



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET

MONIQUE BARBUT
Chief Executive Officer and Chairperson

1818 H Street, NW
Washington, DC 20433 USA
Tel: 202.473.3202
Fax: 202.522.3240/3245
E-mail: mbarbut@TheGEF.org

April 04, 2012

Dear Council Member:

I am writing to notify you that we have today posted on the GEF's website at www.TheGEF.org, a medium-sized project proposal from UNIDO entitled ***Guinea: Promoting Development of Multi-purpose Mini-hydro Power Systems under the Regional: SPWA-CC: GEF Strategic Program for West Africa: Energy Component (PROGRAM)***, to be funded under the GEF Trust Fund (GEFTF).

The overall goal of the project is to develop the market environment for improving access to mini hydro-based modern energy services in rural areas.

The project proposal is being posted for your review. We would welcome any comments you may wish to provide by April 18, 2012, in accordance with the new procedures approved by the Council. You may send your comments to gcoordination@TheGEF.org.

If you do not have access to the Web, you may request the local field office of the World Bank or UNDP to download the document for you. Alternatively, you may request a copy of the document from the Secretariat. If you make such a request, please confirm for us your current mailing address.

Sincerely,

Attachment: Project Document

cc: Country Operational Focal Point
GEF Agencies
STAP
Trustee



REQUEST FOR CEO ENDORSEMENT/APPROVAL

PROJECT TYPE: Medium-sized Project

THE GEF TRUST FUND

Submission date: 25 February 2011

Resubmission date: 11 July 2011

Resubmission date: 15 December 2011

Resubmission date: 16 February 2012

Resubmission date: 23 March 2012

PART I: PROJECT INFORMATION

GEFSEC PROJECT ID: 3958

GEF AGENCY PROJECT ID: XX/GUI/09/X01

COUNTRY(IES): Republic of Guinea

PROJECT TITLE: Promoting development of multi-purpose mini hydro power systems

GEF AGENCY(IES): UNIDO

OTHER EXECUTING PARTNER(S): Ministry of Mines and Energy

GEF FOCAL AREA(S): Climate Change

GEF-4 STRATEGIC PROGRAM(S): CC-SP3-RE

NAME OF PARENT PROGRAM/UMBRELLA PROJECT: GEF STRATEGIC PROGRAM FOR WEST AFRICA (GEFSPWA):

ENERGY COMPONENT

Expected Calendar (mm/dd/yy)	
Milestones	Dates
Work Program (for FSPs only)	22 May 2009
Agency Approval date	28 Feb 2011
Implementation Start	01 May 2012
Mid-term Evaluation (if planned)	-
Project Closing Date	29 February 2016

A. PROJECT FRAMEWORK

Project Objective: The overall goal of the project is to develop the market environment for improving access to mini hydro-based modern energy services in rural areas.

Project Components	Indicate whether Investment, TA, or STA ²	Expected Outcomes	Expected Outputs	GEF Financing ¹		Co-Financing ¹		Total (\$) c=a+ b
				(\$ a)	%	(\$ b)	%	
1. RE market development, hydropower based.	TA	1.1. RE investments climate improved. 1.2. Information system on mini hydro potential improved. 1.3. Investment prioritization system is improved at public and private sector level.	1.1. Policy, regulatory framework and financial system reviewed and improved, introducing incentive mechanism (i.e., feed in tariff, tax exceptions and reductions). 1.2. Detailed feasibility studies for two mini hydro facilities prepared and ready for further development by potential developers and investors. 1.3. Institutional capacity to provide support to the private sector and investors strengthened.	33,000	25	97,000	75	130,000

2. Technology demonstration, technical capacity building and awareness rising.	INV	2.1 Reduced the GHG emissions, increased energy access through rural electrification based on mini-hydro and income-generation activities created in rural communities.	2.1. Construction of an 800 kW pilot plant at one of three selected sites completed; Approx. 20,800 persons served by access to electricity by 2016, (approx. 400 local businesses and 3,000 households with access to electricity). Technical capacity and awareness building – through the learning by doing approach– is grounded.	750,000	40	1,150,000	60	1,900,000
	TA	2.2. Stakeholders awareness increased; technical and commercial viability of mini hydro demonstrated. 2.3. Technical capacities increased.	2.2. Local team authority and private sector service providers are trained on operation, maintenance and management.	20,700	29	50,000	71	70,700
3. Monitoring and evaluation	TA	N/A	3.1. Monitoring and evaluation plan has been prepared and implemented. 3.2. Publications on lessons learnt and toolkits have been produced and disseminated. 3.3. New energy installations covered by local/national business media.	20,000	23	40,000	67	60,000
5. Project management				40,000	25	119,916	75	159,916
Total Project Costs				A863,700		B1,456,916		2,320,616

¹ List the \$ by project components. The percentage is the share of GEF and Co-financing respectively of the total amount for the component.

² TA = Technical Assistance; STA = Scientific & Technical Analysis.

B. SOURCES OF CONFIRMED CO-FINANCING FOR THE PROJECT (expand the table line items as necessary)

<i>Name of Co-financier (source)</i>	<i>Classification</i>	<i>Type</i>	<i>Project</i>	<i>%*</i>
Project Government Contribution (MEM)	Nat'l Gov't	Grant	727,270	52.7
GEF Agency (UNIDO)	Impl. Agency	Grant	50,000	3.6
UNIDO/France contribution	Impl. Agency/ Nat'l Gov't	Grant	579,646	36.5
GEF Agency (UNIDO)	Impl. Agency	In kind	100,000	7.2
Total Co-financing			B1,456,916	100%

* Percentage of each co-financier's contribution at CEO endorsement to total co-financing.

C. FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	<i>Project Preparation a</i>	<i>Project b</i>	<i>Total c = a + b</i>	<i>Agency Fee</i>	<i>For comparison: GEF and Co-financing at PIF</i>
GEF financing	50,000	A863,700	913,700	91,370	863,700
Government of Guinea Co-financing (UNIDO Managed)	N/A	727,270	727,270	72,730	800,000
Multilateral/ Bilateral (Co-financing from France - UNIDO Managed)	N/A	579,646	579,646	75,354	1,320,000
UNIDO in-kind	N/A	100,000	100,000	N/A	
UNIDO grant	50,000	50,000	100,000	N/A	50,000
Total	100,000	B2,320,616	2,420,616	239,454	3,033,700

D. GEF RESOURCES REQUESTED BY AGENCY(IES), FOCAL AREA(S) AND COUNTRY(IES)¹

<i>GEF Agency</i>	<i>Focal Area</i>	<i>Country Name/ Global</i>	<i>(in \$)</i>		
			<i>Project (a)</i>	<i>Agency Fee (b)²</i>	<i>Total c=a+b</i>
N/A	N/A	N/A	N/A	N/A	N/A
(select)	(select)				
Total GEF Resources					

¹ No need to provide information for this table if it is a single focal area, single country and single GEF Agency project.

² Relates to the project and any previous project preparation funding that have been provided and for which no Agency fee has been requested from Trustee.

E. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

<i>Component</i>	<i>Estimated person weeks</i>	<i>GEF amount(\$)</i>	<i>Co-financing (\$)</i>	<i>Project total (\$)</i>
Local consultants*	47	33,000	7,000	40,000
International consultants*	13	0	40,000	40,000
Total	70	33,000	47,000	80,000

*Details to be provided in Annex C.

F. PROJECT MANAGEMENT BUDGET/COST

<i>Cost Items</i>	<i>Total Estimated person weeks/months</i>	<i>GEF amount (\$)</i>	<i>Co-financing (\$)</i>	<i>Project total (\$)</i>
Local consultants*	79	40,000	40,000	80,000
International consultants*	-	0	0	0
Office facilities, equipment, vehicles and communications*			55,000	55,000
Travel*			24,916	24,916
Others**				
Total		40,000	119,916	159,916

*Details to be provided in Annex C. **For others, it has to clearly specify what type of expenses here in a footnote.

G. DOES THE PROJECT INCLUDE A “NON-GRANT” INSTRUMENT? yes no

(If non-grant instruments are used, provide in Annex E an indicative calendar of expected reflows to your agency and to the GEF Trust Fund).

H. DESCRIBE THE BUDGETED M&E PLAN:

Project monitoring and evaluation (M&E) will be conducted by UNIDO Headquarter staff in accordance with established UNIDO evaluation system and GEF M&E principles. UNIDO will closely monitor and review the progress of the project activities through periodic meetings, field visits, and consultations.

The overall objective of the monitoring and evaluation process is to ensure successful and quality implementation of the project by: i) tracking and reviewing project activities execution and actual accomplishments; ii) providing visibility into progress as the project proceeds so that the implementation team can take early corrective action if performance deviates significantly from original plans; and iii) adjust and update project strategy and implementation plan to reflect possible changes on the ground, results achieved and corrective actions taken.

A detailed monitoring plan for tracking and reporting on project time-bound milestones and accomplishments will be prepared by UNIDO in collaboration with the Project Coordination Unit (PCU) and project partners at the beginning of project implementation and then periodically updated.

The National Project Coordinator will be responsible for continuous monitoring of project activities execution, performance and track progress towards milestones. UNIDO project manager will be responsible for tracking overall project milestones and progress towards the attainment of the set project outputs. UNIDO project manager will be responsible for narrative reporting to the GEF.

A final external evaluation will be conducted six months upon completion of the project. The Strategic Results Framework (SRF) provides performance and impact indicators with their corresponding means of verification, which will be taken as a reference for monitoring the project's implementation, and for (independent) evaluation of performance and impact.

PART II: PROJECT JUSTIFICATION

A. STATE THE ISSUE, HOW THE PROJECT SEEKS TO ADDRESS IT, AND THE EXPECTED GLOBAL ENVIRONMENTAL BENEFITS TO BE DELIVERED:

The Issue: Although Guinea (around 11 million inhabitants) is rich in mineral and agricultural resources, however it is still one of the poorest countries in the world. Due to a very low GNI per capita, US\$ 400, and a low human assets index (37.4), Guinea has been considered amongst the Least Developed Countries (LDC) group since 1971. And in 2009, it was classified on the Human Development Poverty Index as 170 out of 182 countries. Since 2003, poverty in Guinea has increased significantly. Half of the country's population (53.6%) is below the poverty line, and around 70% in rural areas.

Guinea's energy consumption is relative low, and mainly produced from biomass (80%), with imported hydrocarbons (18%) and electricity (2%) making up the remainder¹. Fuel oil is the main imported oil product for mining operations and electricity generation proposes, with diesel fuel in second place. Only 18.4% of the population had access to electricity in 2002/2003, compared to the Poverty Reduction Strategy Papers, PSRP, objective of 65% by 2015. This is actually a reduction from previous years: in 1994/1995, electricity coverage was 19.5%. As a consequence, the cost of electricity is high, which among other things has an impact on the production costs of SMEs and reduces economic productivity, thereby limiting Guinea's development. The use of electricity for lighting decreases with the distance from the capital, being only 5 percent in some regions. As a consequence, two-thirds of households use oil lamps for lighting and the majority use wood and charcoal for cooking.

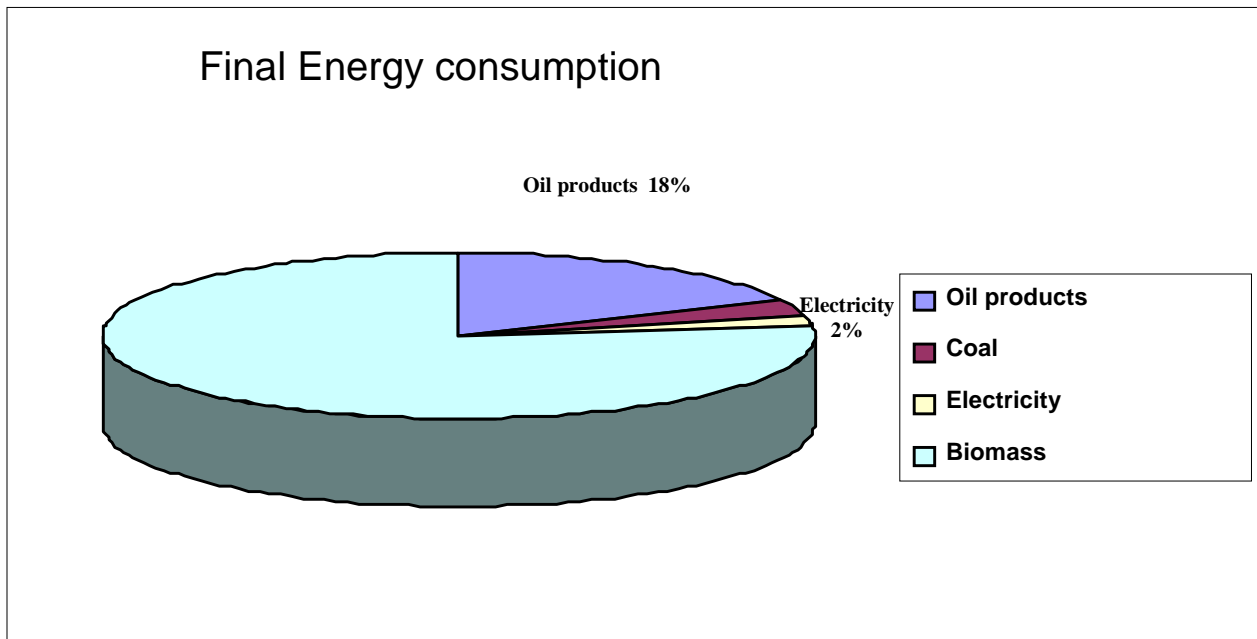


Fig. 1: Total energy consumption by sources

Most of the country's electricity is produced from thermal power (95%). The Guinean Electrical Company, EDG, has an installed capacity of 205.21 MW (75.46 MW thermal power plant in Tombo and 129.72 MW hydro power plant in Garafiri), which supplies electricity to the capital, Conakry, and to a number of smaller towns. Mining companies and some other large consumers generate electricity for their own use, which accounts for nearly half of the electricity generation in Guinea. Given the growth of the mining and aluminum sectors, it is estimated that the demand will rise to 1,100 MW by 2020, which will surpass their capacity to generate electricity.

¹ International Monetary Fund (January 2008). *Guinea: Poverty Reduction Strategy Paper*. Retrieved on September 13, 2010, from [5](#)

In addition, there are 24 small diesel generators and run-of-the-river hydropower stations in several towns, whose operation is sporadic, inefficient and unreliable. In peri-urban areas, there are still thousands of potential consumers who are not connected to the grid for technical and/or financial reasons. Batteries are often used as the energy source, to run TVs and lights. In most rural areas, there is no electricity, and there are no prospects of extension of the national grid to them in the near future, given that EDG's priority is the urban areas. Private small generators up to 10 kW are being used by some wealthy citizens 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, using mostly second-hand diesel generators and low-cost distribution networks. Consumers are mainly cottage and small businesses. These operators generally do not provide electricity to households.

This situation exists due to i) the low production of electricity energy by EDG due to the fact that only about half of the installed capacity is operational; ii) the deterioration of production and transportation facilities; iii) the poor state of transportation and distribution systems; iv) under-investment in the electricity sector; v) financial imbalances; and vi) a weak institutional framework (Poverty Reduction Strategy Paper, PRSP, 2008).

The PRSP progress report advises that there should be "a) improvement of the financial viability of the sector, which requires considerable improvement in commercial returns (especially through vigorous anti-corruption efforts) as well as more rational management of resources; b) development and sustainability of the concept of paying for public utilities; c) strengthening of production and distribution capacities to meet the needs of the population, including in rural areas". The government has reiterated its commitment to launch a new reform process in the power sector. The quality of urban electricity service has improved significantly in urban areas and consumption has increased substantially, although largely through illegal connections.

With the assistance of the Energy Sector Management Assistance Program (ESMAP), the Government has also conducted several surveys with regards to rural access to energy. 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 long distances. Currently, households not connected to the national grid pay a fairly significant amount (\$5-8 per month) for their energy uses (kerosene lamps, dry cell batteries, etc.). If one considers that Guinea's 1998 GNP per capita was US\$540, this expenditure on fuels represents 11-17% of households' average annual income; and
- (b) Individual systems (e.g., solar lanterns) or collective systems (e.g., pico-hydro systems, hybrid diesel-generator sets) could provide an intermediate solution that would be affordable for many rural (and the peri-urban) households.

Taking into account the findings of the surveys, the Government has adopted a new strategy for its Decentralized Rural Electrification (DRE) initiative, reflected in a sector policy letter of February 1998 (see PART B. CONSISTENCY OF THE PROJECT WITH NATIONAL AND/OR REGIONAL PRIORITIES/PLANS)

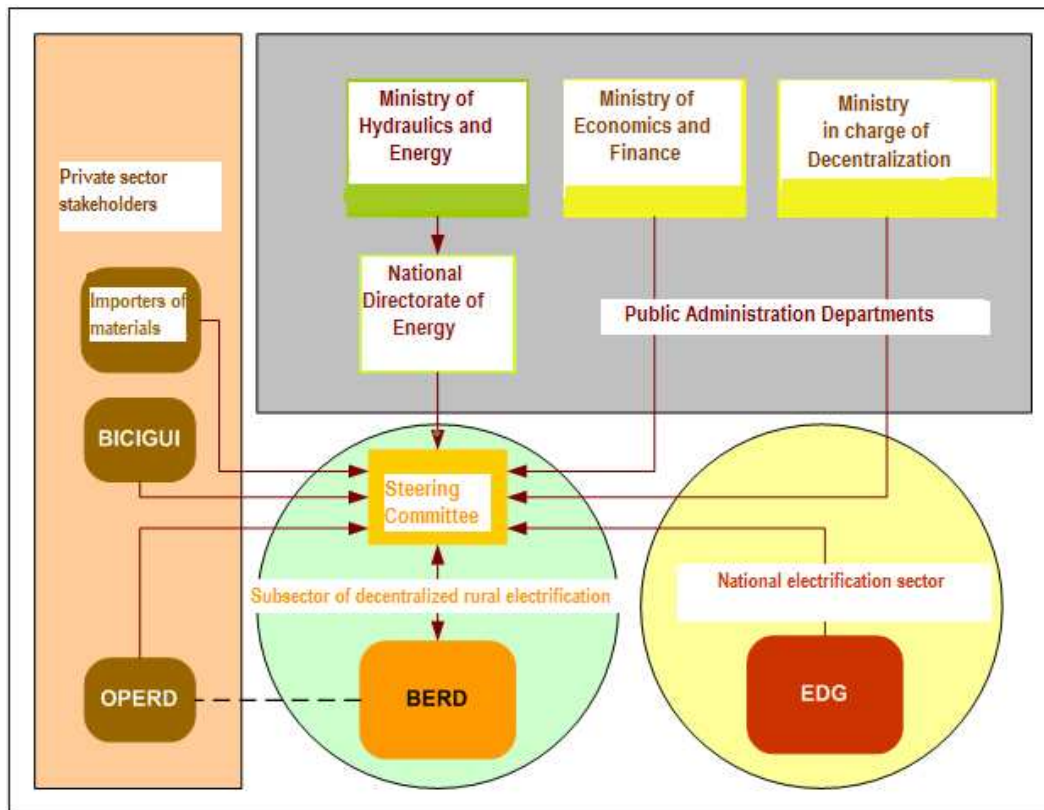


Figure 2. BERD institution Framework

Notes:

BERD, “Bureau d’Électrification Rurale Décentralisée”, decentralized rural electrification office

BICIGUI, “Banque Internationale pour le Commerce et l’Industrie de la Guinée”, local commercial bank

EDG, “Électricité de Guinée”, Guinean electrical company

OPERD, “Opération privé d’ERD”, private suppliers of decentralized rural electrification (DRE)

Current plans tend to consider the establishment of decentralized mini-grids powered by fossil fuels. However, this does not take into account the environmental impacts of this option: the use of fossil fuels to power the energy production in these decentralized facilities will contribute to increasing the country's GHG emissions. This option will also increase the country's dependence on expensive imported fossil fuels. The solution is to promote the development of mini-grids powered by the most suitable renewable energy system locally available. In the case of Guinea, this would be small hydropower given the country's major hydropower potential.

Guinea has high rainfall (about 2,000 mm/year) and a voluptuous landscape (regions of Fouta-Djalou and Guinée Forestière), which give the country the perfect conditions to develop natural hydro power sources such as the Gambia and the Niger rivers, which originate in its domain. The estimated hydroelectric potential (technically feasible) is 6.1 GW for a production of 19,300 GWh/year¹, as well as a mini hydro potential (less than 1 MW) of near 40 MW. Only 1% of the hydro power potential has been developed. Future plans include the construction of two large hydro power plants of Bafing and Konkouré on the Niger river, and the 215 MW hydro power plant in Kaléta, on the Konkouré River in central Guinea. The solution is to promote the development of mini-grids powered by the most suitable renewable energy system locally available. A potential of 150 small, mini and micro hydro sites have been reported; 13 sites with total capacity of 24 MW earmarked. Apart from mini hydro potential, Guinea also has the possibility to develop other renewable energies, such as solar and wind energy. The potential for these energies has been estimated as 4.8 kWh/m²j and 2-4 m/s, respectively.

¹ Barry, M. O. & Sow, A. (juin 2006). *OMD présentation du rapport diagnostic secteur énergie*. République de Guinée et PNUD. <http://www.gn.undp.org/Docs/omd/Diagn-Energie-OMD-2006.pdf>

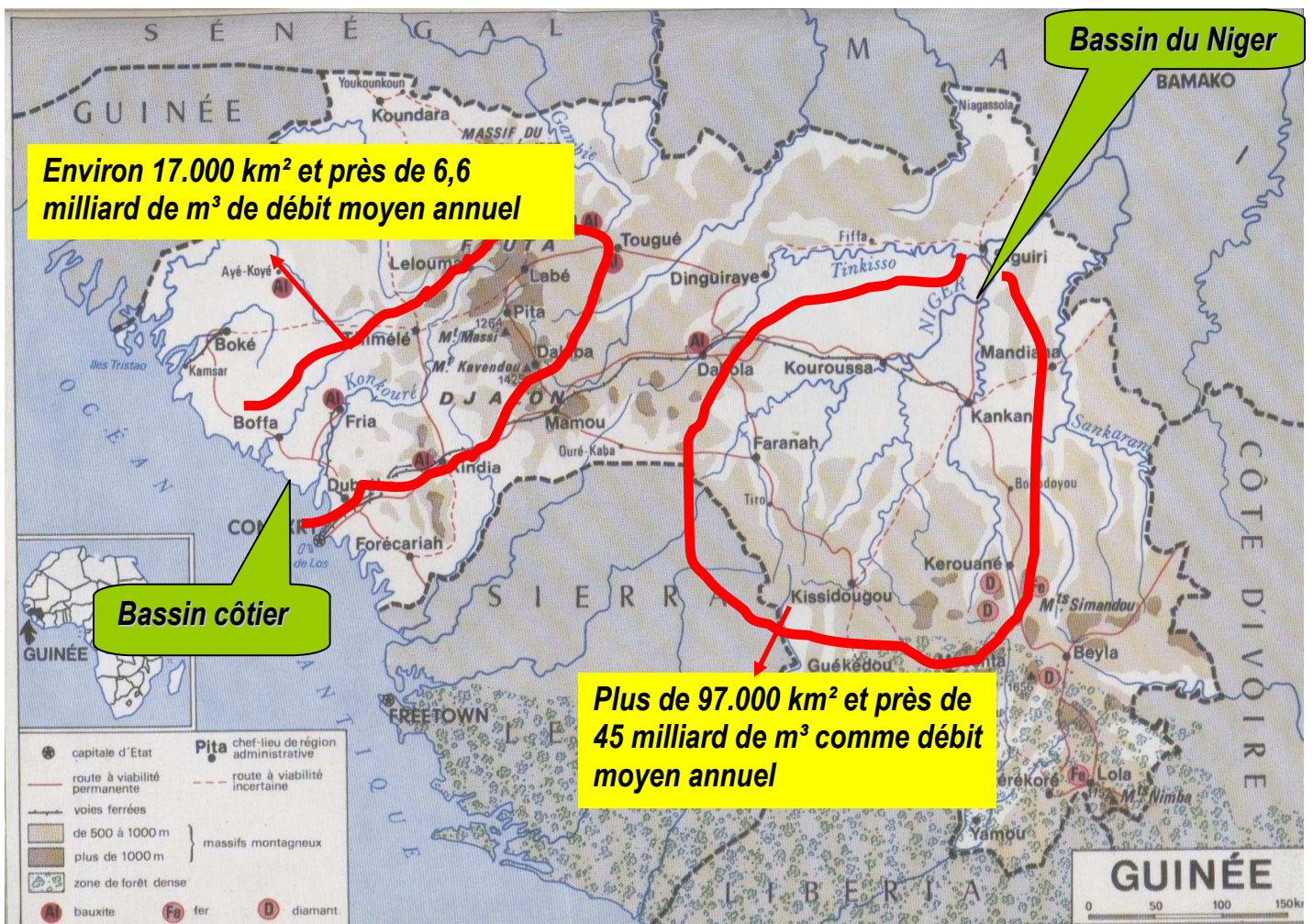


Figure 3 : Principaux Bassins hydroliques de la Guinee

However, the establishment of viable and functional renewable energy-powered decentralized mini-grids in rural areas in Guinea faces a number of barriers, some of which are specific to mini-grids and some which are specific to the use of renewable energy to power mini-grids. Among the most important barriers are:

1. Weak legal & regulatory framework: there is a need to enhance the existing institutions and improve the existing mechanisms, especially to support involvement of the private sector in renewable energy investments based rural energy access.
2. Lack of information on available renewable energy resources and its technical and commercial feasibility: the renewable energy resources in the country have not been assessed in detail, so, for the private sector and investing institutions it is difficult to have a clear and informed picture on the basis to initiate the actions required for project & enterprise development based on the use of these renewable.
3. Lack of knowledge about the technical and commercial viability of renewable energy projects: there is a need to demonstrate the technical and commercial viability of renewable energy projects in order to attract private sector participation in the dissemination and adoption of these technologies.
4. Lack of technical capacities: there is a lack of local technical capacities to identify, design, construct, install, manage, operate, and maintain small hydropower based mini-grids, especially those combined with powering irrigation.

The project:

The project seeks to address these existing barriers, to deliver measurable results and to increase the investment in renewable energy in The Guinea through an integrated approach that combines: technical assistance at the policy and project level, capacity building and technology demonstration.

To remove the identified barriers that prevent the development of a market on multi-purpose mini hydro grids and to meet the growing electricity needs in rural areas, that are being partially satisfied by fossil fuels, as well as, to address the current needs for irrigation, the project aims to: i) create a critical mass of skilled and knowledgeable technicians and public officers; ii) increase the awareness on the appropriate technologies and the best practices to combine the intended purposes and maximize the effectiveness; iii) formulate and endorse policies encouraging the involvement of private sector and improving the access to the current financial mechanisms that are supporting the RE development in rural areas.

The primary target beneficiaries of the project are: the energy policy-makers and implementing institutions, focusing on the Ministry of Energy and DRE, the energy generator sector (managers and engineers), rural energy users, training institutes, energy professionals and service providers and the financial sector.

The project will work with local partners, at the central and local government levels, with private sectors as installers and service providers, and with local banks and financial institutions. The project will provide technical assistance to the Directorate of Energy of the Ministry of Energy and Mining, and to the Bureau d'Electrification Rurale Decentralisee, in the monitoring, evaluation, and dissemination of activities. Local private sector providers will be trained and assisted in identifying and setting of electricity delivery services in rural areas. Training will be provided in the installation and maintenance of equipment. Local village organizations will be encouraged to organize service delivery. The project will work closely with the OPERD, Operation privé d'ERD (see Figure 2) and the Chambers des Commerces to ensure the private sector involvement.

In strong coordination with the main stakeholders of the project, it will look for synergy areas in order to address the gaps and improvements need within the current policy and regulatory framework. Technical assistance will be provided to the private sector in order to facilitate their access to the financial mechanism that is already operational (GEF/WB Project). In addition the project will promote the public-private sector partnership.

Besides removing the afore-mentioned barriers, the end of project situation will include establishing of a total of 800 kW hydropower based generation capacity, composed of a number to be determined following the feasibility studies, of mini hydro power facilities with isolated grids. The project will therefore establish a demonstration pilot site in off-grid isolated communities, and by building local capacity. The pilot will also be used for increasing awareness about appropriate technologies for rural electrification among different actors and stakeholders (financial institutions, the private sector, service providers, local governments, etc). The project will pay special attention to the local management arrangements of the mini hydro facilities, in line with the recommendations and lessons learned from the UNIDO mini hydro evaluation report¹. The selection criteria of the pilot sites incorporate the possibility of producing electricity for productive uses and for serving irrigation facilities, and thus the impact on income generation.

Three small hydro sites have been identified and selected by the Ministry of Energy. These are TOUBA (GAOUAL), SÉRÉDOU (MACENTA) and KENO. Detailed studies will be conducted for these three sites.

Due to budget limitation recalculation and down sizing are made to enable establishing, from the 3 sites identified during the PPG phase, one site of up to 800 kW, with possibility of a need for trade off between transmission line distance and installed generation capacity. The option considered at this stage is an 800 kW plant at Touba (GAOUAL). However, the final decision will be made after undertaking further detailed studies. The pilot demonstration sites and the process of establishing them are to be used for the demonstration of the technical and economic feasibility as well as for the capacity and awareness building.

¹ Independent thematic review – “UNIDO Projects for the promotion of small hydro power for productive use” (June 2009)

It is expected that approximately 20,800 persons will be served by access to electricity, of which approximately 18,000 persons in households and 2,800 persons in small local businesses powered by electricity by the end of project.

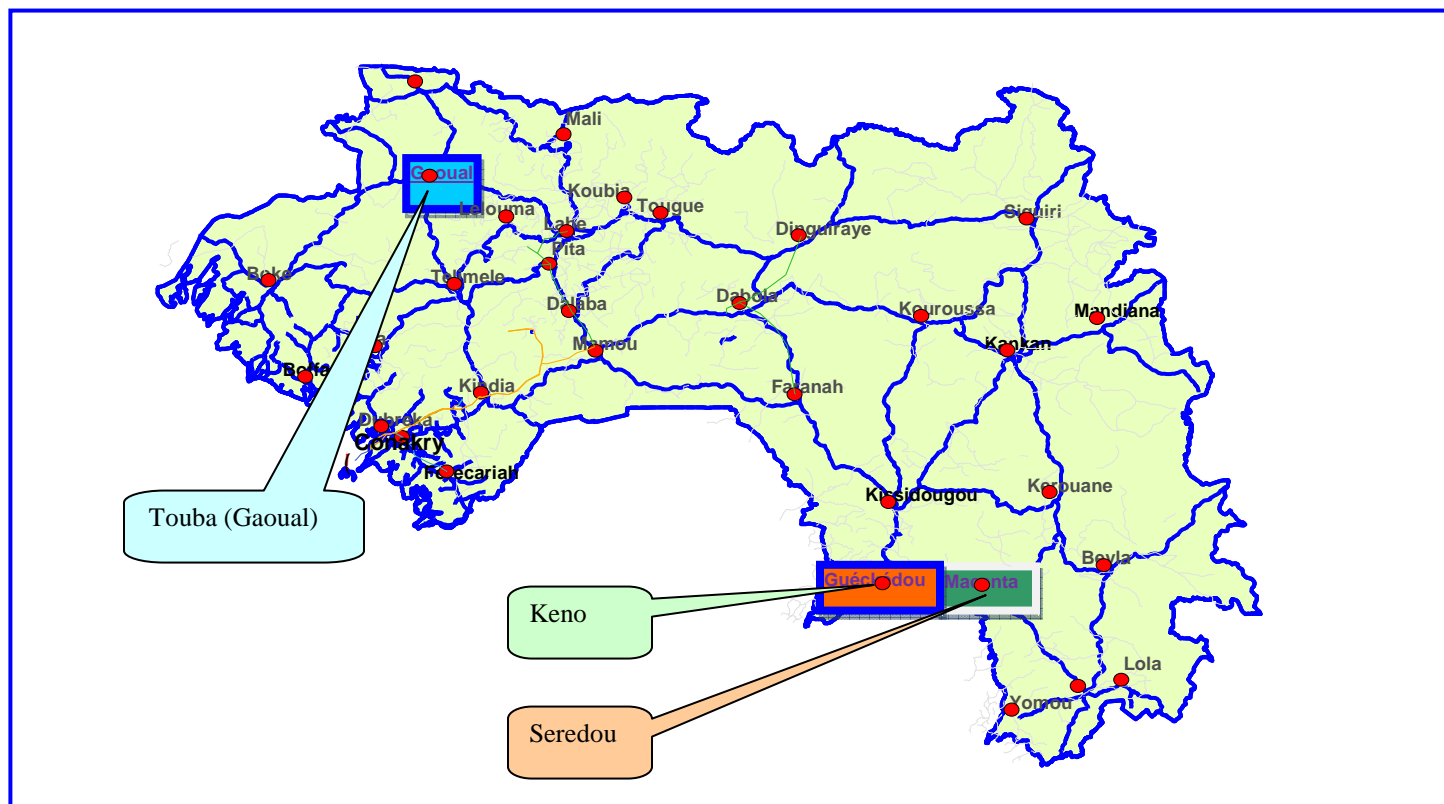


Figure 4: The identified small hydro sites to be considered for detailed feasibility studies and selection of one as demonstration and the remaining two for potential PPP investment.

Components:

The project is designed to achieve its objectives through two main components:

Component 1: This component attempts to develop a RE market based on hydropower carrying out several activities oriented to improve the current policy and regulatory framework, encourage the current financial mechanism, improving existing information system on the potential of the mini hydro, in addition, with this component the investment prioritization process at the decision makers level will be facilitated.

Component 2: The demonstration of the technical and economic feasibility of hydropower based mini grids is one the key element of this component. To secure an increment of the technical capacities within the country and to achieve a broad awareness about the potentials of the hydro power at different levels, capacity building activities will be performed at different stages of the project, mainly during the implementation of the demonstrative project, at the same time the energy access achieved after the project implementation will increase the awareness on the benefits of the hydropower. Another important outcome of this component is the GHG emissions reduction derives from the energy displacement that the operation of the hydro plant meaning.

Output and activities

The outputs and the activities related to the three technical components are as following:

Component 1: RE market development, hydropower based.

Output 1.1: Policy and regulatory framework and financial system improved.

Table 1. Activities for output 1.1

<i>Activity</i>	<i>Main Responsibility</i>	<i>Estimated completion date</i>
1.1.1 Analyze and review the current regulatory and policy framework. 1.1.2 Analyze the current financial mechanism, design strategies for synergy between the current developments in this field and this new proposal. 1.1.3 Develop a pathway to address the gaps within the policy and regulatory framework, as well as, a strategy to support the current financial mechanism.	International consultant and national multidisciplinary experts' team.	3 months after start

Output 1.2: Detailed feasibility studies of 2 potential mini hydro facilities prepared and ready for further development by potential developers and investors.

Table 3. Activities for output 1.2

<i>Activity</i>	<i>Main Responsibility</i>	<i>Estimated completion date</i>
1.2.1 Feasibility, including the baseline studies for 2 site mini hydro based mini grids. The sites are to be selected based on criteria prioritizing the multi functionality of the facilities to be installed, the cost effectiveness of the investments in terms of natural resource technical characteristics, the potential of other productive use and community based services, etc.	International consultant and national multidisciplinary experts team	3 months after start

Output 1.3: Institutional capacity to provide support to the private sector and investors strengthened.

Table 4. Activities for output 1.3

<i>Activity</i>	<i>Main Responsibility</i>	<i>Estimated completion date</i>
1.2.1 Awareness raising workshops on the benefits and potentials for mini hydropower, for different stakeholders, focusing on public officials.	International consultant, national multidisciplinary experts team, and PCU.	Spread over the whole project period with focus on the start, during the construction of the pilot facility and after the establishment of the facilities.

Component 2: Technology demonstration, technical capacity building and awareness rising.

Output 2.1: Construction of an 800 kW hydropower pilot plant at one of three sites completed

Table 6. Activities for output 2.2

<i>Activity</i>	<i>Main Responsibility</i>	<i>Estimated completion date</i>
2.2.1. Civil work and Equipment procurement – progress report	Technical providers, international consultant and national multidisciplinary expert team	14 months after start
2.2.2. Installation of equipment, transmission and distribution lines, start up testing and commissioning- progress report	Technical providers, international consultant, national multidisciplinary expert team, PCU	24 months after start
2.2.3. Training of multidisciplinary team through on-job training on the issues of construction, commissioning, operation and maintenance & management - progress report	Technical providers, international consultant, national multidisciplinary expert team, PCU	26 months after start
2.2.4. Developing manuals and handbooks for operation, maintenance and management.	Technical providers.	26 months after start
2.2.5. Preparing As-built documents and final report	Technical providers.	27 months after start

Output 2.2: Local team and private sector providers are trained on operation, maintenance and management

Table 7. Activities for output 2.2.

<i>Activity</i>	<i>Main Responsibility</i>	<i>Estimated completion date</i>
2.3.1 Technical training will be provided to local authorities, public officers and interested private sector service providers. Final report.	International consultant, Technical providers and national multidisciplinary experts team	29 months after start

Global environmental benefits: The global environmental benefits of the project will be the reduction of GHG emissions by promoting RE mini hydro based for energy access and productive uses to meet modern energy needs of Guinea's rural areas.

Direct emission reductions: The proposed project will install a mini hydro grids, of 800 kW capacity. Working at 80% of its installed capacity, the power plant would yield 5,591 MWh (i.e. 800 kW * 80% * 8,736 hours). As a result of the project, the total installed capacity of 800 kW will generate 5,591 MWh per year or 111.820 MWh over its default lifetime of 20 years.

Assuming that the access to modern energy in these isolated communities would have been otherwise achieved through conventional fossil energy (mainly diesel generators). Research conducted for project preparation documents have determined the average CO2 intensity for diesel generators to be 0.9 tonnes of CO2 equivalent per MWh. This means that given the quantity of mini hydro power produced, and the carbon intensity of the electricity supplied by generators, the proposed project will lead to the direct emissions reduction of approximately 100,638 tons of CO2 equivalent over the estimated life time if 20 years.

Direct Post-Project Emission Reductions: This GEF project has not put in place a financing mechanism, or any sort of component, that will continue to operate after the project closes and catalyze GHG emission reductions. Therefore, no direct post-project emissions reductions will be achieved by the project.

Indirect Emission Reductions:

(1) Using the GEF bottom-up methodology, indirect emission reductions attributable to the project are 301,914 tonnes of CO2 equivalent. This figure assumes a replication factor of 3.

(2) Using the GEF top-down methodology, indirect emission reductions attributable to the project are 1,811,497 tonnes of CO2 equivalent. This figure assumes that total technological and economic potential for GHG emission reductions in this area over 10 years is 3,019,162 tonnes of CO2 equivalent, with a project causality factor of 60%.

Table 8. Emission reduction overview.

Measure	Emission Reduction (t CO2)
Direct	100,638
Direct Post-project	0
Indirect Bottom-up	301,914
Indirect Top-down	1,811,497

B. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH NATIONAL AND/OR REGIONAL PRIORITIES/PLANS:

National Level:

The project is consistent with national priorities, since the Government of Guinea has accorded special priority to renewable energy utilization through various policies and institutional measures as discussed below:

The overall Government's strategy for the power sector aims at:

- (a) Ensuring reliable electricity supply to support economic activities;
- (b) Adopting and enforcing effective economic tariff policies;
- (c) Mobilizing private sector financing for the production, transmission, and distribution of electricity;
- (d) Promoting decentralized electricity supply; and
- (e) Limiting the Government's activities to policy making and regulation of the energy sector and creating the enabling market environment for private sector investments.

Development Policy Letter (1992): This Letter establishes the goal of meeting all of the country's energy needs.

“Policy Letter for Human Development” (LPDH) and “Guinea, Vision 2010” (1998): Both aim to promote growth based on the participation of the private sector and have set the objectives of promoting a good environment to attract the private sector, and removing the barriers for businesses to generate employment.

DRE Sector Policy Letter (February 1998): This Letter recommends liberalizing rural electrification using PV, pico-hydro, pico-thermal and wind energy. The Government sets certain commitments with respect to rural electrification of communities which are not connected to the national grid and whose connection is not planned in the next 10 to 15 years, and to those power plants with up to 250 kW of installed capacity. The main points are the following:

1. Privatization of the rural electrification sector, including the liberalization of tariffs on DRE delivery and services (art. 7).
2. Creation of a financing mechanism (“Fonds d'Électrification Rurale Décentralisée”), to be managed by a local financial institution.
3. Establishment of a regulatory framework for the DRE ensuring the equal treatment of all stakeholders involved in the production, transport and distribution of electricity.
4. Creation of a small rural electrification office - Bureau d'Électrification Rurale Décentralisée (BERD) - for DRE planning
5. Set up fiscal incentives such as the elimination or reduction of import taxes and VAT on specific DRE equipment (art. 7).

This letter established the target of electrifying 100 communities.

Law 97/012/AN (June 1998): This Law opened up the sector to the private sector by allowing businesses to finance, construct, manage, and operate infrastructure assets.

Poverty Reduction Strategy Paper (PRSP-II) (2007-2010): As it was proven that the lack of specific targets in the energy sector in the PRSP was a constraint to development, the PRSP-II includes specific targets in the energy sector, i.e. increasing the access to electricity from 7% in 1999 to 65% by 2010. It also sets three axes of action: economic growth, access to basic social services (water, electricity, etc), and reinforcement of institutional and human capacities.

Anti Poverty Program: The implementation of the Poverty Reduction Strategy for Guinea has carried out the following energy-related activities in the country in recent years :

1. On-site interventions in Conakry and in secondary cities;
2. Installation of three thermal power plants at Kankan, N'Zérékoré and Faranah;
3. Preparation of a final version of the Master Plan for electrification; and
4. Development of an electrification plan involving 24 localities. This plan was presented to a national workshop

organized in March 2006 by the Department of Energy.

Regional Level:

At a regional level, the Energy Component program, of which the proposed project is part, is in line with the regional priorities and plans of ECOWAS and UEMOA, especially the following policies:

- **ECOWAS:** The White Paper for a Regional Policy on Energy Access (January 2006) encourages the use of RE technologies to increase the access to energy in support of the MDG.
- **NEPAD:** The priorities identified in the action plan for the environment initiative and the energy plan of the New Partnership for Africa's Development (NEPAD).
- **Dakar International Conference on Renewable Energy in Africa (April 2008):** The energy component also takes into consideration the key strategic concerns and outcomes of the Dakar International Conference on Renewable Energy in Africa and its Action Plan, especially the Dakar Declaration On Scaling Up Renewable Energy in Africa.
- **Niger Basin Authority (ABN):** Under this initiative, the hydro power capacity of the country is expected to increase due to the construction of the Bafing and Konkouré dams on the Niger river.
- **West African Power Pool (WAPP):** The WAPP master plan study estimates that over 100 hydro power sites totaling 6 GW can be built in Guinea. This electricity could be sold to neighbouring countries.
- **Gambia River Basin Development Organisation (OMVG):** Under this initiative, it will be built a 215 MW hydro power plant in Kaléta, on the Konkouré River in central Guinea. This plant will be connected to the nearby Guinean town of Mamou and to the Bissau-Guinean capital, Bissau. The energy produced will then be distributed to Gambia, Guinea, Guinea-Bissau and Senegal.
- **Senegal River Basin Development Organisation (OMVS):** Under this initiative, the electricity produced from the hydro power plants of Manantali (200 MW) and future Galougo, Felou, Gouina and Gourbassi is then distributed then to the member countries: Guinea, Mali, Mauritania and Senegal.

C. DESCRIBE THE CONSISTENCY OF THE PROJECT WITH [GEF STRATEGIES](#) AND STRATEGIC PROGRAMS:

The project is consistent with the GEF Climate Change focal area, and more specifically with Strategic Programme/ **SP 3 - Promoting market approaches for Renewable Energy**: this project will promote off-grid renewable energy and contribute positively to the market transformation process by the implementation of viable and sustainable RE pilot projects, which will enable the Government to further establish the appropriate policy and regulatory framework and contribute to climate change mitigation through replication of such projects.

This project is part of GEF Programmatic Approach to Access to Energy in West Africa, approved by GEF Council in November 2008.

D. JUSTIFY THE TYPE OF FINANCING SUPPORT PROVIDED WITH THE GEF RESOURCES.

The context and barriers analysis as well as stakeholders discussions carried out during the PIF preparation and PPG implementation have clearly indicated that:

- the Government has insufficient resources, lack the technical expertise and institutional capacity to autonomously structure and implement programs to promote and support the development of mini hydro based mini grids in the short- to medium-term
- the limited and partial expertise currently available in Guinea is not going to be addressed without the transfer of expertise and best practices

- to convince enterprises that investing in modern clean energy makes good economic and environmental sense, the availability of a sufficient number of national success stories is a critical component of any effective promotional and educational campaign

The project is targeted to address and remove existing policy gaps and technical capacity barriers at the institutional and market level by providing technical assistance. GEF resources are needed to secure incremental international and national expertise, human resources and services needed to address and remove many of identified barriers to renewable energy.

The GEF resources being requested for this project will be targeted towards establishing a market environment that will promote investments in renewable energy based mini-grids in rural areas. The GEF funding will be used to co-finance project activities leading to contribution to (1) avoiding new GHG emissions during the development of the rural electricity sector in Guinea; (2) developing an RE market by overcoming institutional, administrative, technical and financial barriers that prevent RE based grids from being a significant part of the energy supply mix; (3) promoting a market approach, and encourage the participation of the private sector to develop mini-grid connected RE systems for meeting the growing demand for electricity thereby supporting sustainable socio-economic growth; (4) developing pilot mini grids to demonstrate the technical feasibility and economic viability of renewable energy for productive uses; (5) supporting independent evaluation and monitoring of the pilot projects to document the best practices that can be applied to other similar projects.

E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

Recognizing the challenges in the energy sector in Guinea, the Government has spearheaded a number of initiatives whose overall goal is to promote renewable energy technologies in general and mini hydropower in particular. In particular, this project will coordinate with the following initiatives:

GEF Strategic Program for West Africa: Energy Component: This project is being developed as part of the GEF Strategic Program for West Africa, of which the MSP is recently approved: At the regional level, it will be coordinated and harmonized with the other projects implementing national market transformations to promote the uptake of mini-grids powered by renewable energy in Cape Verde, Côte d’Ivoire, Chad, The Gambia, Liberia, Nigeria, Sierra Leone. This regional harmonization and coordination will be undertaken through ECOWAS (the Economic Commission of West African States), of which Guinea and all the other countries are members. Because ECOWAS has a focus on promoting renewable energy among its members, it is by far the most suited regional institution to organize the coordination and harmonization between these GEF projects. Through ECOWAS, policies and strategies to promote market-based RE powered mini-grids will progressively be expanded to all countries in the region. The present project will therefore liaise with these specific regional activities under the umbrella of the GEF Programmatic Energy programme for West Africa led by UNIDO. Provisions to undertake this coordination will be part of the coordination mechanism of the programme as envisaged in the PFD

United Nations Development Assistance Framework (UNDAF) (2007-2011): As the common strategic framework for the operational activities of the UN system, the UNDAF has set five axis of intervention, two of which are targeted in the proposed project: development of basic social services (rural electrification is identified specifically as one of them), and environment preservation and sustainable management of natural resources.

IBRD’s Rural Energy Project: The project, which is currently under implementation, aims at improving access to electricity in the country’s rural areas by testing the relevant institutional, financial and delivery mechanisms. To do so, it is providing technical assistance to BERD, and has created a fund of long-term credit for renewable-energy based rural electrification systems. Furthermore, it assists private providers to identify and set electricity services in rural areas. The proposed project will avoid duplication by focusing on different regions, but at the same time it will benefit from synergies by developing mini-hydropower based demonstration projects that could attract private stakeholders with the potential of being beneficiaries of the fund.

European Commission (EC): The 9th European Development Fund (EDF) (2002-2007) allocated funds for two priority areas: road infrastructures and rural development. However, the funds remained blocked due to political instability. The project will search synergies with the EC if aid is resumed in the future. The situation is expected to be re-evaluated begin of 2011.

UNDP's National Adaptation Plan of Action, NAPA: The NAPA encourages the adoption of new and renewable energies as a substitute of fuel wood in Haute Guinee and coastal areas, as well as the construction of mini hydro dams for diverse uses.

Table 9. Past RE development and cooperation projects.

N°	Subsector	Number	Years	Donors	State (%)
1	Biogas	92	1977-2004	Chine, IEPF, UE, Etat, GTZ, R.W	30
2	PV	200 kWp	1989-2004	UE, USAID, BM, North Corea	
3	Micro hydro	2	1983-2004	CIDA-GEF	100
4	Energy for Household	37,753	1986-2004	EU	100
5	Wind	2	92-04	MSFT, China	60

F. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH INCREMENTAL REASONING :

The GEF funding is being requested for this project to help remove the barriers to establishing a market environment that will promote investments in renewable energy based mini-grids in rural areas. The GEF funding will provide the necessary support to demonstrate the technical feasibility and economic viability of mini hydro based mini grids and promote productive uses. GEF co-financing will provide the necessary support to demonstrate the technical and commercial viability of renewable energy projects. The demonstration effect will be significant in helping to remove identified barriers currently preventing potential stakeholders from implementing RE projects. GEF co-financing will provide technical assistance to promote public private partnership and scale-up of renewable energy and will provide the technical assistance to establish a legal and regulatory framework that would create support for renewable energy. Further, GEF co-financing would provide technical assistance for institutional strengthening, capacity building and awareness rising to create a supportive institutional framework. In so doing, GEF co-financing will contribute largely increasing energy access; promote economic development while avoiding new GHG emissions during the development of the rural electricity sector in Guinea.

Baseline scenario:

There are significant limitations in terms of the capacity of the stakeholders to facilitate a renewable energy market. There are limitations at each level from the Ministry of Energy in terms of lack of reliable information and data on potential renewable resources and weak ability to deliver and prepare new policies. BERD/DRE currently has no capabilities to develop mini hydro power projects so needs significant training if it is to play a significant role in the market in the future. In addition, the finance institutions and the private sector do not have reliable information, knowledge or experience of renewable energy and therefore do not understand the risks and opportunities and therefore are not lending or investing in potential projects.

The Government is well aware of its resource and capability constraints and for this reason is seeking international support from both multilateral and bilateral donors.

Baseline trajectory

In the absence of the proposed GEF-UNIDO project very few steps, if any, towards the development of mini hydro based mini grids for energy access and productive uses, are likely to be made in the short and mid -terms. Without the GEF project, the “business as usual” scenario involves either reliance on fossil fuels for electricity generation in rural

areas as the scenario with the least cost expensive option, or a continued lack of access to modern energy services in these areas. Under this scenario, the mini hydro resource potential in the country will continue to be underexploited, and the use of renewable energy resources will remain restricted to niche markets. Mini hydro grids will not be used in rural areas on a large scale to increase rural electrification efforts. Since no modern energy leads to no development, conventional energy based solution would pop-up with its impacts on local and on global environment.

Moreover the outcomes of the component 1, of the present proposal are oriented to scaling up to a national level the result of the project intervention carrying out activities oriented to develop a RE market mini-hydro based. Due to lack of technical capacities, lack of awareness and lack of financial resources, this expected scaling up will not be possible without the GEF resources.

The cost of the baseline scenario of the direct and indirect deliverables of this project is estimated at 1,605,000 USD.

GEF alternative scenario: GEF assistance will support the development of a RE market based on mini hydro through the removal of barriers related to technical capacity, awareness of the technical feasibility and economic viability of mini hydro technologies, lack of resources and potentials information, inappropriate or immature regulatory framework and promoting financial mechanisms which will attract the involvement of the private sector.

GEF funds will be used to pilot an approach of establishing demonstration sites of multipurpose mini hydro-based renewable energy services, while using the process for learning-by-doing practices to develop different types skills and knowledge, and supplying the electricity generated to the local isolated communities for basic services and income generation activities. The project is expected to lay the foundation for market environment for mini hydro-based renewable energy for the first time in Guinea, and will have a significant demonstration effect. If successful, the GEF support will enable the Government to scale up and replicate the project achievements across the country. As such, GEF support will ensure that (i) commercialized development of renewable mini hydro power and GHG avoidance are sustained by removing technical, policy and capacity barriers; and (ii) it is demonstrated that the electricity generated from renewable sources can be used sustainably in rural areas. These activities will contribute towards GHG emission reduction through avoidance of potential future use of fossil fuels, as well as to the economic and social development of Guinea's rural areas.

GEF involvement, therefore, adds value in taking the development of mini hydro-based energy services several steps further. It will trigger co-financing, mainly from multilateral agencies and the private sector. Multilateral agencies will also take advantage of the political commitment to mini hydro-based renewable energy and the established market environment to support viable and effective investments in renewable energy mini grids in rural areas. Once market barriers are removed, the private sector at the local and international level is expected to take advantage of business opportunities created to invest in renewable energy based mini grids projects in rural areas.

G. The cost of this alternative scenario is estimated at 2,660,070 USD (including the PPG preparation and agency fee). The additional cost, in relation to the baseline scenario is 1,505,070, will enable direct GHG emission reduction of 100,638 tones CO₂ equivalent and indirect reduction from 301,914 to 1,811,497 tones CO₂ equivalent during the 10 years that follow the project end.

INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED AND OUTLINE RISK MANAGEMENT MEASURES:

Seven categories of risks related to the project and its objectives being achieved are considered: i) institutional; ii) technical; iii) market; iv) financial; v) implementation; vi) stability, and vii) climate change risks.

Risk	Potential Impact	Probability	Management/Mitigation
<p><u>Institutional risk:</u> Low government commitment to renewable energy and the GEF UNIDO project</p> <p>The project objectives and activities are in line with national energy policy objectives and actions plans for increasing the energy from renewable energy and helping to enable the market. The Ministry of Energy is committed to the project and is committing resources to the project.</p> <p>A risk could be that the propose Policies and Financial mechanisms are not enacted.</p>	High	Very Low	<p>The Ministry of Energy is fully committed to the project and the objectives are in line with its policies. The Directorate of Energy, the technical arm of the MoE will be responsible for the management and coordination of the project in cooperation with the project steering committee. Close coordination, regular consultations and delegation of responsibility will ensure continuous active involvement of key policy/institutional counterparts.</p> <p>It is also important that the enacted laws are followed by application decrees given that the enactment of laws is not sufficient to attract the private sector in rural electrification projects.</p>
<p><u>Technical risk:</u> The renewable energy based mini-grids technologies are not technically viable</p> <p>There is a technical risk associated with the demonstration projects due to limited experience in the country with the proposed technology and with similar projects.</p> <p>There are no noteworthy technical risks associated with the policy measures and capacity building activities proposed by the UNIDO GEF project. All of them are well proven interventions, tested by national experiences and in many other countries.</p>	High	Very Low	<p>Execution of activities will be carried out with the support of international experts/companies with demonstrated and successful past experience. Only mature and proven renewable energy technologies are being proposed. With respect to the capacity building and enabling activities special attention will be given to further defining the existing baseline in order to develop effective on-job-training while establishing the demonstration sites and well-targeted capacity building programmes.</p>
<p><u>Technical Risk:</u> Operation and maintenance of the mini-grids</p> <p>Given the low literacy rate and lack of specialized capacities among rural communities in Guinea, maintenance issues can be considered a risk to the mini-hydropower systems.</p>	High	Low-medium	<p>Building technical capacities among rural local authorities and communities is important to mitigate this risk. It is also an integral part of the turn key subcontract of establishing the mini hydro facility. This will be done by providing basic technical training to selected groups and persons, at community and local authority levels, on issues related to operation, preventive and accident resulted maintenance, management of mini hydro facility, as well as on the role and responsibility of the various stakeholders and the information and decision flow, etc. This is in addition to the regular training of the operators and maintenance team of the facility.</p>

Risk	Potential Impact	Probability	Management/Mitigation
<p><u>Economic and Financial risk: Renewable energy mini-grids turn out not to be economically and/or financially viable in guinea's rural areas.</u></p> <p>The risk is that investment in renewable energy projects is shown not to be commercially viable and so demonstration projects are not able to provide replicable examples and impact on the potential market for RE.</p>	High	Low-medium	Focus on renewable energy for productive purposes where the energy generated is used to create values/ services for the communities, which use the income so generated to pay for the energy services received. In addition, small hydro power is known for being a cost effective technology option relative to other renewable energy.
<p><u>Economic and Financial risk: Financial and credit constraints prevent enterprises from investing in RE.</u></p> <p>The ability of companies to invest in renewable energy projects will impact the replication of the demonstration projects and the long term market for renewable energy. Access to finance in Guinea is possible but at prohibitively high interest rates.</p>	High	Low-medium	One of the key advantages to investing in renewable energy is the offset of fossil fuel – which is very expensive in Guinea. As part of the training in Project Component 1 and 2 life cycle analysis will be taught to show the life time benefits of renewable energy, particularly in a volatile fossil fuel market. Demonstrating these benefits is expected to lead to further investment in RE projects. Training will also be provided to local financial institutions so that they fully understand the risks and benefits of RE projects.
<p><u>Market risk: Increased investments in renewable energy based mini-grids do not provide high enough returns. Sector stakeholders do not participate/ engage actively in the project</u></p> <p>Due to the lack of information and awareness in renewable energy there is a risk that there is not active participation from stakeholders. However the project aims to address this barrier and the very high cost of traditional energy in the country means that organizations are looking for alternatives.</p>	High	Low-medium	During the project preparation the general response was of strong support and interest to participate in the project. A well-structured national dissemination campaign demonstrating the viability of the pilot projects and outlining the opportunities during project implementation combined with an active dialogue and involvement of associations at the national and local level during the whole project duration will ensure the desired stakeholder response to the project. In addition, mobilizing part of the investments from development partners which can provide concessionary financing terms, and focus on providing energy for productive uses, will contribute market penetration and creation efforts.
<p><u>Market risk: Fall in fossil fuel prices</u></p> <p>The international price of oil may fall to a level where fossil fuel power generation will be more cost effective than renewables</p>	High	Very low	Investment in renewable energy should always include assessment of externalities, which will place renewables on a comparative advantage to fossil fuels. The fundamentals of global oil prices indicate that in the long-term the price of oil is expected to grow again.
<p><u>Implementation risk:</u></p> <p>UNIDO has long-standing direct experience in the development and implementation of RE projects and it has a strong knowledge of the key variables that determine the success and the failure of project implementation.</p>	Medium	Very low	UNIDO will mitigate this risk through detailed development of activities plans in close cooperation with in-country project partners, stakeholders and developers. Agreed and transparent modus operandi will be defined before the start of the project implementation.

Risk	Potential Impact	Probability	Management/Mitigation
<p>Stability Risk: Impact of political environment and instability Although there is a strong political commitment, a volatile political environment could make a come back and lead to potential policy and insecurity environment that may have a detrimental impact on project implementation and on hydropower based mini grids development.</p>	High	Medium	<p>The recent election and the government commitment to political stability and development are strong indications of the very low probability of the return to volatile situations.</p> <p>The process is supported by the donors and the international community</p>
<p>Climate change risks: Long-term implication of climate change on rivers The largest threat to the project is posed by the hydrology itself.</p>	High	Low-Medium	<p>Although the sites selected are displaying sufficient hydrological stability and water quantity for a mini hydropower scheme to succeed, the longer-term implications of climate change on the rivers in Guinea cannot be assessed at the moment. Reducing and properly sizing the installed capacity of the project and choosing technical solutions with good distributions of efficiency over a range of flows, in order to cater for potential fluctuations in annual flow distributions due to sudden droughts, are among the options considered resolve this problem and lower the associated risk.</p> <p>Reducing the installed capacity is however considered in this project also for budgetary reasons.</p>
<p>Climate change risks: Modification of hydrological regimes Poor maintenance of riverbanks can lead to debris and sedimentation which can have a detrimental impact on mini hydropower systems because it might affect the river flows and increase the sand and clay contents of the water interring the turbine.</p>	High	Low-Medium	<p>The rivers and water streams must be well maintained and the sediment composition and transport may need to be monitored in order to avoid the accumulation of significant waste, which can create pollution. These risks will be mitigated through appropriate training of operators on maintenance issues. Detailed feasibility study will also check the silt content of the water and design to the financially viable solution for de-silting techniques. In addition UNDP's National Adaptation Plan of Action, NAPA encourages the adoption of new and renewable energies as a substitute of fuel wood in Haute Guinee and coastal areas, as well as the construction of mini hydro dams for diverse uses.</p>

H. EXPLAIN HOW COST-EFFECTIVENESS IS REFLECTED IN THE PROJECT DESIGN:

The project takes a comprehensive approach to address many of the barriers that are preventing the development of the available natural resources into clean modern energy and thus avoiding the use of fossil fuels and reducing GHG emissions. In so doing it will also provide access to energy for basic community needs and economic development.

The barriers are in particular related to awareness and capacity building of public and private stakeholders including relevant institutions, policy makers and potential developers. The strategy of the project to achieve high cost-effectiveness is geared on four principles: (i) creating a critical mass of skilled and knowledgeable technicians and public officers; (ii) through pilot projects, building the awareness of the appropriate technologies and the best practices to combine the intended purposes and maximize the effectiveness; (iii) formulating and endorsing and adopting policies encouraging the involvement of private sector and providing access to innovative and smart financial mechanisms supporting mini hydro based grids in rural areas; v) searching and maximizing synergies with ongoing and future programs and credit lines for investment.

Given its focus on addressing policy and technical capacity barriers, the GEF UNIDO project will generate the biggest share of GHG emission savings after the project implementation period, when the capacity built and the programs established will deploy their full impact on market led hydro power development.

Compared to other conventional energy technology solutions that could be used to provide same energy services, this GEF project is expected to generate cumulative DIRECT GHG emission savings in the range of 100,638 ton CO_{2eq} and INDIRECT GHG emission savings in the range of 301,914 – 1,811,497 ton CO_{2eq}. The GEF resources cost- efficiency for the DIRECT GHG emission savings would be 8.58 USD/ton of CO_{2eq}; for the INDIRECT GHG emission savings cost-efficiency would significantly improve, going down to 2.86 – 0.48 USD/ton CO_{2eq}.

PART III: INSTITUTIONAL COORDINATION AND SUPPORT

A. INSTITUTIONAL ARRANGEMENT:

UNIDO is the sole implementing GEF agency of this project. However, as discussed in section E, the project will collaborate with other international donor community at a national level, and with the GEF Agencies implementing the GEF Strategic Program for West Africa at the regional level.

B. PROJECT IMPLEMENTATION ARRANGEMENT:

As GEF Implementing Agency, UNIDO holds the ultimate responsibility for the implementation of the project, the delivery of the planned outputs and the achievement of the expected outcomes. The project will be executed under the technical and administrative supervision of UNIDO's project manager, following UNIDO's rule and procedures.

The project will be implemented in collaboration with the Directorate of Energy of the Ministry of Energy and Mining, MME, and to the Bureau d'Electrification Rurale Decentralisee. The Ministry is the main counterpart agency by virtue of its central role in rural energy by coordinating all the activities related to rural energy, and taking part in improving the energy access.

UNIDO will be responsible for the general management and monitoring of the project, and reporting on the project performance to the GEF. UNIDO will be in charge of procuring the international expertise needed to deliver the outputs planned. It will manage, supervise and monitor the work of the international teams and ensure that deliverables are technically sound and consistent with the requirements of the project.

On a national level, a Project Coordination Unit (PCU) will be established within the Directorate of Energy of the Ministry of Energy and Mining. This unit will be constituted by a National Project Coordinator (NPC), and administrative support (Secretary-finance Clerk and Driver). The PCU will be responsible for overall day to day coordination and supervision of field activities, including effective linkages between the project and the beneficiaries and other on-going programmes, ensuring an effective monitoring and evaluation system of all activities as per agreed project work plan. In close collaboration with the Bureau d'Electrification Rurale Decentralisee, the PMU will coordinate all project activities being carried out by project national experts and partners. It will also be in charge of the organization of the various seminars and trainings to be carried out under the Project

Taking into consideration the nature of this project – involving activities dealing with different counterparts (government Ministries, local government bodies and other institutions) and the need to expand cooperation with all concerned – a Project Steering Committee (PSC) will be constituted by representatives of main stakeholders. The main functions and responsibilities of the PSC will be to: (i) advise the project on strategic directions of support activities to be provided; (ii) ensure the effective cooperation between all involved stakeholders; and (iii) advise the effectiveness of the ongoing activities, including the progress towards achieving the planned outputs, review and approve annual work plan. In this connection, the project will achieve coordination and cooperation among stakeholders and will ensure national ownership and sustainability of the project planned activities.

The members of the PSC will be representatives from the following institutions: The ministry of Mines and energy; Minister of Environment/ GEF focal point as Chair; Ministry of Finance and economy; UNIDO Representative; and the

project national coordinator. The PSC members will hold bi-annual meetings and more frequently if the situation requires. The Project Coordinating Unit (PCU) will act as the secretariat.

The project strategy pays particular attention to the involvement of the communities to be served by the mini grids in decision making, planning and monitoring through participatory workshops. In this respect, the project will support the representatives of the communities through extensive participatory methodologies to assure their maximum involvement and enhance their awareness of project opportunities.

Whenever possible the business associations (cooperatives) specifically for women will be established specifically for management, operation and maintenance and productive uses of the energy produced. In the associations where men and women are members, women will be encouraged and supported to be in the management level. To increase the number of women in the associations, all efforts will be made not to overburden them by work (additional house hold work) a flexible working time.

Close cooperation will be sought with various government departments, multi/bilateral donor agencies and civil society to assure complementarily of work to bring about synergies between various ongoing or proposed interventions.

At the beginning of project implementation a detailed working plan for the entire duration of the project will be developed by UNIDO in collaboration with the PCU, the Ministry of Mines and Energy and the national and international teams of experts. The working plan will clearly define roles and responsibilities for the execution of project activities, including monitoring and evaluation; it will set milestones for deliverables and outputs. The working plan will be used as management and monitoring tool by UNIDO and the PCU and reviewed and updated as appropriate on a biannual basis. Fig.2 shows a diagram of the project implementation arrangement.

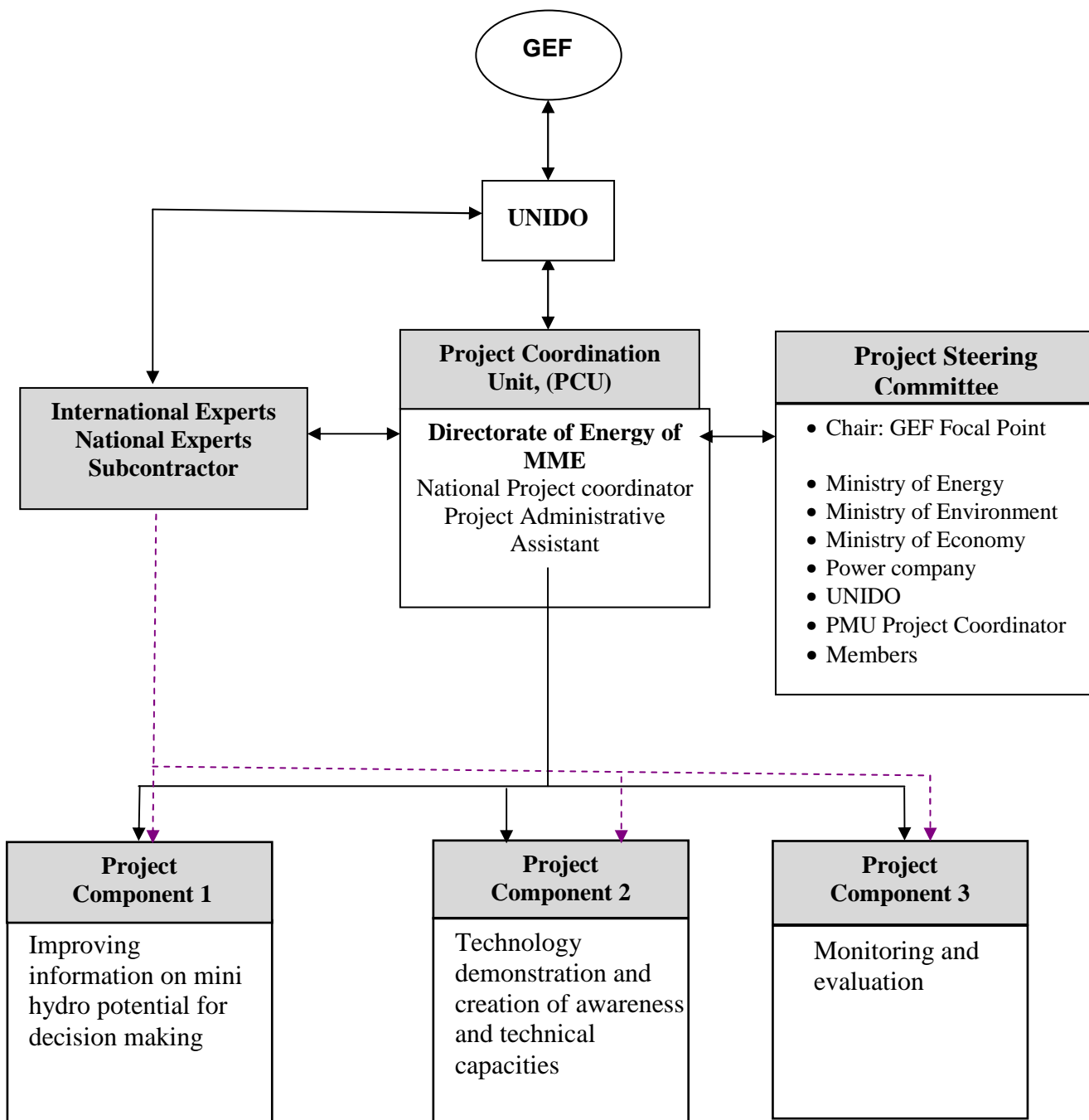


Fig. 6 Diagram of project implementation arrangement

UNIDO will closely coordinate with ongoing as well as planned relevant initiatives to ensure maximum synergies and overall impact of Climate Change related technical assistance to Guinea.

PART IV: EXPLAIN THE ALIGNMENT OF PROJECT DESIGN WITH THE ORIGINAL PIF:

Due to the developments achieved by the GEF/WB project in Guinea (particularly the establishment of a Financial Mechanism), the third component at the PIF stage has been removed, to address some activities and expected outcomes under this component the first component of the present proposal has been strengthened. Accept minor re-wording of the text of the Project Framework,

However due to the fact that the co-financing resources envisaged at the PIF stage have been only partially raised, budget related to the various project components have been re-calculated and down sized to enable achieving the intended original designed results within the budget constrains.

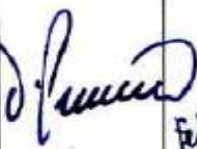
These changes are mainly the following:

- Component 1 is recalculated and down sized. This atlas of mini hydro potential in the country is replaced by preparing pre feasibility studies for 5-8 potential sites with all associated socio economic baselines in order to enable prioritization of actions and taking informed decisions. As it is indicated above, this component has been strengthened adding some outputs of the third component, the name of the component has been changed as well.
- Component 2 is recalculated and down sized to enable establishing, from the 3 sites identified during the PPG phase, a pilot mini hydro-based mini grid of 800 kW (with the probability of the need for trade off between transmission line distance and installed generation capacity) for the demonstration of the technical and economic feasibility as well as for the learning by doing approach to capacity and awareness building.
- Component 4: splits into 2 components: monitoring and evaluation and project management. Budget allocation has been reduced.

However, should the on-going efforts to establish partnerships with potential donors result in securing additional co-financing, the atlas will be prepared and the reduced activities will be re-established, leading to strengthening and expanding the outputs and outcomes of the project components.

PART V: AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for CEO Endorsement.

Agency Coordinator, Agency name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Mr. Dmitri PISKOUNOV, Managing Director, Programme Development and Technical Cooperation Division UNIDO		February 24, 2011	Ms. Fatin ALI MOHAMED, Industrial Development Officer, Renewable and Rural Energy Unit Energy and Climate Change Branch PTC Division, UNIDO	+43-1-26026- 3279	f.alimohamed@unido.org

ANNEX A: PROJECT RESULTS FRAMEWORK

Outcomes	Indicators	Baseline	Target	Sources of verification	Risks and assumptions
Objective					
To develop the market environment for improving access to mini hydro-based modern energy services in rural areas.	<p>1. Incremental direct and indirect CO₂eq emission reductions (tons of CO₂eq)</p> <p>2. The number of electricity connections on selected sites.</p> <p>3. The number of selected local businesses and households with access to electricity on selected sites.</p>	<p>1. No direct or indirect CO₂eq emission reductions.</p> <p>2. Weak or no economic activities in the area without energy access</p> <p>3. Weak or no reliable health care in the area without energy access</p> <p>4. Weak education institutions in the area without energy access</p>	<p>1. Direct emission reductions: approx. 100,638 tons CO₂eq</p> <p>2. Indirect emission reductions: from 301,914 to 1,811,497 tons CO₂eq over period 2015-2025.</p>	<p>1. Monitoring reports and site visits</p> <p>2. End of project survey</p> <p>3. Final evaluation</p>	<p>A1. Sustained and solid Government support to the project.</p> <p>A2. Poverty reduction and economic growth drives for securing the modern energy input to development grow progressively stronger.</p> <p>A3. Various international RE technical cooperation programs achieve good synergy and leverage of respective complementarities.</p> <p>A4. Stability and security in the country</p>
Component 1. RE Market development hydropower based.					
<p>RE Investment scenario improved.</p> <p>Information system on mini hydro potential improved.</p> <p>Investment prioritization system is improved at public and private sector.</p>	<p>1. At least 3 potential sites identified for installations of hydro based mini grids.</p> <p>2. The number of public officers with technical capacity strengthened</p>	<p>1. Weak institutional support</p> <p>2-lack of technical capacity</p>	<p>1. 10 policy makers trained.</p> <p>2. Three mini hydro sites identified.</p>	<p>1. Monitoring reports and site visits</p> <p>2. End of project survey</p> <p>3. Final evaluation</p>	<p>A1. Sustained and solid Government support to the project.</p>

Outcomes	Indicators	Baseline	Target	Sources of verification	Risks and assumptions
Component 2. Technology demonstration and creation of awareness and technical capacities					
<p>Increased access to rural electrification and income-generating activities created in rural and peri-urban areas, and increased appreciation of technical and commercial viability of mini hydro for providing access to cleaner energy, while GHG emissions reduced.</p>	<p>1. Number of small businesses and households using electricity as main source for lightning and productive uses.</p>	<p>1. No local businesses or households with access to electricity in selected sites.</p> <p>2. Small diesel generators, candles and batteries are the only modern energy and are afforded by elites only.</p>	<p>1. A pilot mini hydro power plant of around to 800 kW (with possibility of a need for trade off between transmission line distance and installed generation capacity).</p> <p>2. Technical capacity and awareness built through the learning by doing approach during the process of establishing the pilot power plants.</p> <p>3. Approx. 20,800 persons served by access to electricity by 2015.</p> <p>4. The above mentioned persons served are of approx. 400 local businesses and 3000 households powered by electricity by 2015.</p>	<p>1. Monitoring reports and site visits.</p> <p>2. End of project survey.</p> <p>3. Final evaluation.</p>	<p>A1. Coherent community acceptance to the participative approach.</p> <p>A2. Beneficiaries understand the benefits of the new approach.</p>

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF)
GEF SECRETARIAT REVIEW FOR MSP

Not applicable.

ANNEX C: CONSULTANTS TO BE HIRED FOR THE PROJECT USING GEF RESOURCES

<i>Position Titles</i>	<i>\$/ person week*</i>	<i>Estimated person weeks**</i>	<i>Tasks to be performed</i>
For Project Management			
Local			
National project Coordinator	698	57.30	<p>Responsible for the management, monitoring, coordination of all project activities in the countries. Responsible of ensuring, in close cooperation with the relevant authorities, all needed authorizations and permits are timely obtained (environmental, construction, long period visa, clearance of equipment, etc.) Organizing all needed contacts with local authorities. Responsible of monitoring the construction activities. Responsible for the organization of project activities, such as the organization of the training sessions and workshops. Facilitating the work of the other national and international experts. Tracking and timely disbursement of project funds.</p> <p>In order to ensure that the experience of the project will remain in the government counterpart institution MEM, as well as, to accommodate the budget limitation by choosing to allocate most of the available budget to delivering tangible results, it is opted for the following management arrangement: the Coordination Unite and coordination staff will be an experienced government officer to be selected and agreed by the counterpart and UNIDO project manager; to whom the project will 'top up' the salary by up to one third of a national expert salary. One third of Full-time assignment for the entire duration of the project, 3.0 yr 1 week= 5 working days; 1 months= 4.3 weeks;</p>
International			
-	-	-	-
For Technical Assistance			
Local			
Experts for establishing the mini hydro based mini grids, PC1 & PC2 Video production, web design, local awareness building on operation and	698	35	In cooperation with the contractor, the experts will facilitate site identification and feasibility studies preparation, promote productive use, impact assessment, facilitate contacts with the local population, awareness building of the beneficiaries,

maintenance, and management issues			etc., PC 1 & PC 2
Evaluation and dissemination of lessons learned	698	12.27	Independent consultant to carry out final evaluation of the project and dissemination of lessons learned.
International			
-	-	-	-
Contracted services			
	<i>Budget \$</i>	<i>Estimated person weeks**</i>	<i>Tasks to be performed</i>
PC1 – Foreign company to deliver international technical assistance needed for all outputs of PC2 (and part of PC1)	767,700	n/a	The contractor will design, construct, install electro-mechanics equipment and transmission and distribution lines and provides the technical expertise and on-job training and guidance of national experts and DE staff for the development and establishment of all mini grids.

* Provide dollar rate per person week. ** Total person weeks needed to carry out the tasks.

ANNEX D: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS

A. EXPLAIN IF THE PPG OBJECTIVE HAS BEEN ACHIEVED THROUGH THE PPG ACTIVITIES UNDERTAKEN.

PPG objectives have been fully achieved.

- 1) The project document has been formulated on the basis of further analysis of the policy, legal and regulatory frameworks, capacity building needs assessment and stakeholders consultations
- 2) Co-financing resources envisaged at the PIF stage has been partially raised: Government co-finance confirmed. Efforts are being done to mobilize the remaining required funds.
- 3) Direct and in-direct energy savings and GHG emission reduction have been estimated on the basis of the identified hydro recourses.
- 4) Field visits undertaken by national experts and a report prepared on the results of the updating of existing pre-feasibility studies of the mini hydro sites identified.

B. DESCRIBE FINDINGS THAT MIGHT AFFECT THE PROJECT DESIGN OR ANY CONCERNS ON PROJECT IMPLEMENTATION, IF ANY:

Findings that might affect project design

As it has been explained in PART II, SECTION E above the GEF UNIDO project will continue to seek collaboration and discussing possible co-financing agreement developmental partners active in Guinea. However, it was indicated that donor's commitments would be stronger once the results the political situation continues to improve.

However, based on the project design, with the confirmed government co-finance, it is possible to attain the project objective of establishing around 0.8 MW capacity hydro power facility (with possible need for trade off between the costs of transmission line distance to load centers and installed generation capacity), undertaking capacity and awareness building and formulate recommendations for policies and financial mechanisms promoting market led small hydro development. Further potential collaboration and co-financing from other developmental partners would not bring about significant changes to the design of the project, but they would mainly expand and strengthen the outputs of Project Components 1 and 3. For PC2 the capacity or the number of hydro sites facility will increase in function of the co-finance made available. For PC1 the development of the small and mini hydro Atlas will be added.

Any concerns on project implementation

No additional concern beside the risks discussed in PART II, SECTION G.

C. PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES AND THEIR IMPLEMENTATION STATUS IN THE TABLE BELOW:

<i>Project Preparation Activities Approved</i>	<i>Implementation Status</i>	<i>GEF Amount (\$)</i>				<i>Co-financing (\$)</i>
		<i>Amount Approved</i>	<i>Amount Spent To date</i>	<i>Amount Committed</i>	<i>Uncommitted Amount*</i>	
1. Collection of supplemental data	Completed	14,000	13,635.6	364.4		19,000
2. Stakeholder consultation	Completed	6,000	6,000	0		15,000
3. Design of pilot/demonstration projects	Completed	18,000	18,000	0		10,000
4. Project strategy and implementation detailing	completed	12,000	12,000	0		6,000
Total		50,000	49,635.6	364.6		50,000

* Any uncommitted amounts should be returned to the GEF Trust Fund. This is not a physical transfer of money, but achieved through reporting and netting out from disbursement request to Trustee. Please indicate expected date of refund transaction to Trustee.

ANNEX E: CALENDAR OF EXPECTED REFLOWS

N/A. The proposed project does not include a non-grant instrument.

Additional Annexes

ANNEX G: LETTERS OF CO-FINANCING



MINISTRE D'ETAT CHARGE DE
L'ENERGIE ET DE L'ENVIRONNEMENT

0278

N°.....MEEE/CAB/DNE/DER/12

OBJET : lettre d'engagement pour la participation
Guinéenne au projet mini/micro barrages
Hydroélectriques à buts multiples

REPUBLIQUE DE GUINEE

Travail - Justice - Solidarité

~~10 MARS 2012~~

Conakry, le.....2012

Le Ministre d'Etat

A

Dmitri Piskounov Managing
Director Programme de Development
And Technical Cooperation Division Unido
Vienna International Center
P.O.BOX 300 14 000 Vienna
- (Autriche)

Monsieur le Directeur,

Dans le cadre des relations de la Guinée avec la communauté internationale, lors de son investiture le Président de la République Son Excellence le Professeur Alpha CONDE a reconnu et accepté tous les accords signés par les précédents Gouvernements ; dont celui relatif au financement du projet : «**Promotion et Développement des mini/micro barrages à buts multiples par le FEM**»

Par la présente lettre, je vous confirme l'engagement du Gouvernement de la République de Guinée à apporter sa contribution de 800 000 \$ USD, qui lui est requise et à mener les activités relatives au projet conformément à l'approche de son programme de développement.

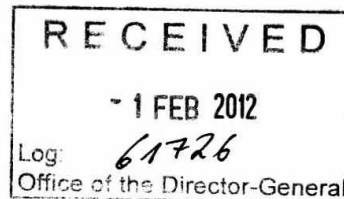
Veillez agréer, Monsieur Directeur, l'expression de mes sentiments distingués.

P. Le Ministre P.O
Le Secrétaire Général



El Hadj Sékouna DIAKITE

BP : 1217- Conakry, République de Guinée, Tél : (+224)30451069/30452552/Fax : 30452559



REPRESENTATION PERMANENTE DE LA FRANCE
AUPRES DES NATIONS UNIES ET
DES ORGANISATIONS INTERNATIONALES

L'Ambassadrice

N° 25

Vienne, le 27 janvier 2012

Monsieur le Directeur Général,

Me référant à la décision adoptée lors de la 14e session de la Conférence générale de l'ONUDI sur la question des soldes non utilisés, et à la suite d'échanges entre cette Représentation permanente et les services de l'ONUDI, j'ai l'honneur de vous informer de la décision du Gouvernement français, malgré un contexte budgétaire et financier très contraint, de renoncer, à titre exceptionnel, à la restitution d'un montant de 1 000 000 euros sur le total de 2 205 685 euros de soldes non utilisés revenant à la France.

La France souhaite que ce montant de 1 000 000 € soit utilisé pour financer les deux projets suivants :

- un projet en Guinée consacrée au développement de petites centrales électriques, pour un montant de 500 000€,
- un projet au Cambodge visant à développer l'énergie solaire et la fabrication locale de gazéificateurs de biomasse de qualité, pour un montant de 500 000€.

Je serais très reconnaissante à vos services de bien vouloir informer cette Représentation permanente des étapes de mise en œuvre de ces deux projets ainsi que des dates prévues de décaissement.

Conformément au règlement financier de l'ONUDI, le reliquat de 1 205 685 € des soldes non utilisés revenant à la France devra naturellement être déduit de l'appel à contributions pour 2012.

Je vous prie d'agréer, Monsieur le Directeur Général, l'expression de ma haute considération.

et de mon amical souvenir



Florence Mangin
Florence Mangin

M. Kandeh Yumkella
Directeur Général – ONUDI
Copie : M. Peter Ulbrich,
Directeur du service financier
M. Andie de Groot
Directeur de la mobilisation des ressources



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

VIENNA INTERNATIONAL CENTRE

P.O. BOX 300, A-1400 VIENNA, AUSTRIA

TELEPHONE: (+43 1) 260 26 3002

FAX: (+43 1) 263 3011

www.unido.org

unido@unido.org

14 February 2012

Dear Ms. Barbut,

Please refer to our submission to the GEF Secretariat for final review and approval of the CEO Endorsement in respect of the project "Promoting development of multi-purpose mini hydro power systems" in Guinea.

This project is a part of the Strategic Programme for West Africa (SPWA) Energy Component, and seeks to reduce GHG emission by establishing a market environment that will stimulate investment in renewable energy projects in Guinea.

I am writing to confirm UNIDO's contribution in the amount of US \$ 150,000 (in cash and kind) as co-financing for this project. While the funds to the tune of US \$ 50,000 have been approved from UNIDO's Regular Programme of Technical Cooperation to be released upon approval of the project by the GEF, the remaining balance of US \$ 100,000 will be provided by UNIDO as in-kind contribution.

Yours sincerely,

A handwritten signature in black ink, appearing to read "Dmitri Piskounov", written in a cursive style.

Dmitri Piskounov
Managing Director
Programme Development
And Technical Cooperation Division

Ms. Monique Barbut
CEO and Chairperson GEF
1818 H Street, NW
MSN G 6-602
Washington, DC 20433
United States of America

ANNEX H: FICHE DU PROJETS IDENTIFIES

Note conceptuelle

La Guinée dispose d'importantes ressources hydrauliques estimées à près de 6.000 MW. Ce potentiel ne concerne que les grands aménagements, les micro/mini centrales dont le potentiel est estimé à 65 MW (133 sites) se trouvent au stade de simple reconnaissance. Il faut noter que globalement tout ce potentiel n'est exploité qu'à 2%.

Ceci explique la crise énergétique très préoccupante que traverse la Guinée depuis l'an 2000, compte tenu des conséquences de cette pénurie sur l'ensemble des secteurs socio-économiques.

Cette situation appelle des solutions durables dans le temps, mais aussi, des solutions d'urgence telles qu'envisagées par le Gouvernement dans le secteur de l'énergie à travers la lettre de politique du secteur énergétique (LPSE) et du Document de la Stratégie de Réduction de la Pauvreté (DSRP).

Les solutions qui s'attachent à cette situation passent en priorité par la promotion et le développement des micro/mini centrales qui s'inscrivent dans une perspective à court et moyen terme et ce, conformément au programme d'urgence que le département de l'énergie vient d'élaborer concernant l'électrification des zones rurales et péri urbaines.

Dans la présente annexe donne des études de faisabilité préliminaires seulement, seul le site de Touba qui a l'étude de pré-faisabilité élargi pour inclure une courbe de débits dérivés à partir des données du bassin versant à proximité.

Les études de faisabilité comprendra hydrologique détaillée, géotechnique, mécanique, électrique, financière, et les évaluations environnementales pour les sites.

FICHE DU PROJET TOUBA (GAOUAL)

Identification du Projet :

- Le site de Touba est situé dans le village de Horè N'Djourdè sur le cours d'eau de la Saranwol, ont atteint la chute à une distance de 10 Km de Touba la sous préfecture ; puis en empruntant une route de 40 Km (une contournante) dans la montagne de Horè N'Djourdè pour le transport du matériel au site du Barrage.

Les Coordonnées Géographiques sont : 11°34 Nord et 12°52 Ouest.

Objectif Global :

- La réalisation d'un barrage et une centrale d'une puissance de 800 KW pour une première étape.
- Développement économique de la sous préfecture de Touba et des environs de BOKE (Moyenne Guinée).

Objectif Spécifique :

- ✓ Régularisation du cours d'eau par la gestion optimale du réservoir de la Saranwol ;
- ✓ Electrification rurale de la zone ;

- ✓ Accroissement de la production agricole et l'élevage ;
- ✓ Adduction d'eau potable.
- ✓ Elevage

Résumé et Résultats Attendus :

Renforcement de la production d'énergie et la création d'un cadre de vie amélioré.
 Accroissement du taux d'accès à l'électricité.

Liens et Interactions avec d'autres Projets :

- A. Le projet génère les bénéfices financiers avec le transit des produits agricoles et de l'élevage ainsi que de la pêche par la dynamisation du commerce dans la région.
- B. Possibilité d'irrigation des plaines ;
- C. Projet de réduction de la pauvreté.

Eligibilité au NEPAD/CEDEAO :

Le projet est sous régional (OMVG-ABN) ;

Il s'inscrit dans le Programme de la CEDEAO, il permet : la régularisation du régime du cours d'eau, d'irriguer les plaines le long de la Saranwol

Possibilité d'ériger d'autres projets sur la suite du cours d'eau en aval du barrage de la Saranwol.

Etat d'Avancement :

1. Etudes préliminaires en 1990 ;
2. Etudes de pré faisabilité avec MECAMIDI (France).

CARACTERISTIQUES TECHNIQUES DU PROJET TOUBA

1. Réservoir

- Niveau normal retenue 339,5 m
- Cote de la retenue 337 m
- Niveau d'eau du canal d'évacuation 121.6 m

2. Hydrologie

- Bassin Versant 226 Km²
- Apport annuel "Moyen" 6,16 m³/s
- Crue décennales 55 m³/s
- Crue centennale 72,4 m³/s
- Débit d'équipement 1 m³/s

3. Puissance

- Disponible 6 MW
- Installée 1,6 MW
- Nombre de turbines 2 pièces
- Type de turbine Kaplan

4. Energie Annuelle

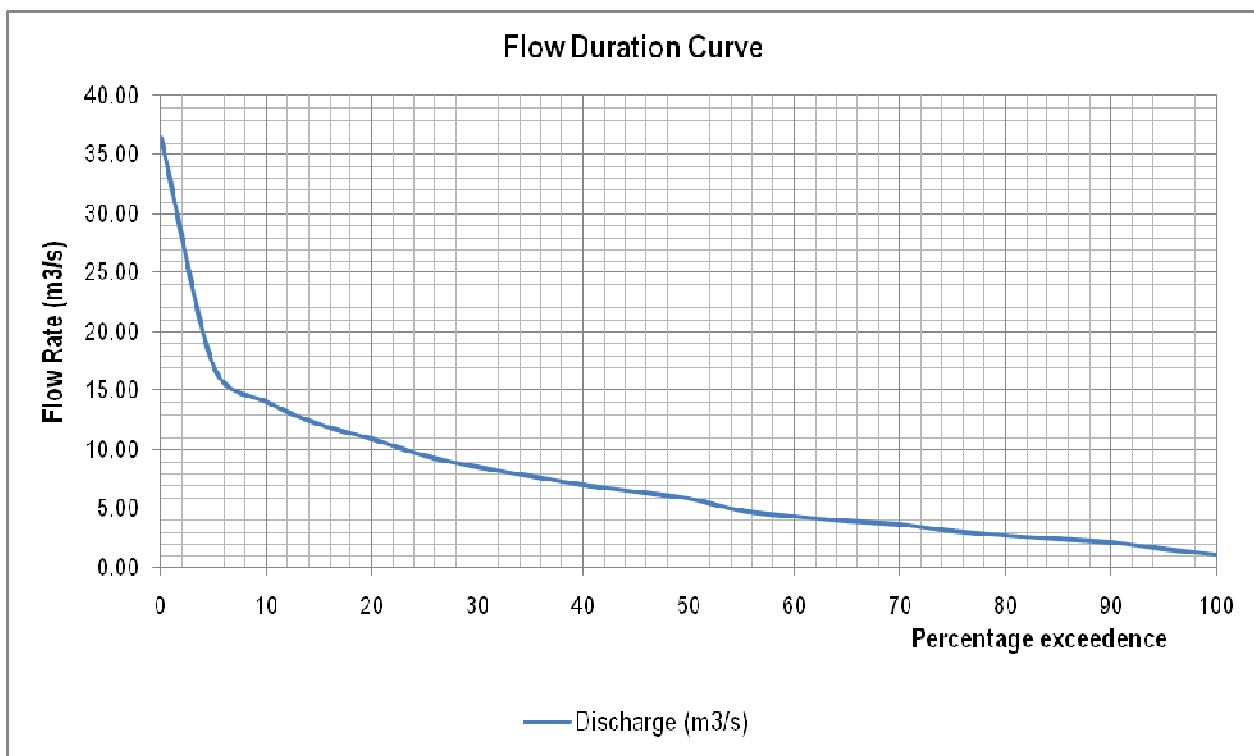
- Energie Maximale disponible 10,74 GWh/an
- Energie Moyenne 8,3 GWh/an
- Energie Garantie 6,7 GWh/an

5. Barrage

- Hauteur de chute brute 216 m
- Hauteur de chute nette 210 m
- Hauteur du Barrage 3 m
- Longueur du Barrage 85,55 m

6. Caractéristiques Hydromécaniques

- Diamètre de la Conduite Forcée 0,8 m
- Longueur de la Conduite Forcée 500 m
- Cote de l'axe de la Turbine 123,5 m



Flow Duration Curve for Touba

L'analyse hydrologique effectuée au stade de PPG a indiqué que le bassin versant de Touba a un débit moyen annuel (Q moyenne) de 6 m³. La courbe des débits, voir ci-dessus, indique que le débit de 1,15 m³ est atteint ou dépassé le 100% du temps. Le débit de conception choisie à l'étape de PPG était de 1 m³. Ce qui donne une capacité installée of 1.6 MW. Il a été décidé pour des raisons diverses que l'usine de démonstration ne sera que de 800 kW, ce qui nécessite seulement un débit de 0,5 m³ à une chute nette de 210m et l'efficacité global du système de 75%. Ce débit représente seulement 8% de Q moyenne (0.08 Q moyenne). Divers guides de conception (par exemple the British Hydropower Association Mini Hydro Design Guide - voir, par exemple <http://www.british-hydro.org/mini-hydro/index.html>) suggèrent que pour un débit de

conception moyenne le facteur de capacité est typiquement de 40%; au 0.5 de débit-conception moyen, le facteur de capacité augmente jusques 60%, et atteint le 70% au niveau de 0.33 débit moyen. Par conséquence, au 0.08 de débit moyen-conception, un facteur de capacité de 80% est une estimation très prudente. En outre, sur la base du débit de conception à partir d'un point de vue production, la capacité installée peut être fournie régulièrement.

L'étape PPG a également analysé la demande d'énergie et a établi que le pouvoir combiné du temps jour électrique nécessaire pour servir l'industrie, des ménages et des services, y compris les pertes de transport et de distribution, est de 644 kW dans la première année après la mise en œuvre de projet. Cela devrait augmenter de façon substantielle à cause des nouveaux utilisateurs que sont attendus à venir en raison de la disponibilité de l'électricité. La demande en période de pointe a été estimée à 863 kW et le hors-pointe (22h00-06h00) a été évaluée à 220 kW. Toutefois, le projet vise à promouvoir les activités productives liées à l'énergie produite. Une de telle activité est le charge-batteries pendant les périodes hors pointe, que servira comme "load dumping" service en mêmes temps. Par conséquent de point de vue de la demande de l'énergie produite, elle sera presque tous utilisés tout au long de l'année.

Les deux arguments ci-dessus indiquent un facteur de capacité très élevé, toutefois la conception du projet se limitent à 80%.

7. Population

- 200 000 habitants
- 14 habitants au Km² ;

RESUME

- Le Projet s'inscrit dans le cadre de la politique générale du pays en matière d'énergie et de protection de l'environnement pour un développement durable, à savoir la gestion des ressources hydroélectriques nationales qui font la fierté de la Guinée dans la sous région ouest Africaine.
- Le projet prévoit la construction d'un barrage en béton de 3 m de hauteur, équipé d'une centrale technique d'une turbine de type Kaplan d'une puissance de 800 KW en première phase, mais qui peut atteindre la puissance de 1,6 MW.
- La réalisation du projet de Touba a une valeur ajoutée par rapport aux actions déjà introduite dans la zone, il s'agit : de l'éclairage, la mouture des grains, l'extraction d'huile, l'alimentation des plateformes multifonctionnelle, l'irrigation des plaines, le pompage d'eau, la conservation des produits de provenance diverse : agricole, élevage et de la pêche ; la communication, l'éducation, etc.

Acteurs Principaux :

- **Ministère de l'Énergie et de l'Hydraulique (MEH);**
- **Direction Nationale de l'Énergie(DNE),**
BP : 1217 Conakry (République de Guinée)
Tél : (224)60 54 73 13/30 43 12 45 Fax :(224)30 45 25 59

E-mail : louacecealexis@yahoo.fr

- **Division des Energies Renouvelables ;**
BP : 1217 Conakry (République de Guinée) ;
Tél : (224) 60 27 09 70 Fax : (224)30 45 25 59 ;
E-mail : nfalyguelo@yahoo.fr

Documents Disponibles :

1. Rapport d'études préliminaires 1990 ;
2. Rapport d'études de préfaisabilité 2005.

Etudes Projetées :

- Etudes de faisabilité ;
- Etudes D'Impact Hydraulique ;
- Etudes d'Impact Environnemental et social ;
- Etudes d'Ingénierie (APD et DAO).
- Réalisation physique : Barrage, Centrale, Ligne de Transport 30 KV et Postes pour un réseau principal de 10 Km (Touba et Kounsitel) aux conditions économiques.

FICHE DU PROJET Sérédou (Macenta)

Projet : Aménagement Hydroélectrique de SEREDOU

- **LOCALISATION**

Le site de SEREDOU sur le cours d'eau de la Labaguié est situé à 40 Km de la préfecture de Macenta en Guinée Forestière et à 5 km du village dont il porte le nom. **Les Coordonnées Géographiques** : 8°14' Nord et 9°16' Ouest

- **BUTS DU PROJET**

Production d'énergie hydroélectrique (2,8MW) pour électrifier de la ville de Macenta.

- **DESCRIPTION DU PROJET**

Les caractéristiques principales de l'ouvrage fixées en phase de la préfaisabilité sont :

Bassin versant (km ²)	25
Débit moyen (m ³ /s)	0,660
Crues Décennales (m ³ /s)	3
Vol. utile de la retenue (Mm ³)	1,43
Puissance installée (MW)	1,440
Hauteur de Chute (m)	16

Energie moyenne (GWh/an)	8,10
--------------------------	------

Coût total (US \$ millions)	4,8
Coût par KW installé (US \$)	2638

RESULTATS A ATTENDUS DU PROJET

Amélioration du cadre de vie des populations, de l'artisanat, de la production agricole, de l'élevage et des actions génératrice de revenus des femmes.

LIENS ET INTERACTIONS AVEC D'AUTRES PROJETS/PROGRAMMES

Programme de lutte contre la pauvreté.

Acteurs Principaux :

- **Ministère de l'Energie et de l'Hydraulique (MEH);**
- **Direction Nationale de l'Energie(DNE),**
BP : 1217 Conakry (République de Guinée)
Tél : (224)30 45 10 69/30 43 12 45 Fax :(224)30 45 25 59
Email : louacecealexis@yahoo.fr

Division des Energies Renouvelables ;

BP : 1217 Conakry (République de Guinée) ;
Tél : (224) 60 27 09 70 Fax : (224)30 45 25 59 ;
Email : nfalyguelo@yahoo.fr

Documents Disponibles :

Rapport d'études préliminaires 1990 ;
Rapport d'études de Faisabilité 2005.

Etudes Projetées :

- Etudes de faisabilité ;
- Etudes D'Impact Hydraulique ;
- Etudes d'Impact Environnemental et social ;
- Etudes d'Ingénierie (APD et DAO).
- Réalisation physique : Barrage, Centrale, Ligne de Transport 30 KV et Postes pour un réseau principal de 15 Km localités et les villages environnants aux conditions économiques.

RESUME

Le Projet s'inscrit dans le cadre de la politique générale du pays en matière d'énergie et de l'environnement pour un développement durable, à savoir la gestion des ressources hydroélectriques nationales qui font la fierté de la Guinée dans la sous région ouest Africaine.

Le projet prévoit la construction d'un barrage en enrochement de 12 m de hauteur, équipé d'une

centrale technique d'une turbine de type Francis d'une puissance de 800 kW en première phase, mais qui peut atteindre la puissance de 1,44 MW plus tard.

La réalisation du projet de a une valeur ajoutée par rapport aux actions déjà introduite dans la zone, il s'agit : de l'éclairage, la mouture des grains, l'extraction d'huile, l'alimentation des plateformes multifonctionnelle, l'irrigation des plaines, le pompage d'eau, la conservation des produits de provenance diverses : agricole, élevage et de la pêche ; la communication, l'éducation, les centres de loisir, etc.

FICHE DU PROJET KENO

Projet : Aménagement à buts multiples de KENO

LOCALISATION

Le site de KENO situé à 4 Km dans la ville de **Guéckédou**, il profile la chute torrentielle au bord droit du fleuve Makona qui prend sa source dans la préfecture de Macenta.

Les Coordonnées Géographiques : 10°07' Nord et 8°13' Ouest

BUTS DU PROJET

La réalisation d'un barrage et la construction d'une centrale électrique d'une puissance installée de 2,4 MW à 4 MW.

3. DESCRIPTION SOMMAIRE DU PROJET

Les caractéristiques principales de l'ouvrage fixées en phase de préféabilité sont :

3.1 Hydrologie

Bassin versant (km ²)	2960
Apport moyen annuel (m ³ /s)	127,7
Crue décennales (m ³ /s)	1060
Volume réservoir (m ³ millions)	2,10

3.2 Barrage : type : en matériaux locaux. Hauteur : 25 m

Cote de retenue (m)	435
Superficie (km ²)	294
Volume (hm ³)	2784

4. Caractéristiques techniques

Puissance installée (MW)	2,4 à 4
Energie Garantie (GWh/an)	13,397
Energie moyenne (GWh/an)	18,607

Débit régularisé (m ³ /s)	19,54
--------------------------------------	-------

5. Caractéristiques économiques

Coût total (US \$ millions)	4,4 à 10
Coût par KW installé (US \$)	2187
Coût KWh produit (US \$)	0,26

6. RESULTATS A ATTENDUS DU PROJET : Satisfaction de la demande amélioration du cadre de vie des populations, de l'artisanat et des PME/PMI.

LIENS ET INTERACTIONS AVEC D'AUTRES PROJETS/PROGRAMMES

Programme de lutte contre la pauvreté

Acteurs Principaux :

- **Ministère de l'Energie et de l'Hydraulique (MEH);**
- **Direction Nationale de l'Energie(DNE),**
BP : 1217 Conakry (République de Guinée)
Tél : (224)30 45 10 69/30 43 12 45 Fax :(224)30 45 25 59

Email : louacecealexis@yahoo.fr

- **Division des Energies Renouvelables ;**
BP : 1217 Conakry (République de Guinée) ;
Tél : (224) 60 27 09 70 Fax : (224)30 45 25 59 ;

Email : nfalyguelo@yahoo.fr

- **Documents Disponibles :**

Rapport d'études préliminaires 1990 ;

Rapport d'études de Faisabilité 2005.

Etudes Projetées :

- Etudes de faisabilité ;
- Etudes D'Impact Hydraulique ;
- Etudes d'Impact Environnemental et social ;
- Etudes d'Ingénierie (APD et DAO).
- Réalisation physique : Barrage, Centrale, Ligne de Transport 20 KV et Postes pour un réseau principal de 4 Km localités et les villages environnants aux conditions économiques.

RESUME

Le Projet s'inscrit dans le cadre de la politique générale du pays en matière d'énergie et de l'environnement pour un développement durable, à savoir la gestion des ressources

hydroélectriques nationales qui font la fierté de la Guinée dans la sous région ouest Africaine. Le projet prévoit la construction d'un barrage en enrochement de 25 m de hauteur, équipé d'une centrale technique d'une turbine de type Francis d'une puissance de 800 kW en première phase, mais qui peut atteindre la puissance de 2,4 MW plus tard. La réalisation du projet de a une valeur ajoutée par rapport aux actions déjà introduite dans la zone, il s'agit : de l'éclairage, la mouture des grains, l'extraction d'huile, l'alimentation des plateformes multifonctionnelle, l'irrigation des plaines, le pompage d'eau, la conservation des produits de provenance diverses : agricole, élevage et de la pêche ; la communication, l'éducation, les centres de loisir, etc.

