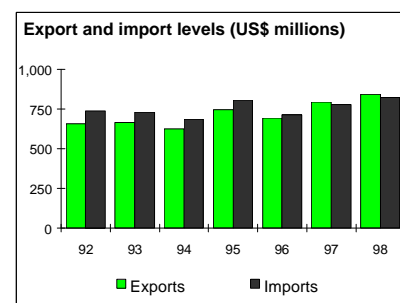
## PRICES and GOVERNMENT FINANCE

	1977	1987	1997	1998
<b>Domestic prices</b>				
<i>(% change)</i>				
Consumer prices	..	36.9	3.2	4.5
Implicit GDP deflator	..	35.9	3.1	4.7
<b>Government finance</b>				
<i>(% of GDP, includes current grants)</i>				
Current revenue	..	14.6	11.1	10.6
Current budget balance	..	1.7	2.1	1.8
Overall surplus/deficit	..	-7.5	-6.0	-5.9



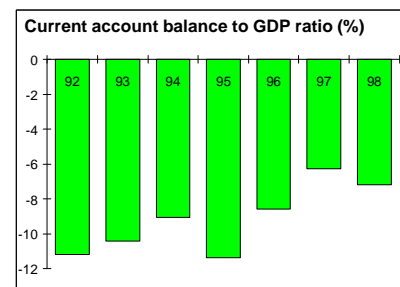
## TRADE

	1977	1987	1997	1998
<i>(US\$ millions)</i>				
Total exports (fob)	..	635	797	843
Other metals	..	403	342	377
Aluminum	..	87	113	113
Manufactures	..	..	..	..
Total imports (cif)	..	500	779	822
Food	..	15	77	79
Fuel and energy	..	61	90	86
Capital goods	..	65	83	85
Export price index (1995=100)	..	..	..	..
Import price index (1995=100)	..	..	..	..
Terms of trade (1995=100)	..	..	..	..



## BALANCE of PAYMENTS

	1977	1987	1997	1998
<i>(US\$ millions)</i>				
Exports of goods and services	..	646	773	813
Imports of goods and services	..	627	861	919
Resource balance	..	19	-88	-106
Net income	..	-144	-111	-114
Net current transfers	..	-37	-47	-39
Current account balance	..	-161	-246	-259
Financing items (net)	..	216	292	255
Changes in net reserves	..	-55	-47	4
<b>Memo:</b>				
Reserves including gold (US\$ millions)	0	0	225	251
Conversion rate (DEC. local/US\$)	21.1	428.4	1,095.3	1,300.0



## EXTERNAL DEBT and RESOURCE FLOWS

	1977	1987	1997	1998
<i>(US\$ millions)</i>				
Total debt outstanding and disbursed	918	2,072	3,120	3,265
IBRD	64	65	0	0
IDA	8	217	989	978
Total debt service	68	164	125	813
IBRD	8	14	0	0
IDA	0	2	12	14
Composition of net resource flows				
Official grants	3	65	..	..
Official creditors	-15	73	355	303
Private creditors	13	-3	9	-10
Foreign direct investment	0	13	..	..
Portfolio equity	0	0	..	..
World Bank program				
Commitments	0	92	72	68
Disbursements	6	39	57	99
Principal repayments	2	10	5	7
Net flows	4	29	52	92
Interest payments	6	6	7	7
Net transfers	-2	23	44	85

