



PROJECT IDENTIFICATION FORM (PIF)

PROJECT TYPE: MEDIUM-SIZE-PROJECT

THE GEF TRUST FUND

Submission Date: 27 August 2009
Re-submission Date: 1 February 2010

PART I: PROJECT IDENTIFICATION

GEF PROJECT ID¹: PROJECT DURATION: 48 months

GEF AGENCY PROJECT ID: 4344

COUNTRY(IES): Senegal

PROJECT TITLE: National Greenhouse Gas Reduction Program through Energy Efficiency in the Built Environment in Senegal

GEF AGENCY(IES): UNDP

OTHER EXECUTING PARTNER(S): Direction de l'Environnement et des Etablissements Classés, Ministère de la Construction, Ministère de l'Energie (Direction de la Maîtrise de l'Energie), Senegalese Institute of Standardisation (ISN), Ordre National des Architectes du Sénégal

GEF FOCAL AREA (S)²: Climate Change

GEF-4 STRATEGIC PROGRAM(S): SP-1: Promoting Energy Efficiency in Residential and Commercial Buildings

NAME OF PARENT PROGRAM/UMBRELLA PROJECT (if applicable): (i) GEF Energy Programme for West Africa
(ii) Global framework for low carbon buildings.

INDICATIVE CALENDAR	
Milestones	Expected Dates mm/dd/yyyy
Work Program (for FSP)	-
CEO Endorsement/Approval	July 2011
Agency Approval Date	Sept 2011
Implementation Start	Oct 2011
Mid-term Evaluation (if planned)	Sept 2013
Project Closing Date	Sept 2015

* See guidelines for definition of milestones.

A. PROJECT FRAMEWORK

Project Objective: Reduction of greenhouse gas emissions from the commercial & residential sectors in Senegal								
Project Components	Indicate whether Investment, TA, or STA ^b	Expected Outcomes	Expected Outputs	Indicative GEF Financing ^a		Indicative Co-Financing ^a		Total (\$) c = a + b
				(\$ a)	%	(\$ b)	%	
1. Identifying, testing and demonstrating energy efficiency in construction techniques & building materials	TA & Inv.	Demonstration that new construction practice in Senegal and innovative materials save energy in buildings	<ul style="list-style-type: none"> Energy saving construction techniques & materials applicable for Senegal conditions identified for both existing and new buildings. Selected techniques and materials are demonstrated on one building of national administration & on a programme of social housing (new construction). Findings & results of the first demo projects are shared 	420 000	17%	2 000 000	83%	2 420 000
2. Development of	TA	Appropriate	<ul style="list-style-type: none"> Evaluation & Lessons 	200 000	33%	400 000	67%	600 000

¹ Project ID number will be assigned by GEFSEC.

² Select only those focal areas from which GEF financing is requested.

a thermal & EE Building Code		<p>institutional and regulatory frameworks for the transformation of construction practices and material to promote energy efficiency in the building sector.</p> <p>Provisions are developed to introduce EE practices in existing buildings</p>	<p>Learnt from the Enerbat (GEF) project</p> <ul style="list-style-type: none"> • A framework for Thermal and Energy Efficiency Building codes is elaborated for new constructions • Standards for EE building design, materials, equipment and installation are developed and submitted for Government approval • Application decrees necessary to enforce the EE Building Code are drafted 						
3. Strengthening institutional, economic and policy framework and local capacity for an effective implementation of new EE building code	TA	<p>Framework & guidelines for EE standards and practices are in place.</p> <p>Financing of EE effort are accessible and available</p>	<ul style="list-style-type: none"> • Diffusion of EE building practices • Design of viable financial mechanisms to support the implementation of EE schemes in new construction • Definition of future enforcement mechanisms • Identification of national or public administration departments to lead the implementation and control processes 	110 000	35%	200 000	65%	310 000	
4. Strengthening of Technical capacities	TA	<p>A technical centre is established to provide technical leadership and support to building stakeholders on energy efficiency</p>	<ul style="list-style-type: none"> • Full mapping of required resources for EE building solutions • Validation & certification of energy efficient options for the building sector 	100 000	33%	200 000	67%	300 000	

			<ul style="list-style-type: none"> • Training of construction professional to EE practices, material & new building regulation • Building Stakeholders informed and trained for the EE techniques, practices & material 					
5. Project management				90 000	31%	200 000	69%	290 000
Total project costs				920 000	23%	3 000 000	77%	3 920 000

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

^b TA = Technical Assistance; STA = Scientific & Technical Analysis.

B. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE and by NAME (in parenthesis) if available, (\$)

Sources of Co-financing	Type of Co-financing	Project
Project Government Contribution	Cash/In-Kind	2,000,000
GEF Agency (UNDP Senegal)	Cash	
Bilateral Aid Agency (ies) Programme – (EU Energy Facility)	Cash/Parallel	1,000,000
Multilateral Agency(ies)	Cash/Parallel	
Others		-
Total Co-financing		3,000,000

INDICATIVE FINANCING PLAN SUMMARY FOR THE PROJECT (\$)

	Previous Project Preparation Amount (a) ³	Project (b)	Total c = a + b	Agency Fee
GEF financing		920 000	920 000	92,000
Co-financing	-	3 000 000	3 000 000	
Total		3 920 000	3 920 000	92,000

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

GEF Agency	Focal Area	Country Name/ Global	(in \$)		
			Project (a)	Agency Fee (b) ²	Total c=a+b
(select)	(select)				
(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.

PART II: PROJECT JUSTIFICATION

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

Senegal is currently facing severely dampened industrial and economic development due to power production shortfalls and the poor quality of electricity supply. For several years now, the Government has been committing to the eradication of all shortages

³ Include project preparation funds that were previously approved but exclude PPGs that are awaiting for approval.

of power, with no success so far. As a result of financial over-commitment, volatile fuel prices, and outdated installations, the whole of Senegal's energy sector has found itself in distress. Additionally, power shortages seem to have led many small and medium enterprises to bankruptcy. Larger companies and administration have been relying on diesel generators and have also reported serious declines in output.

The SENELEC, like numerous utility companies in Africa, is facing difficulties to keep up with electricity demand. Its effective power demand peak is currently around 350 MW (relative to an installed capacity of 459 MW in 2006) and expected to reach 600 MW by 2012 (50% electrification & 8%/year of increase demand) and to exceed 1,000 MW by 2020. The overall current electricity consumption was around 1.7 TWh in 2006 and is estimated to reach 4.4 TWh by 2020. While SENELEC expects to augment its productive capacity to reach 700 MW by next year, this increase is expected to barely keep up with the growth in demand from households and businesses. This trend scenario is obviously unsustainable.

Within this context, the promotion of large scale, concrete, national energy efficiency programme is a critical demand-side initiative to help reduce the energy consumption. Promoting energy efficiency is more than a priority in Senegal, it is considered as a vital way to keep up with the rapidly growing electricity demand and the high cost of energy. Like in most sub-Saharan countries, the building sector accounts for growing portion of total energy demand, in particular of the national electricity consumption.

The government is aware of the problem as it has been experiencing the serious impacts of the erratic price of hydrocarbons lately. It has taken preliminary steps to improve the quality and EE of some end-uses with the introduction of efficient lighting among consumers and the launch of a communication campaign on TV and in the press to raise awareness among stakeholders. Conversely, the first step that was initiated five years ago in the built environment with the ENERBAT Project has been left in a deadlock. In fact, legal texts had been drafted but never enforced and case studies had been started without any follow-up. As Senegal construction sector continues to grow under the combined cumulative effect of urban population growth and economic activity, the government believes that the proposed energy efficiency policy framework is particularly timely to the extent that it will set in motion a local process of collaboration among project holders and professionals (architects, public administration, construction companies, bankers, insurance companies...) by creating the appropriate mechanisms to improve the energy efficiency first in new buildings then in the existing stock.

The decision to review the ENERBAT project achievements and to build – on the lessons learned – a conducive Energy Efficiency institutional and legal environment is a very strong signal sent by the Government to the stakeholders, in the current critical situation. However, much work needs to be achieved to set an accurate snapshot of the situation – the starting point – on the one hand and to design a conducive framework, mechanisms and tools that will contribute to improve the situation on the other hand.

Many countries have introduced energy efficiency programs. Among the different tools available, rating scheme, labeling programs and minimum energy performance standards have proven to be highly effective approaches in the construction sector – either for existing or new buildings. However the following barriers, prevent the implementation of building codes and the achievement of higher efficiency buildings in Senegal such as:

- Lack of information on the impact of building design on the electricity consumption and on actual trends;
- Lack of understanding of the potential for reducing energy demand through energy efficiency in the construction sector and little interest to develop relevant policies to transform the markets;
- Lack of knowledge in the ministries and institutions on how to specifically proceed to implement and enforce energy efficiency regulations and how to develop support energy efficiency schemes such as standards, codes, certification and labels in order to speed up the market transformation process;
- Lack of capacity, and procedure in the development of the legal framework by the Legislative Arm of Government and the absence of information, knowledge and culture to understand the need for the action by the Legislative Arm of Government to use both the budget and oversight tool to ensure effective regulation and guidance of the process of effective implementation of Energy efficiency policy;
- Absence of research materials and data to feed into the bill and other legal instruments to enable it meet the needs and object of energy efficiency programmes;
- Partial subsidies energy usage regime that distort the cost and effect of inefficient consumption of energy;
- Little information is available at the government level on the potential impact and cost effectiveness of Energy Efficiency regulation;
- Absence of policy framework and regulations to introduce legal energy efficiency requirements;
- Customers and professionals lack information about the availability of energy efficient materials and the cost effectiveness of

investing in efficient materials and approaches;

- Retail staff and commercial staff do not pay attention and do not know how to market energy efficient materials. This and the former point leads retailers not to offer a sufficient range of efficient products because of the low demand for this type of appliance;
- Local medium size manufacturers lack capacity to develop and market more efficient construction products and are uncertainty about the market demand of high efficiency models;
- Little national experience and installations for testing energy performance according to international standards.

Lesson learned from ENERBAT, a missed opportunity

The government recognizes that some of the objectives of the previous project ENERBAT (Energy in buildings) have not yet fully been achieved. As a reminder, the objectives of the ENERBAT project were as follows, with a target of 4 million tonnes of CO₂ equivalent reduction over a period of 15 years:

- Objective 1: Demonstrate the technical feasibility of the rehabilitation in key buildings
- Objective 2 : Demonstrate the environmental benefit of building rehabilitation
- Objective 3 : Demonstrate the economic viability of the rehabilitation

Not all the objectives were met at project closure. The absence of a sound monitoring system made it difficult to evaluate and quantify the impact of the actions implemented on the achieved energy savings in the buildings concerned. The following lessons are taken from ENERBAT:

- The involvement of the project's natural partners was not sufficiently in line with the importance of their position, in particular the Building Department, the Urban Planning Department, the Ministry of Energy
- The project gave priority to direct involvement in the rehabilitation of buildings (purchase of equipment) without consideration to long-lasting financial mechanism to building envelopes particularly relevant for new buildings.
- The project failed to establish the proper level of commitment between the project team and the targeted project owners
- No monitoring/evaluation system was implemented to allow the evaluation of the impact of the measures implemented at a later stage

A new situation for a new project

In Senegal, the building sector is very dynamic to meet both economic development and population needs. Construction activities expand steadily, driven by the combined effects of high urban population growth and changes in economic activity. This project will launch the process for collaboration between project owners, professionals (architects, banks, insurers, etc.) and the administration by creating a suitable and favourable framework for enhancing energy efficiency in existing and new buildings. Several multilateral and bilateral agencies (Agence Française de Développement, German Cooperation Agency GtZ, the Delegation the European Union...) have already supporting or intend to provide policy, technical and financial support to Senegal national government to develop a comprehensive policy for promoting an more energy efficiency building sector, both residential and commercial.

The project will build from the achievements and un-completed work of ENERBAT but also from international best practices in the promotion of energy efficiency in the construction sector. The Ministry of Construction, the Ministry of Energy (Department of Energy Efficiency) and the Ministry of Environment have decided to collaborate and coordinate a national multi-year programme to promote energy efficiency first in new construction through the implementation of thermal building codes. The present project will provide the institutional support and will reinforce capacity on energy efficiency in the three ministries involved.

The project will also benefit from the recently approved UNDP-GEF project "Technology transfer: development of a thermal barrier from typha to ensure the Energy Efficiency of Senegalese buildings". The Ministry of Construction will mobilize all relevant institutional and operational players in the building and construction sector, but in particular the public programme such as social housing and government buildings.

The project includes four (4) components:

Component 1 Identifying, testing and demonstrating energy efficiency in construction techniques and building materials

For this component, a demonstration that new construction practice in Senegal and innovative materials are possible in Senegal and can save a significant portion of the energy consumed in buildings both new and existing.

For this demonstration, energy saving construction techniques and materials applicable to Senegal conditions will first be identified and analyzed for both existing and new building. Two parallel demonstration programmes are proposed. The first

one will tackle the largest buildings of the Senegal national administration. The 9 story building located in Dakar hosts several ministries and is an illustration of a poorly designed building. Demonstration will focus on improving the thermal building envelopes. It is expected that the energy efficiency as well as comfort improvements will be instrumental to validate and to widely communicate on the benefits of EE techniques to building stakeholders around the country. The second demonstration project will introduce concrete energy efficiency solutions in the construction of a new suburban city planned next to the new national Airport Blaise Diagne located 40 km away from Dakar. The demonstration will focus on the construction of new social housing but will also provide guidance for commercial and administrative buildings.

Component 2 Development of a thermal & EE Building Code

This component will elaborate and implement appropriate institutional and regulatory frameworks for the transformation of construction practices and material to promote energy efficiency and greater thermal comfort in the building sector, starting with new construction. This can be achieved by evaluating lessons learnt from the GEF Enerbat project, elaborating a framework for Thermal and Energy Efficiency Building codes for new constructions, developing standards for EE building design, materials, equipment and installation and submitting them to Government approval. This component comprises a validation of energy efficiency solutions that are technically feasible and economically justified, tailored to Senegalese context. The component intends to conclude with a series of specific decrees necessary to enforce the EE Building Code. Provisions will be developed to expand EE recommendations to existing building in light with achievement from component 1.

Component 3 Strengthening institutional, economic, policy framework and local capacity for an effective implementation of new EE building code

This component will establish all the necessary guidelines for a smooth implementation of EE building standards. To meet this objective, a large diffusion of EE building practices will be organized through training sessions in professional schools but also across stakeholders from the whole construction industry. Education materials (brochure, visuals, CD-rom, easy-to-use Computer tools to guide decisions on optimal building design, on-line training, reference publications...) will be produced and widely made available to explain the reasons to adopt new construction practices. This will help different stakeholders to adopt these new practices, in particular from architects, building owner and construction managers all the way to field workers. The component will also explore viable financial mechanisms to support the implementation of EE schemes in new construction. The new thermal building code is likely to force extra investment in the building envelop. National and private banks along with the Ministry of Finance will be consulted and engaged into discussions for improving financing options for the construction industry. Other activities comprises setting an enforcement mechanism, identification of control processes.

Component 4 Strengthening of Technical capacities

This component will mainly lead to establish a technical centre that will provide technical leadership and support to building stakeholders on energy efficiency.

To achieve this objective, the following activities are proposed:

- Full mapping of required resources for EE building solutions;
- Enhancing Research & Development for supporting an energy efficient building sector;
- Validation and certification of energy efficient options for the building sector
- Training of construction professional to EE practices, material & new building regulation
- Stakeholders and different partners informed and trained for these techniques

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

The current energy situation of the country has been the same for the past several years. After the Government has insisted in increasing massively the generation facilities, it appeared that demand-side initiatives could not be kept away from the building of scenarios that would reveal sustainable solutions to the current situation. Owing to the country's size, growing population base and relatively vibrant economic activity, Senegal offers a unique market outlet for business/processes in search for sizable economies of scale and replicability. Because of the above inherent attraction and appeal to consumer products and equipment, the Government of Senegal pursues a policy initiative to improve the quality of imported products, to ensure that goods rejected by other countries are not dumped on the domestic market and to ensure that best engineering practices in infrastructure, construction, industry and agriculture are brought to the country. As part of its National Energy Policy (August 2002), it has also established the goal of: (i) "ensuring the importation of the more energy-efficient equipment and machinery"; (ii) "promoting R&D activities in energy conservation and efficiency including the development and manufacture of energy-efficient equipment and machinery; and (iii) "promoting public awareness about the benefits of improved energy efficiency."

The National Energy Commission of Senegal is particularly keen to encourage energy efficient end-use and willing to promote the most relevant policy framework.

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

The proposed project is expected to contribute to meeting the Climate Change focal area strategy and the GEF Strategic Program 1 (CC-SP1) “Promoting Energy Efficiency in residential and commercial buildings”.

The residential and commercial sector in Senegal already accounts for a significant portion – more than 50% - of the national electricity consumption, and is expected to increase with population and economic growth, which results into more constructions. By increasing the stock of energy efficient buildings, the energy demand from both the residential and commercial sector will be curbed, which in turn will restrain the GHG emissions resulting from the required generation to meet the demand. The public sector (national and local administration, education buildings, hospital, etc...) accounts for a significant portion of both the national energy and electricity demand. The proposed project will support the adoption and enforcement of verified energy efficiency requirements and precisely target thermal building codes for new construction with a series of provision of existing buildings. GEF funding for this project will be critical to secure the said global benefits. Moreover, the project will gain from and also contribute further to the international experiences in promoting EE buildings codes.

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

Overall the GEF financing will support capacity & institutional development activities. A portion of the budget is allocated to consultation of stakeholders, collecting and analyzing technical solutions to thermally insulate buildings, tailoring passive solar to Senegal climatic solution, validating the selected design concept and improved material, drafting of piece of legislation... The remaining of the budget on capacity development will go for communication and training materials to help the construction industry to adapt new building practices. GEF financing will also cover the additional investment cost in the two demonstration projects. GEF allocation will be used to compensate the additional cost of the energy efficient solutions that will be tested and implemented, typically roof and wall insulation, overhang over windows, shading devices, natural ventilation systems... solutions that are not known or even available in Senegal today.

E. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:

The UN Common Country Assessment (2001) emphasized the need to make the production mechanism and processes of industries in the country more environmental friendly and efficient towards further reducing Senegal’s contribution to GHGs in the context of sustainable poverty reduction. In responding to the global call to assist developing nations to attain the MDGs, the UN Development Assistance Framework for Senegal (2002 – 2007) is focused on the promotion of resource conservation, as well as the advancement of R & D and transfer of appropriate technology, including energy technologies, for sustainable environmental management.

In the current Country Programme, UNDP resources have been allocated to supporting a national programme on “Energy and Environment for Sustainable Development”. The main elements of UNDP’s strategic approach include (i) strengthening capacity for the integration of energy and environmental concerns into development planning, policies and programmes; (ii) strengthening capacity to develop and implement a national renewable energy master plan; (iii) building partnerships between governments, private, non-governmental organizations and donors for resource mobilization to promote environmental sustainability for poverty reduction, including promotion of a public-private initiative for wide-adoption of renewable energy technologies. The implementation of this programme will positively complement the proposed project activities

F. DISCUSS THE VALUE-ADDED OF GEF INVOLVEMENT IN THE PROJECT DEMONSTRATED THROUGH [INCREMENTAL REASONING](#) :

As mentioned in part A, Senegal has been facing an ever growing demand for electricity, and still is. Attempts to limit this demand growth are faced with many hurdles. Without GEF support, these hurdles will remain and will result in unabated growth of electricity produced and the resulting GHG emissions. Barriers to be addressed by the GEF supported project are: (1) Lack of Policy, Legal and Regulatory Framework that are supportive of energy efficiency initiatives, (2) Limited institutional capability to facilitate energy efficiency initiatives in the buildings sector, (3) Low Public Awareness about, and Professionals’ Interest on, EE initiatives in the buildings sector; and, (4) Lack of Capability from Local Companies to implement EE projects, and/or provide EE services.

The barriers presented above slow down the widespread application of EE technologies, techniques and practices in the buildings sector in Senegal. The project has been designed to overcome these significant barriers and allow a faster transformation process for the buildings market towards widespread application of building EE technologies and EE appliances/equipment. The GEF support to the project will also catalyze the intervention of many local entities that are interested and willing to implement EE activities, and particularly those who have expressed interest in becoming co-financing partners for this project. These partners would however not provide their support to the proposed project without GEF intervention.

G. INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS, THAT MIGHT PREVENT THE PROJECT OBJECTIVE(S) FROM BEING ACHIEVED, AND IF POSSIBLE INCLUDING RISK MITIGATION MEASURES THAT WILL BE TAKEN:

There are two areas of risks linked to the achievement of the outcome of this project; economic stability and stakeholder commitments. The climate change risk is not likely to prevent the objectives to be met and more likely to render the need for the project even more acute (increased use of air-conditioning).

Risk	Risk Level	Mitigation measures
The economic stability: Should the current rate of economic growth slows down the need for the project and its achievements would be less dramatic as the capacity of households to acquire new or exchange their appliances would be constrained by the stress on their purchasing power	H	Such risk cannot be mitigated by the project, but is unlikely because the trend of the last few years was consistently towards higher growth rate not lower.
Market risks on demand and supply of EE supplies: the quantity demanded may not be as high as anticipated (low consumer preferences) and/or the quantity supplied is not enough to meet the needs	M	Public awareness campaign to ensure customers attractiveness. Promote and mobilize the efficient materials and techniques/technologies among the equipment suppliers and the construction companies. Initiate regulations on the matter.
The stakeholder commitment, poor or limited enforcement: Many stakeholders are to be actively involved for a successful implementation of the project	M	Support of all the stakeholders has to be ensured through close co-operation established early in the design of the project

H. DESCRIBE, IF POSSIBLE, THE EXPECTED COST-EFFECTIVENESS OF THE PROJECT:

A very preliminary and conservative estimate based in particular from inputs from ENERBAT indicates that the indirect impact of the project is at the minimum in the order of 2 M tons of CO2 reduction by 2020. The cost effectiveness of the GEF support can be estimated at USD 0.5 per ton CO2 reduced.

I. JUSTIFY THE COMPARATIVE ADVANTAGE OF GEF AGENCY:

The comparative advantage of UNDP is justified by the nature of the project (being a “pure” capacity building / technical assistance project) and taking into account UNDP’s past experience with similar projects.

PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)


A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):

(Please attach the [country endorsement letter\(s\)](#) or [regional endorsement letter\(s\)](#) with this template).

NAME	POSITION	MINISTRY	DATE (Month, day, year)
<i>Cheikh Sylla</i>	Director/GEF OFP <i>Ministry of the Environment</i>	Ministère de l'Environnement	<i>19 August 2009</i>

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF policies and procedures and meets the GEF criteria for project identification and preparation.

Agency Coordinator, Agency name	Signature	Date (Month, day, year)	Project Contact Person	Telephone	Email Address
Yannick Glemarec UNDP/GEF Executive Coordinator		1 February 2010	Benoit Lebot	+ 212 33 869 06 76	Benoit.lebot@undp.org