Government of Mauritius

United Nations Development Programme

Global Environment Facility

Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings
PIMS No. 3001, Proposal ID: 00048159, Project ID: 00058178

Brief Description

The overall project goal is to reduce GHG emissions sustainably through a transformation of the building energy efficiency market for existing and new buildings. The target is an accum ulated total of 245,000 tonnes CO_2eq over 10 years.

The project is intended to overcome barriers to energy efficiency in buildings in Mauritius and reinforce the development of a market approach to improving residential and non -residential building energy efficiency in both existing stock and future buildings. In setting out to do so, the project activities will ensure that energy is used cost effectively and rationally throughout the island. The project tackles market barriers in all three areas of a building's energy use: building fabric, equipment, and people (behaviour).

The project is comprised of 4 components focusing on policy (component 1: building regulations and codes), functioning markets (component 2: stimulating demand and supply of technology a nd services), awareness (component 3: information, knowledge and awareness) , and monitoring & evaluation (component 4: monitoring and evaluation).

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Acronyms

APR	Annual Project Report
AWP	Annual Work Plan
CCF	Country Cooperation Framework
CEB	Central Electricity Board
CO	Country Office (UNDP)
CO_2	Carbon Dioxide
CO_2eq	Equivalent to CO_2's global warming potential
CSO	Central Statistical Office
CWA	Central Water Authority (MPU)
DSM	Demand-Side Management
EEU	Energy Efficiency Unit
EPA	Environmental Protection Act
GEF	Global Environment Facility
GHG	Greenhouse Gas
GoM	Government of Mauritius
IW	Inception workshop
KM	Knowledge Management
kWh	Kilowatt-hour (unit of electric energy)
M&E	Monitoring and Evaluation
MoE&NDU	Ministry of Environment and National Development Unit (MoE&NDU)
MoHL	Ministry of Housing and Lands
MPU	Ministry of Public Utilities (MPU)
MW	Megawatt (thousand kilowatts; unit of electric power)
NAP	National Action Plan
NCSA	National Capacity Self Assessment
NDS	National Development Strategy
NEX	National Execution (UNDP)
NSC	National Steering Committee
PDF-A	Project Development Facility Block A
PIR	Project Implementation Review
PM	Project Manager
RCU	UNDP/GEF Regional Coordination Unit
PMU	Project Management Unit
RRA	Rodrigues Regional Assembly
SBAA	Standard Basic Assistance Agreement
SC	Steering Committee
SGP	Small Grants Program (UNDP/GEF)
S & L	Standards and Labelling
TAG	Technical Advisory Committee
ToR	Terms of Reference
TPR	Tripartite Project Review
TRAC	Technical Resources Allocated from Core (category of UNDP funding)
TTR	Terminal Tripartite Review
UNDAF	United Nations Development Assistance Framework
UNFCCC	United Nations Framework Convention on Climate Change
UNDP	United National Development Programme

SECTION I: ELABORATIO N OF THE NARRATIVE

PART I: SITUATION AN ALYSIS

1. Over the past decade, electricity demand in Mauritius has grown at an average annual cumulative rate of over 8%. The CEB forecasts that energy generation requirements will increase by approximately 60% over the next 10 years, equivalent to an average cumulative annual growth rate of over 4.5% and a peak demand increase by 17 MW per year between 2004 and 2013. Air conditioning and mechanical ventilation from commercial and residential build ings are major contributors to this growth, and currently account for a load of 40 MW during the day and 30 MW at night, well over 10% of the *peak demand*.

2. For the residential sector an additional 96,000 houses will need to be built between 2005 and 20 15 (including stock replacement of approximately 25,000). Based on CEB historical data, the average household used about 1,175 kWh of electricity in 1992 and in 2003 used 1,770 kWh per year. Continuing the same trends, consumption per household is likely t o be about 2,400 kWh in 2015. The household baseline consumption forecast in 2015 is thus likely to be approximately 990 GWh per year.

3. With an effective demand side management (DSM) programme, which *reduces growth* by just 14% in the commercial and resi dential sectors in 10 years, Mauritius stands to save between 290,000 and 540,000 tonnes of imported coal, which is an equivalent saving of between 14.8 million and US$ 27 million in "hard currency" foreign exchange at today's prices. Other savings include a delayed investment in new generation capacity. Globally such a DSM programme represents between 126,000 and 245,000 tonnes of CO_2 equivalent.

4. Energy efficiency measures, products and services particularly related to buildings, which arguably are res ponsible for two-thirds of the electricity demand, are uncommon in Mauritius despite the exponential growth of energy demand in the last 10 years. The cause for this relates to a number of interrelated market, policy, finance, business management skills, i nformation and awareness as well as technology barriers. These barriers are unlikely to be overcome through current measures. A more detailed description of these barriers is given in Annex A.

PART II: STRATEGY

5. The project is intended to overcome barri ers to energy efficiency in buildings in Mauritius and to stimulate the development of a market for and non-residential building energy efficiency in both existing stock and future buildings. In setting out to do so, the project activities will ensure that energy is used cost effectively and rationally throughout the island. The project tackles market barriers in all three areas of a building's energy use: building fabric, equipment, and people (behaviour).

PART III: MANAGAMENT ARRANGEMENTS

6. The project will be nationally executed with UNDP Country Office Support (Country Support to NEX modality). The Ministry of Public Utilities will be the Executing agency for the project. A Project Management Unit (PMU) will be established within the Ministry of Public Utilities to implement the project. The PMU will be responsible for the delivery of all project outputs through direct action or hiring of necessary experts.

7. A National Steering Committee (NSC) will be established to provide expert and technical guidance to the PMU in the implementation of the project. The NSC will be chaired by the National Project Director (Ministry of Public Utilities) and will include representatives from the Ministry of Public Utilities, the State Law Office, UNDP and other relev ant stakeholders. This NSC will give advice to the Project Manager, thus supporting the decision-making process. Ultimate responsibility for day-to-day decisions lies with the PMU, which will equally carry the responsibility for delivery of project outputs.

8. The private sector will be closely associated with the project implementation. The company Okipoo Ltd, which works in Mauritius in the field of energy saving, will be a private sector representative in the NSC as a technical advisor. That it will work closely with the PMU and the Ministry of Public Utilities to establish awareness-raising and co-ordination mechanisms with the private sector to mainstream the project with them. Okipoo Ltd is contributing US$ 180,000 of financing to the project. The pri vate sector contribution to project outputs are listed in Annex E.

PART IV: MONITORING AND EVALUATION PLAN AND BUDGET

9. Project monitoring and evaluation (M&E) will be conducted in accordance with established GEF procedures as well as following new UNDP p rocedures in the ATLAS system. Project M&E provided by the project team, supported by UNDP, i.e., the UNDP Country Office (CO) The Logical Framework Matrix (see Annex C) provides *performance* and *impact* indicators for project implementation along with thei r corresponding *means of verification*. These will form the basis on which the project's Monitoring and Evaluation system will be built throughout the 4-year implementation period (2007-2011).

10. The principle components of the Monitoring and Evaluation P lan will include: (1) establishing monitoring responsibilities and events, (2) project reporting and (3) independent evaluations. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Report following a col lective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities. Indicative cost of monitoring and evaluation is USD 83,492.

PART V: LEGAL CONTEX T

11. This Project Document shall be the instrument ref erred to as such in Article I of the Standard Basic Assistance Agreement between the Government of Mauritius and the United Nations Development Programme, signed by the parties on 29 August 1974. The host country implementing agency shall, for the purpose of the Standard Basic Assistance Agreement, refer to the government co-operating agency described in that Agreement.

12. The UNDP Resident Representative in Mauritius is authorized to effect in writing the following types of revision to this Project Docum ent, provided that he/she has verified the agreement thereto by the UNDP-GEF Unit and is assured that the other signatories to the Project Document have no objection to the proposed changes:

a) Revision of, or addition to, any of the annexes to the Project D ocument;

b) Revisions which do not involve significant changes in the immediate objectives, outputs or activities of the project, but are caused by the rearrangement of the inputs already agreed to or by cost increases due to inflation;

c) Mandatory annual revisions which re-phase the delivery of agreed project inputs or increased expert or other costs due to inflation or take into account agency expenditure flexibility; and

d) Inclusion of additional annexes and attachments only as set out here in this Project Document

SECTION II: STRATEGIC RESULTS FRAMEWORK

PART I: LOGICAL FRAMEWORK ANALYSIS

13. For the objectively verifiable impact indicators, please see logical frame in the approved MSP proposal in part 3, Annex (C)

SECTION III: TOTAL BUDGET AND WORKPLAN

14. For the total budget and work-plan, please see Annex (F) in Section IV of the approved MSP proposal.

SECTION IV: ADDITONAL INFORMATION

PART I: APPROVED MSP PROPOSAL

1. PROJECT SUMMARY

a) PROJECT RATIONALE, OBJECTIVES, OUTCOMES/OUTPUTS, AND ACTIVITIES

15. Over the past decade, electricity demand in Mauritius has grown at an average annual cumulative rate of over 8%. The CEB forecasts that energy generation requirements will increase by approximately 60% over the next 10 years, equivalent to an average cumulative annual growth rate of over 4.5% and a peak demand increase by 17 MW per year between 2004 and 2013. Air conditioning and mechanical ventilation from commercial and residential buildings are major contributors to this growth, and currently account for a load of 40 MW during the day and 30 MW at night, well over 10% of the *peak demand*.

16. For the residential sector an additional 96,000 houses will need to be built between 2005 and 2015 (including stock replacement of approximately 25,000). Based on CEB historical data, the average household used about 1,175 kWh of electricity in 1992 and in 2003 used 1,770 kWh per year. Continuing the same trends, consumption per household is likely to be about 2,400 kWh in 2015. The household baseline consumption forecast in 2015 is thus likely to be approximately 990 GWh per year.

17. With an effective demand side management (DSM) programme, which *reduces growth* by just 14% in the commercial and residential sectors in 10 years, Mauritius stands to save between 290,000 and 540,000 tonnes of imported coal, which is an equivalent saving of between 14.8 million and US$ 27 million in "hard currency" foreign exchange at today's prices. Other savings include a

delayed investment in new generation capacity. Globally such a DSM programme represents between 126,000 and 245,000 tonnes of CO_2 equivalent.

18. Energy efficiency measures, products and services particularly related to buildings, which arguably are responsible for two-thirds of the electricity demand, are uncommon in Mauritius despite the exponential growth of energy demand in the last 10 years. The cause for this relates to a number of interrelated market, policy, finance, business management skills, information and awareness as well as technology barriers. These barriers are unlikely to be overcome through current measures. A more detailed description of these barriers is given in Annex A.

19. This project is thus intended to overcome these barriers to energy efficiency in buildings in Mauritius and reinforce the development of a market approach to improving residential and non-residential building energy efficiency in both existing stock and future buildings. In setting out to do so, the project activities will ensure that energy is used cost effectively and rationally throughout the island. The project tackles market barriers in all three areas of a building's energy use: building fabric, equipment, and people (behaviour) through four project components of which the outcomes and outputs are summarised below:

Outcome 1:
Building regulations and codes for energy saving are developed, enacted and sustainably enforced
- Energy Efficiency Unit (EEU) is established
- Building regulations and codes developed and enacted, taxation and labelling mechanisms assessed
- Compliance enforcement capabilities of municipal building code enforcement agencies reinforced.

Outcome 2:
Demand and supply for energy saving services and technology stimulated
- National standard for energy audits and programme of certification of energy auditors established
- Number of investment grade energy audits and feasibility studies through audit scheme increased
- Standard designs developed for low and middle income housing, schools, and other building needs developed and in use
- Appliance selection and installation guidelines for key products available at sale points.

Outcome 3:
Building engineers, architects, compliance officers, policy makers, financial sector, suppliers and public are convinced of importance and market opportunities for building energy saving
- Information on local costs and benefits of DSM and building energy efficiency well known by service suppliers and policy makers
- Awareness of building energy saving opportunities improved.

Outcome 4:
Monitoring, learning, adaptive feedback and evaluation
- Monitoring and evaluation work plan implemented
- Lessons learned collected, prepared and disseminated

b) KEY INDICATORS, ASSUMPTIONS, AND RISKS

20. Key indicators of performance of the project include those listed below:

Environmental:

- Reduction in direct GHG emissions and reduced energy consumption associated with more energy-efficient investments and better energy efficiency practices in commercial and residential buildings

Regulatory and institutional:

- Number of regulations and building codes developed, enacted and enforced as percentage of building permits issues
- Compliance rate to building codes and regulations
- Availability and quality of guidelines on appliances
- Draft legislation for appliance labelling systems created
- Strengthened institutional capacity at government level (by establishment and operation of Energy Efficiency Unit)

Capacity building, awareness creation and knowledge dissemination:

- Professionals (auditors, architects) trained and certified as energy saving experts
- Number of commercial actors in building energy saving sector
- Increased awareness and acceptance by private sector and end-users regarding energy savings in buildings and appliances

Energy audits:

- Number of audits being implemented (under the audit scheme)

21. Important project assumptions include:

- Effective enforcement of regulations and standards is sustainably maintained after the end of the project
- Project support is consistent throughout project by government and donors and afterwards by government
- Electricity prices remain stable or continue to rise and act as an incentive for investment in energy saving.
- Ongoing support from government and concerned stakeholders
- Regulations developed by stakeholders are adopted by government
- Ongoing growth or sustaining of energy (electricity) prices

22. Risks and remedial actions are summarized in the table below:

Risks	Type	Likelihood	Remedial actions
1. Lack of ongoing, long term political and government support for building energy efficiency	Exogenous	Low	Ongoing consultations and ownership of project development and implementation, with key government stakeholders. establishment of EEU under output 1.1 reinforces project ownership.

2. Government puts back subsidies for electricity, thereby reducing market signals for energy saving	Exogenous	Low	While there is some political pressure to reduce electricity tariffs, government plans to establish an independent regulatory authority will help to de-politicise electricity rates. Ongoing policy dialogue through this project will help to reinforce the importance of cost recovery in the sector. Lifeline tariffs if deemed necessary for very low income households will not have a significant impact on this project.
3. Low fossil fuel prices	Exogenous	Low	Since Mauritius imports all fossil fuels they come at a premium price. Coal, which will be required for future growth in base-load capacity as well as in the sugar industry out of season is imported from South Africa and prices are thus already low. Oil, which is required for peak-load is globally expected to maintain high prices with huge growth in India and China markets.
6. Poor cooperation between stakeholders	Endogenous	Medium	Highly participatory project development and implementation strategy, with specific incentives to key institutions.
7. Withdrawal of baseline funding	Endogenous	Medium	Government commitments in this area have been confirmed on the highest level and they have been committed over some time to energy efficiency although financial resources have been limited.
8. Inadequate project implementation	Endogenous	Medium	Careful selection of project team members and the M&E to be put in place is required. The project design aims to minimise institutional bureaucracy through careful apportionment of activities between government and private sector.
9. Cost overrun and time delays	Endogenous	Medium	Negotiation of fixed price “turnkey” contracts with experts will be required.
10. Use of inappropriate technologies	Endogenous	Low	Utilizing technologies with a satisfactory track record and use of experienced contractors will be required. Market forces and no GEF technology subsidies aim to ensure that rational choices are made for investments.
11. Failure of investment projects	Endogenous	Low	Mitigated through use of commercial approaches placing risk in the hands of private sector. Training in investment quality energy audits also contributes to reducing this risk.

2. COUNTRY OWNERSHIP

a) COUNTRY ELIGIBILITY

Mauritius ratified the UNFCCC on 17 August 1992.

b) COUNTRY DRIVENNESS

23. Over the past decade, electricity demand in Mauritius has grown at an average annual cumulative rate of over 8%, and forecasts are that energy generation requirements will increase by approximately 60% over the next 10 years, equivalent to an average cumulative annual growth rate of over 4.5%. With cogeneration potential from bagasse in the sugar industry already in use and accounting for 17% of the generation fuel fix (2000), and the hydroelectricity potential having been reached in 1983 and accounting for 6% of the generation fuel mix, the expected needed capacity additions of 220 MW between 2006 and 2012 are most likely to come from diesel and coal sources. Since these fuels will have to be imported, and this negatively affects the balance of payments, demand side management is of significant interest. If, through effective demand side management existing electricity infrastructure is more efficiently and productively used, expenditures on new sources of electricity supply – including generation facilities, power purchases and transmission and distribution capacity additions – can be deferred. From the consumer's point of view there is growing interest in reducing electricity bills, which, as a result of recent tariff increases, are growing rapidly. Mauritius additionally has strongly supported initiatives to burn less fossil fuel because of environmental reasons.

24. The interest of Mauritius in energy efficiency is best demonstrated through the following policies and actions:

- While in the 80's considerable emphasis was laid on Energy Planning and Policy for economic reasons, the last decade has witnessed the rising importance of environmental considerations. The National Long Term Perspective Study of 1997 proposed a vision of a country self-sufficient in energy and making high use of clean energy around 2020, relying on 'sensible conservation measures', including in buildings. The National Environmental Strategies (1999) specifically refer to the need 'to encourage energy conservation'.
- The Initial National Communication under UNFCCC published in 1999 provided a directory of GHG emissions and directed towards measures to curb CO_2 emissions from buildings. The Government is currently preparing the Long-term Energy Policy 2007-2025 with the aim of fully integrating renewables (in particular, the sugar sector and biofuels development) on a competitive basis. In addition, a Renewable Energy Master Plan is planned for 2008.
- A soft-loan programme to promote the use of solar water heaters is currently run by the Development Bank of Mauritius.
- Electricity sector restructuring is currently underway following an in-depth analysis conducted in 2000. A new Electricity Act and Utility Regulatory Act are planned to be proclaimed in 2008. This includes the introduction of an independent Utility Regulatory Authority to oversee development of the power sector, in which a level playing field is created for the independent power producers (IPPs, mainly bagasse-coal based private generators from the sugar industry) with the historical player, the Central Electricity Board (CEB). The state utility CEB remains responsible for power transmission and distribution.
- The Integrated Electricity Plan of November 2003 published by the CEB recognises that

"Energy saving activities that reduce demand – and therefore defer the need for new supply – are the most cost effective means to a sustainable energy future" (p17). Furthermore, "At CEB, we believe there is a significant opportunity for energy savings through conservation and increased energy efficiency. We recognise that strong utility involvement is needed to encourage the attitudinal and behavioural changes that lead customers to use energy wisely […]. In future plans, our goal is to show how at least 10% of total electricity demand growth will be served through conservation and energy efficiency".

- The CEB's strategy for Demand Side Management includes (CEB 2003, p77, 35-36) (a) reduction of technical losses in CEB's network, (b) use of tariff mechanisms to shift part of peak demand to off-peak hours, and (c) an end-use energy efficiency programme including surveys, sensitisation campaigns in households, schools, and through radio programmes, activities to stimulate energy efficiency in buildings, identification of market barriers and appropriate measures. The CEB has also recently been involved in a number of walk-through energy audits.
- The Ministry of Public Utilities has recently signing a Memorandum of Understanding with the Government of India under which assistance will be obtained in the field of energy conservation. An energy savings campaign was launched in 2005 by the Government.
- Preparatory work on and Energy Efficiency Bill is ongoing. The new bill, planned to be enacted in 2008, will look into energy efficiency standards for appliances, buildings, vehicles, etc.

3. PROGRAM AND POLICY CONFORMITY

a) PROGRAM DESIGNATION AND CONFORMITY

25. The project is intended to overcome barriers to energy efficiency in buildings in Mauritius and to stimulate the development of a market for and non-residential building energy efficiency in both existing stock and future buildings. In setting out to do so, the project activities will ensure that energy is used cost effectively and rationally throughout the island. The project tackles market barriers in all three areas of a building's energy use: building fabric, equipment, and people (behaviour).

26. The project is therefore fully in line with GEF Operational Program #5: Removal of Barriers to Energy Efficiency and Energy Conservation and the new GEF-4 Strategic Priority of Energy-Efficient Buildings

b) PROJECT DESIGN (INCLUDING LOGFRAME AND INCREMENTAL REASONING)

Goal and Objective

27. The overall goal to which this project contributes is "To reduce GHG emissions sustainably through a transformation of the building energy efficiency market". The target is direct emission reduction of 42,000 tonnes of CO_2eq and an accumulated total of indirect emission reduction of 245,000 tonnes CO_2eq over 10 years. The project objective is "To promote the adoption of energy efficient processes and technologies for existing and new buildings".

Outcome 1: Building regulations and codes for energy saving are developed, enacted and sustainably enforced.

Output 1.1: Energy Efficiency Unit (EEU) established and functioning

The Project Management Unit (PMU) would work on the operational and legislative framework for the setting up of the Energy Efficiency Unit (EEU). The EEU would come into operational by the end of the third year of the project in order to ensure its sustainability. The EEU would be set up as a unit under the Ministry of Public Utilities. Under this output, the necessary piece of legislation will be drafted, and the organizational chart and the scheme of service of the technical staffs of the EEU will be prepared and approved. The mandate of the EEU will include considering the current and future energy demand and consumption patterns with specific reference to different categories of buildings in the residential, commercial and industrial sectors, and reviewing of all related energy policies.

While activity 1.1.1 aims as sustainability of the Unit from a legislative perspective, from year 2, activity 1.1.2 will prepare and secure necessary funding / revenue mechanisms for the ongoing work of the EEU after the end of the project to ensure that it has necessary resources to remain effective. This includes future staffing and funding for the Unit from public and/or private sources.

Activities:

1.1.1 Identification of institutional responsibilities and drafting of the regulatory statute for the Energy Efficiency Unit within the MPU in accordance with local legislation.

1.1.2 Sustainability planning for the Energy Efficiency Unit, including long-term mandate, staffing and internal procedures, budget plan and resource requirements

Output 1.2: Building regulations and codes developed and enacted

This has to be supported by the adoption of relevant legislation covering specific energy policies to promote energy efficiency and energy conservation. Building regulations and codes regulate the design and construction of buildings to incorporate energy conservation as well as indoor air quality and comfort standards for different types of buildings. Information sessions and consultation at various levels will be required in order to identify the relevant benchmarks to be adopted as standards for building materials, building design and appliances that affect the energy requirements of different types of buildings. Legislation will have to be passed to enforce appropriate standards. Development of the codes will require consultation and joint action with many stakeholders including the Ministry of Housing, Finance, Employment, etc.

This work will start with the participatory elaboration and design of technical background material for future thermal building and construction energy efficiency regulations, specifically:

- Characterization of insulation material
- Prescriptive technical recommendations for level of thermal insulation of vertical and opaque walls, floors, ceilings and roofs, doors and window frames and windows glazing
- Characterization of heating. Ventilating and air-conditioning (HVAC) material

- Prescriptive technical recommendations for HVAC, specifically on minimum rate of air ventilation and minimum performance air conditioners
- Guidelines for passive solar design
- Guidelines for the design of piping for the circulation of fluids (air, water)
- Design, test, validation and adoption of an algorithm for the calculation of an o verall thermal building performances.

The regulations may include voluntary aspects and guidelines for technical professionals such as building concept and design, choice of building materials and construction techniques and guidelines on energy efficienc y of air conditioning, lighting, (solar) water heating, electrical as well as lift and escalator installations.

Activities:

1.2.1 Assessment of success factors and failures with existing energy efficiency building legislation on Réunion, and in other tropical (island) countries.

1.2.2 Assessment of legislative gaps and needs related to energy efficiency measures including the import tariff regimes; Identification of potential risks attached to the building code regulatory strategy and development of suitable risk miti gation strategies.

1.2.3 PMU develops regulations and codes in close cooperation with the Ministry of Public Utilities

1.2.4 The Ministry, through the PMU, organises stakeholder workshop to validate proposal and secure commitments/involvement of private s ector.

1.2.5 Assist in preparing the necessary legislation

1.2.6 Review and, if necessary, suggest legislation related to import tariffs for energy efficient building materials (and electric appliances)

1.2.7 Ongoing monitoring of and advocacy in the le gislative process to enact necessary legislation

Output 1.3: Compliance enforcement capabilities of municipal building code enforcement agencies reinforced

Activities

1.3.1 Comprehensive analysis of compliance mechanisms in existing building permit sys tem, assessing compliance level, enforcement approaches, gap analysis, and necessary corrective actions for a sustainable compliance regime. The analysis will include exploration of innovative approaches to compliance enforcement to reinforce the existing approach through building permits.

1.3.2 Preparation of work plans, budgets, etc., for reinforcement of compliance regime

1.3.3 Secure additional government funding for improved compliance enforcement as necessary

1.3.4 Develop training materials for ca pacity building on building regulations

1.3.5 Deliver training courses on building regulations to municipal enforcement agencies.

Outcome 2: Demand and supply for energy saving services and technology stimulated

Output 2.1: National standard for energy audits and programme of certification of energy auditors established

A key aspect of this outcome is the creation of a national standard for energy audits including the creation of a national certification scheme. Best practice in energy auditor certifi cation worldwide will be examined with a view of assessing the potential for the development of Mauritian standards for energy audits, with associated certification of energy auditors. The survey will help to understand best practice for energy auditing an d legal and administrative difficulties and strategies for overcoming them. Subsequently an energy certification scheme for application in Mauritius will be designed. This design will take careful account of factors, such as cost of operation of the scheme and source of funding; legal and administrative measures for implementation; training requirements of energy auditors and timetable and actions required for implementation. The Ministry of Public Utilities, (through the PMU) will undertake the implementa tion of the certification scheme together with other relevant stakeholders, including training. The scheme will run on a full cost-recovery basis to ensure sustainability.

Activities

2.1.1 Survey of successful energy audit schemes used worldwide

2.1.2 Development and design of certification and training scheme for energy audits based on best practice

2.1.3 Development of training materials and training of trainers

2.1.4 Implementation on cost recovery basis thus ensuring commercial operation of traini ng and certification scheme

Output 2.2: Number of investment grade energy audits and feasibility studies through audit scheme increased

This output is concerned with reducing the barriers to the financing of energy efficiency projects in the non-residential sector. The creation of a contingent fund for energy audits is envisaged to encourage the wider use of energy audits. Worldwide, energy audits have proven to be an effective catalyst for energy efficiency investments. Audits allow users who lack infor mation on the potential for energy efficiency improvements to become aware of the potential, and then create knowledge of what measures can and should be taken. Energy audits are highly cost effective (and are therefore even provided free in some countries) with very short payback times (the energy savings from the no and low-cost measures identified will in themselves normally more than repay the cost of the energy audit). However, energy users who do not see the potential for energy efficiency will not in vest in a preliminary energy audit. The reluctance on the part of decision makers to pre-finance an energy audit is a serious barrier to improving energy efficiency in the building sector in Mauritius. This lack of awareness and lack of confidence in the v alue of energy audits necessarily also affects investment in energy efficiency.

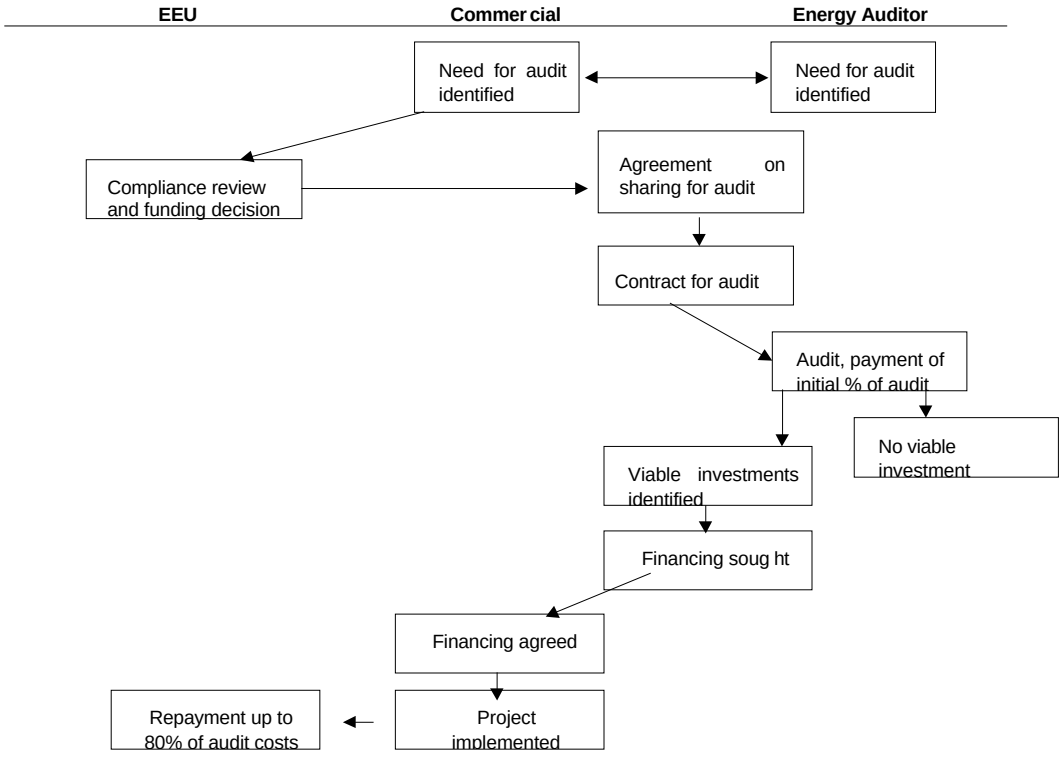
For this reason contingent grants given on a cost-sharing basis for investment grade energy audits would support identification, development, and implementation of investment projects. The cost of energy audits or feasibility studies - based on the offer of a certified energy auditor (see output 2.1) - will be shared with the building owner/manager. The project will support at least 30 audits to a level

of up to 80% (smaller projects) and a further 20 audits up to 30% (for larger projects) to be undertaken in non-residential buildings. All of the audits should identify no-cost and low-cost measures, which should be implemented. A minimum of 30 of the projects where an audit was supported should lead to concrete investment projects over the lifetime of the project.

A contingent support mechanism for energy audits will be established comprising the following elements (see figure below):

- Finalisation of the degree of support necessary (for both audits and feasibility studies)
- Audit repayment mechanism
- Implementation mechanism – channel to be used for the support (public sector and/ or municipal utilities, and/ or energy service or energy auditing companies).
- Linkage to the development of energy audit certification programme for auditors and energy service companies.
- Management of the implementation (options to be considered include the PMU itself or a financial institution).
- Application and procedures. The application and selection procedures should be designed to minimise bureaucracy and maximise transparency. Care will be taken to avoid duplication with the procedures in place (approval committees) with existing financial mechanisms.

Figure: Indicative schematic of energy audit mechanism



The degree of support necessary (percentage of audit or feasibility study cost) which should be pre-financed on a contingent support basis will be determined following a detailed study of the needs of municipalities. The audit repayment mechanism, which is proposed as a starting point (based on the approach used by the UNDP / GEF Public Energy Efficiency Programme in Hungary) might stipulate repayment of audit expenses as follows:

- *Small projects:* 20% payback of audit expenses, followed by 60% on realisation of the main audit recommendations within a pre-determined period
- *Larger projects:* 10% payback of audit expenses, followed by 20% on successful realisation of the main audit recommendations within a pre-determined period

The pre-determined period will be explicitly defined in the programme design phase, but is likely to be a period of two full budgeting cycles (i.e. a maximum of 2 years). Conditions for repayment, including the definition of grace period (if any) and repayment period will be fully defined during the programme design phase under Activity 2.2.2 (below). The recommended mechanism will be presented to and approved by the Technical Advisory Group. An indicative overview of the operation of the mechanism is given in the figure below:

The initial funds to start the energy audit contingent support mechanism will come from the GEF. At the end of the GEF project, the funds will remain with the EEU as long as it continues to disburse funds as intended by the project and consistent with the EEU business plan. If a suitable arrangement for continued operation of the fund cannot be established, the remaining funds will be returned to the GEF. Following the mid-term review the financial mechanism will be adjusted as necessary to ensure maximum impact. The management of the financial mechanism is the direct responsibility of the PMU (subject to validation under activity 2.2.2). The Project Manager will report every 6 months to the National Steering Committee on the status of the fund, including as necessary independently audited financial statements.

A databank will be created to reconcile and catalogue audits carried out in several buildings falling in the same category under the support mechanism. Such databanks can be effectively and handily used as reference in the form of a benchmark for audits in each category of building in the country, resulting in an overall lowering of the cost of audits. Data from this resource will be disseminated through information activities under output 3.2.

Activities:

2.2.1 Needs analysis for the contingent support mechanism

2.2.2 Programme design / design of selection procedures for the fund

2.2.3 Design annual 'best investment project' award which will boost awareness of the audit support mechanism.

2.2.4 Implement award system with maximum press coverage

2.2.5 Implement the contingent support mechanism

2.2.6 Creation and management of energy audit databank and benchmarks for categories of building

2.2.7 Mid-term review of the mechanism and adjustment

Output 2.3: *Standard designs developed for low and middle-income housing, schools, and other building needs developed and in use*

While some buildings are designed by architects, the majority, particularly in the lower to middle income residential sectors, are based on standard designs available through the building contractor. The aim of this output is to ensure that these standard designs meet the requirements of the building regulations and incorporate all cost effective energy saving mechanisms. While direct energy (and CO_2) savings may be more limited in the low-income sector (certainly on a 'per building' basis) and in schools / clinics, etc than in large commercial buildings and high-income households, the demonstration value of the government taking energy saving in buildings seriously should not be underestimated. The key is to create a culture of energy awareness and turn the comment "why should I do it if the government doesn't?" to "this is important for everyone". The message is "Do what I do" not just "Do what I say".

Of particular interest for energy saving is that low income housing in Mauritius is designed to be modular with the expectation that households will extend their houses (even building second floors) as their wealth and opportunity improves. Although low-income households do usually not use air

conditioning or mechanical ventilation, they are without doubt future owners of these appliances. Action in this sector is thus of significant importance for the future.

Activities

2.3.1 Identification of specific needs, level of detail, and k ey sectors in standard designs

2.3.2 Develop energy efficient standard designs

2.3.3 Facilitated dialogue and advocacy with Ministry of Housing and National Housing Development Corporation to ensure implementation of basic energy saving recommendations into government low income housing projects.

2.3.4 Facilitated dialogue and advocacy with Ministry of Education to ensure implementation of basic energy saving recommendations for school projects.

2.3.5 Dissemination of standard designs to municipal build ing permit offices, architects, building contractors, engineering firms etc.; training of selected personnel on standards designs

2.3.6 Monitoring of impacts of standard designs

Output 2.4: Appliance selection and installation guidelines for key product s available at points of sale

As is common in some European countries, guidelines in the form of a short 1 -2 page practical pamphlets on the selection, installation and maintenance of various key energy efficient products and appliances will be prepared a nd made available at points of sale: shops, suppliers of white goods and hardware stores. Commercial sponsorship of these guidelines will be explored (suppliers or installers of particular products (e.g., roof insulation / radiant heat barriers, reflective coatings, efficient refrigerators)) although not at the expense of objectivity of supplied information.

Activities

2.4.1 Review of household energy balances and energy saving products / services to identify key areas where household energy efficiency m ay be improved

2.4.2 Assessment of legislative gaps and needs related to energy efficiency measures including the import tariff regimes and appliance standards and labelling. With regard to appliance standards and labelling, Mauritius will consider and apply the lessons and experiences across the UNDP-GEF portfolio with S&L interventions. (This activity will build on information gathered under Output 3.1: information on local costs and benefits of building energy efficiency measures well known by service supplier s and policy makers).

2.4.3 Secure commercial sponsorship from 2 or more suppliers of services or products per guideline

2.4.4 Prepare 1-2 page guidelines together with sponsors, ensuring building energy efficiency 'corporate' brand maintained (see component 3).

2.4.5 Support dissemination of guidelines through existing supplier networks, shops, and at municipal building permit offices, and through targeted awareness creation events.

2.4.6 Support training on appliance standards and labelling for government of ficials and suppliers of products and services.

Outcome 3: Building engineers, architects, compliance officers, policy makers, financial sector, suppliers and public are convinced of importance and market opportunities for building energy saving

Output 3.1: Costs and benefits of building energy efficiency measures well known by service suppliers and policy makers

A cost-benefit analysis will be carried out. The analysis will cover costs and benefits under current legislative frameworks as well as assessment of future possible impacts from different import tariff regimes and appliance labelling / standards.

Activities

3.1.1 Undertake cost-benefit analysis of energy efficiency measures through monitoring of initial demand-side management (DSM) investments made within component 2.

3.1.2 Prepare analytical report covering costs and benefits.

3.1.3 Prepare short targeted briefing papers for policy makers and training materials for government officials, private sector and other stakeholders on results

3.1.4 Deliver training course on cost-benefits of energy efficiency and DSM investments

Output 3.2: Awareness of building energy saving opportunities improved

Activities

3.2.1 Design overall marketing strategy including establishing information paths (email addresses, web page, telephone numbers), and 'corporate' brand for the building energy efficiency programme

3.2.2 Survey awareness levels at start of project (this analysis and that of 3.2.4 will include end-users as well as stakeholders targeted under output 3.1)

3.2.3 Implement marketing campaign at the end user level

3.2.4 Survey awareness levels at mid-term and after project

Outcome 4: Monitoring, learning, adaptive feedback and evaluation.

This outcome will be achieved through 2 outputs:

4.1. Monitoring and Evaluation work plan implemented
4.2. Lessons learned collected, prepared and disseminated

A more detailed description of the monitoring & evaluation and lessons learned dissemination activities is given under part j) of this Section.

Incremental cost analysis and logical framework

28. A table presenting the incremental cost matrix of the before-mentioned outcomes and outputs is given in Annex B. The project logical framework of outcomes, outputs, indicators, verifiers and assumptions and risks is presented in Annex C.

c) SUSTAINABILITY (INCLUDING FINANCIAL SUSTAINABILITY)

29. Overall sustainability; Participation of multiple stakeholders including beneficiaries will be ensured at all levels to provide buy-in (support for the program). Training provided at all stakeholder levels will ensure that after the end of the project, project objectives and benefits are owned and internalized by stakeholders and that stakeholders have the capacity to sustain the project objectives. Awareness campaigns will be conducted on both the supply and demand side to catalyse demand so as to achieve significant and long term market transformation process, which will sustain demand and supply dynamics of the energy efficiency products and processes in the post-project period.

30. Financial sustainability; Demonstrating commercial benefits and developing bankable business plans will help negative perceptions of financing institutions towards energy efficiency investment loans and improve local financing opportunities.

d) REPLICABILITY

31. Within Mauritius project results could be replicable through a combination of attitude shift, incentives and a rigorous enforcement regime. All new buildings could become more energy efficient after successful implementation of this project.

32. Furthermore the proposed model is highly replicable in other tropical countries throughout the world, and particularly in other small island developing states (SIDS).

e) STAKEHOLDER INVOLVEMENT

33. A very diverse group of stakeholders have been consulted throughout project development. During the PDF-A the national and international experts held interviews with over 20 stakeholders, and a multi-sectoral workshop was held on the 9th of March 2005 to validate findings and discuss the project strategy with a diverse participation of over 40 stakeholders. During this workshop all stakeholders received a full copy of the draft MSP executive summary, and had the opportunity of giving their opinions and ideas within smaller working groups. This resulted in adjustment and improvement of the proposal.

Main stakeholders include:

- Ministry of Public Utilities
- UNDP
- Department of Environment,
- Ministry of Local Government,
- Ministry of Finance and Economic Development,
- Town and Country Planning Board,

- Central Statistical Office,
- Mauritius Research Council,
- University of Mauritius,
- National Housing Development Corporation,
- Central Electricity Board,
- Development Bank of Mauritius,
- Mauritius Association of Architects,
- Institution of Engineers,
- Private companies – building contractors, equipment suppliers, consultants, architects

f) MONITORING AND EVALUATION

34. Project monitoring and evaluation (M&E) will be conducted in accordance with established GEF procedures as well as following new UNDP procedures in the ATLAS system. Project M&E provided by the project team, supported by UNDP, i.e., the UNDP Country Office (CO) The Logical Framework Matrix (see Annex C) provides *performance* and *impact* indicators for project implementation along with their corresponding *means of verification*. These will form the basis on which the project's Monitoring and Evaluation system will be built throughout the 4-year implementation period (2007-2011).

35. The principle components of the Monitoring and Evaluation Plan will include: (1) establishing monitoring responsibilities and events, (2) project reporting and (3) independent evaluations. The project's Monitoring and Evaluation Plan will be presented and finalized at the Project's Inception Report following a collective fine-tuning of indicators, means of verification, and the full definition of project staff M&E responsibilities.

Monitoring and reporting

Project inception phase

36. A Project Inception Workshop will be conducted with the full project team, relevant government counterparts, co-financing partners, the UNDP-CO and representation from the UNDP-GEF Regional Coordinating Unit, as well as UNDP-GEF (HQs) as appropriate.

37. A fundamental objective of this Inception Workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the project's logframe matrix. This will include reviewing the logframe (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise finalize the Annual Work Plan (AWP) with precise and measurable performance indicators, and in a manner consistent with the expected outcomes for the project.

38. Additionally, the purpose and objective of the Inception Workshop (IW) will be to: (i) introduce project staff with the UNDP-GEF *expanded team* which will support the project during its implementation, namely the CO and responsible Regional Coordinating Unit staff; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and RCU staff vis-à-vis the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and

evaluation (M&E) requirements, with particular emphasis on the Annual Project Implementation Reviews (PIRs) and related documentation, the Annual Project Report (APR), Tripartite Review Meetings, as well as mid-term and final evaluations. Equally, the IW will provide an opportunity to inform the project team on UNDP project related budgetary planning, budget reviews, and mandatory budget re-phasings.

39. The IW will also provide an opportunity for all parties to understand their roles, functions, a nd responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms. The Terms of Reference for project staff and decision-making structures will be discussed again, as needed , in order to clarify for all, each party's responsibilities during the project's implementation phase.

Monitoring responsibilities and events

40. A detailed schedule of project review meetings will be developed by the Project Management Unit (PMU), in consultation with project implementation partners and stakeholder representatives and incorporated in the Project Inception Report. Such a schedule will include: (i) a tentative time frames for National Steering Committee (NSC) meetings and (ii) project-related monitoring and evaluation (M&E) activities.

41. Day-to-day monitoring of implementation progress will be the responsibility of the Project Manager based on the project's Annual Work plan (Strategic Planning Matrix) and its indicators. The PMU will inform the UNDP CO and Ministry of Public Utilities (MPU) of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

42. Periodic monitoring of implementation progress will be undertaken by the National Steering Committee (NSC) through quarterly meetings with the MPU and UNDP Country Office (or more or less frequently as deemed necessary). This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to e nsure smooth implementation of project activities.

43. The UNDP Country Office and the UNDP-GEF Regional Coordination Unit (RCU) are responsible for monitoring the project on a continuous basis and ca n conduct, as appropriate, visits to the project and field sites to assess first hand project progress. Any other member of the Project Steering Committee can also accompany, as decided by the Committee. A Field Visit Report will be prepared by the CO and circulated no less than one month after the visit to the project team, all PSC members and UNDP-GEF.

44. Annual Monitoring will occur through the Annual Project Report (APR/PIR). The APR/PIR will highlight policy issues and recommendations for the decisi on of the PSC participants. The Project Manager also informs the project participants of any agreement reached by stakeholders during the APR/PIR preparation on how to resolve operational issues. Separate r eviews of each project component may also be cond ucted if necessary.

45. A terminal tripartite review (TTR) meeting is held in the last month of project operations. The Project Manager is responsible for preparing the Terminal Report and submitting it , through the

National Project Director, to UNDP-CO and LAC-GEF's Regional Coordinating Unit. It shall be prepared in draft at least two months in advance of the TTR in order to allow review, and will serve as the basis for discussions in the TTR. The terminal tripartite review considers the implementation of the project as a whole, paying particular attention to whether the project has achieved its stated objectives and contributed to the broader environmental objective. It decides whether any actions are still necessary, particularly in relation to sustainability of project results, and acts as a vehicle through which lessons learnt can be captured to feed into other projects under implementation of formulation.

46. Although not mandatory, tripartite review (TPR) meetings could also be held on an annual basis, e.g. coinciding with the NSC meetings. This will be decided at the Inception Workshop.
The TPR has the authority to suspend disbursement if project performance benchmarks are not met. Benchmarks will be developed at the Inception Workshop, based on delivery rates, and qualitative assessments of achievements of outputs.

Project reporting

47. The Project Manager will be responsible for the preparation and submission of the following reports that form part of the monitoring process. Items (a), (b) , (c) and (f) are mandatory and strictly related to monitoring, while (d) and (e) have a broader function and the frequency and nature is project-specific to be defined throughout implementation.

a) A Project Inception Report will be prepared immediately following the Inception Workshop. It will include a detailed First Year/Annual Work Plan (AWP) divided in quarterly time frames detailing the activities and progress indicators that will guide implementation during the first year of the project. This AWP would also include the dates of specific field visits and support missions from UNDP CO or RCU staff or Technical Advisors. The Report will also include the detailed project budget for the first full year of implementation, prepared on the basis of the Annual Work Plan, and including any monitoring and evaluation requirements to effectively measure project performance during the targeted 12 months time-frame. The Inception Report will include a more detailed narrative on the institutional roles, responsibilities, coordinating actions and feedback mechanisms of project related (co-financing) partners. In addition, a section will be included on progress to date on project establishment and start-up activities and an update of any changed external conditions that may effect project implementation. When finalized the report will be circulated to project counterparts who will be given a period of one calendar month in which to respond with comments or queries. Prior to this circulation of the Inception Report, the UNDP Country Office and UNDP-GEF's Regional Coordinating Unit will review the document.

b) The Annual Project Report (APR) – Project Implementation Review (PIR) is a UNDP and GEF requirement to facilitate central oversight, monitoring and project management. It is a self-assessment report by project management to the CO, providing inputs to the CO reporting process, as well as forming a key input to the UNDP/GEF M&E Unit, which analyzes the APRs by focal area, theme and region for common issues/results and lessons.

c) Quarterly Reports: The Project Management Unit reports on a quarterly basis to the Executing Agency and the UNDP Country Office on the financial and substantive progress of the project. In the case that a report is rejected, the UNDP Country Office and the PSC jointly define adequate

measures to address the concerns and define a way forward. A reporting routine will be established with the following proposed cut-off dates, 31. March, 30 June, 30 September and 31 December.

d) As deemed necessary by the PMU and/or when called for by UNDP (-GEF) or the PSC, the Project Manager will prepare Thematic Reports, focusing on specific issues or areas of activity or Technical Reports, detailed documents covering specific areas of analysis or scientific specializations within the overall project. If requested by UNDP or PSC, the request for a project report will be provided to the project team in written form by UNDP, clearly state the issue or activities that need to be reported on and allow reasonable timeframes for their preparation by the project team.. These reports can be used as a form of lessons learnt exercise, specific oversight in key areas, or as troubleshooting exercises to evaluate and overcome obstacles and difficulties encountered. Two specific technical reports linked with monitoring are the baseline and end-of-project impact studies (as mentioned in the table on the next page).

e) Project Publications will form a key method of crystallizing and disseminating the results and achievements of the Project and its lessons learnt. These publications are informational texts on the activities and achievements of the Project, in the form of journal articles, multimedia publications, etc. These publications can be based on Technical Reports or may be summaries or compilations of a series of Technical Reports and other research. The National Steering Committee will determine if any of the Project or Technical Reports merit formal publication and the Project Manager will also (in consultation with UNDP, the government and other relevant stakeholder groups) plan and produce these Publications in a consistent and recognizable format. Project resources will need to be defined and allocated for these activities as appropriate and in a manner commensurate with the project's budget.

f) Project Completion Report. During the last three months of the project Project Manager will prepare the Project Completion Report. This comprehensive report will summarize all activities, achievements and outputs, objectives met (or not achieved!) of the Project, as well as lessons learnt and structures and systems implemented. It will also lay out recommendations for any further steps that need to be taken to ensure sustainability and replicability of the Project's activities.

Independent Evaluation

48. The project will be subjected to at least two independent external evaluations as follows: -

Mid-term Evaluation

49. An independent Mid-Term Evaluation will be undertaken at the end of the second year of implementation. The Mid-Term Evaluation will determine progress being made towards the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between the parties to the project document. The Terms of Reference for this Mid-term Evaluation will be prepared by the UNDP CO based on guidance from the UNDP-GEF Regional Coordinating Unit (RCU).

Indicative monitoring and evaluation work plan and corresponding budget

Type of M&E activity	Responsible Parties	Budget US$	Time frame
Inception Workshop	§ Project Manager (PM) § UNDP CO § UNDP GEF RCU	2,000	Within first two months of project start up
Inception Report	§ Project Team § UNDP CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	§ PM will oversee the hiring of specific studies and institutions	To be finalized in Inception Phase and Workshop. Indicative cost 10,000	Start, mid and end of project
Measurement of Means of Verification for Progress and Performance (measured annually)	§ Oversight by Project GEF Technical Advisor and PM § Measurements by consultants as needed	To be determined as part of the Annual Work Plan's preparation. Indicative cost 7,992	Annually prior to APR/PIR and to the definition of annual work plans
APR and PIR	§ PM § UNDP-CO § UNDP-GEF	None	Annually
TTR (and TPR) report	§ Government Counterparts § UNDP CO § PM § National Project Director § UNDP-GEF RCU	None	At the end of the project, and/or upon receipt of APR
Steering Committee Meetings	§ PM § National Project director § UNDP CO § Government counterpart	None	Following Project IW and subsequently at least once a year
Periodic and technical reports	§ PM § Hired consultants as needed	15,000	To be determined by Project Team and UNDP-CO
Mid-term External Evaluation	§ PM § UNDP-CO § UNDP-GEF RCU § External Consultants (i.e. evaluation team)	20,000	At the mid-point of project implementation.
Final External Evaluation	§ PM § UNDP-CO § UNDP-GEF RCU § External Consultants (i.e. evaluation team)	20,000	At the end of project implementation
Terminal Report	§ PM § UNDP-CO § External Consultant	None	At least one month before the end of the project
Lessons learned	§ PM § UNDP-GEF Regional Coordinating Unit	12,000	Yearly
Audit	§ PM § National Project Director	None	Yearly
Visits to field sites (UNDP staff travel costs to be charged to IA fees)	§ UNDP Country Office § UNDP-GEF Regional Coordinating Unit (as appropriate) § Government representatives	None	Yearly
TOTAL INDICATIVE COST *Excluding project team staff time and UNDP staff and travel expenses*		US$ **83,492**	

Final Evaluation

50. An independent Final Evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The Terms of Reference for this evaluation will be prepared by the UNDP CO based on guidance from the UNDP-GEF Regional Coordinating Unit.

Learning and Knowledge Sharing

51. Results from the project will be disseminated within and beyond the project intervention zone through a number of existing information sharing networks and forums. In addition:

- The project will participate, as relevant and appropriate, in UNDP/GEF sponsored networks, organized for Senior Personnel working on projects that share common characteristics. UNDP/GEF shall establish a number of networks, such as Integrated Ecosystem Management, eco-tourism, co-management, etc, that will largely function on the basis of an electronic platform.

- The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to project implementation though lessons learned.

52. The project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. Identify and analyzing lessons learned is an on-going process, and the need to communicate such lessons as one of the project's central contributions is a requirement to be delivered not less frequently than once every 12 months. UNDP/GEF shall provide a format and assist the Project Manager (PM) in categorizing, documenting and reporting on lessons learned. To this end a percentage of project resources will need to be allocated for these activities.

Audit

53. An annual *project audit* will be provided by the Government containing certified annual financial statements relating to the status of UNDP/GEF funds, including an independent annual audit of these financial statements, according to the procedures of the UNDP. The audit will be conducted by the legally recognised auditor of the Government, or by a commercial auditor engaged by the Government, and at the Government's cost.

4. FINANCING AND BUDGET

FINANCING PLAN, COST EFFECTIVENESS, CO-FINANCING, CO-FINANCIERS

a) PROJECT COSTS

Project Components/Outcomes	Co-financing ($)	GEF ($)	Total ($)
1. Building regulations and codes	140,000	279,250	419,250
2. Energy savings services stimulated	4,641,187	428,000	5,069,187
3. Information and awareness	302,000	71,669	373,669
4. Monitoring, learning and evaluation	35,000	83,492	118,492
Project management *	120,000	50,000	170,000
Total project costs	**5,238,187**	**912,411**	**6,150,598**

* This item is the aggregate cost of project management; the breakdown of the aggregate amount is presented in table b) below:

b) PROJECT MANAGEMENT BUDGET/COST

Component	Estimated Staff weeks	GEF ($)	Other Sources ($)	Project Total ($)
National Project Director (Locally recruited personnel*)	70		40,000	40,000
Technical Advisor (Locally recruited personnel*)	78	44,611		44,611
Office facilities, equipment, vehicles and communications		3,389	30,000	33,389
Travel		0	30,000	30,000
Miscellaneous		2,000	20,000	22,000
Total project management cost		**50,000**	**120,000**	**170,000**

* Locally recruited personnel/consultants in this table are hired for functions related to the management of project only. Consultants who are hired to do a special task are referred to as providing technical assistance and details of their services are provided in table c) below:

c) CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

Component	Estimated Staff weeks	GEF ($)	Other Sources ($)	Project Total ($)
Personnel				
Local consultants	501	233,611		233,611
International consultants	84	252,000		252,000
Total	**585**	**485.611**		**485,611**

For all consultants hired to manage project or provide technical assistance, a description in terms of their staff weeks, roles and functions in the project and their position titles in the organization, is given in the Annexes F and G of Part III.

d) CO-FINANCING SOURCES

Name of Co-financier (source)	Classification	Type	Amount	
			Confirmed ($)	Unconfirmed ($)
Ministry of Public Utilities	National Government	In Kind	338,295	
Ministry of Environment & NDU	National Government	Cash	50,744	
Ministry of Environment & NDU	National Government	In Kind	33,830	
Central Electricity Board	National Government	Cash	135,318	
Okipoo LTD	Private Sector	Cash	180,000	
Investments as a result of energy audits-end users	Private Sector	Cash		4,500,000
Total Co-financing			**738,187**	**4,500,000**

Cost-effectiveness

54. For a GEF expenditure of US$ 937,411 (including the PDF A assistance of $ 25,000) an estimated 126,000 to 245,000 tonnes of CO_2 will be reduced over 10 years. This equates to a cost per tonne of CO_2 of between US$ 4 and 8. This figure compares favourably with other GEF projects where costs below US$ 10 per tonne of reduced CO_2 are common.

PROJECT COST

A summary table of project cost and sources of co -financing is given in the table below

Outcome / component	GEF (US$)	Government of Mauritius (US$)	Private sector (US$)	Total (US$)
Outcome 1 Building regulations and codes	279,250	95,000	45,000	419,250
Outcome 2 Stimulating demand and supply of EE	428,000	96,187	4,545,000	5,069,187
Outcome 3 Information, knowledge and awareness	71,669	212,000	90,000	373,669
Outcome 4 Monitoring, learning, feedback and evaluation	83,492	35,000		118,492
Project management	50,000	120,000		170,000
Subtotal cofinancing	**912,411**	**558,187**	**4,680,000**	**6,150,598**
Mauritius Research Council		237,483		
Central Electricity Board (CEB)		1,314,773		
Subtotal parallel financing		**1,552,256**		**1,552,256**
Grand total	***912,411***	***2,110,443***	***4,680,000***	***7,702,854***

Co-financiers:	In-kind	Cash	Total (US$)
MPU	338,295		338,295
ME & NDU	33,829	50,744	84,574
CEB		135,318	135,318
Okipoo		180,000	180,000
End-users		4,500,000	4,500,000
TOTAL	**372,124**	**4,866,062**	**5,238,187**

Note to the table:

- Exchange rate: US$ 1 = 29.56 Mauritian Rs.
- At this exchange rate the co-financing and parallel financing consists of:
  - Ministry of Public Utilities (NPU): Rs. 10 million (in-kind)
  - Ministry of Environment (ME) & NDU: Rs. 2.5 million, of which Rs. 1 million in-kind and Rs. 1.5 million cash
  - Central Electricity Board: Rs 39 million, of which Rs. 4 million is considered co-financing (energy efficiency campaign: Rs. 1 million and media campaign residential sector, Rs. 3 million) and the remaining Rs. 35 million as parallel financing in green energy (interconnection of wind and bagasse power plants)
  - An estimated US$ 4.5 million will be committed during the project in energy efficiency investments. It is based on 30 investments averaging US$ 50,000 in the housing sector and 20 investments of US$ 150,000 in the commercial sector.
  - Confirmed private sector funding consists of US$ 180,000 from Okipoo Ltd. for the activities detailed below:
    - Component 1: Building Regulations and Codes
      - Advise on actual common practices in the private sector
      - Assist in research of new technologies and new applications
      - Liaise with international professionals of the private sector for innovative solutions linked to energy efficiency and conservation
      - Obtain advice and technical support from leading manufacturers and suppliers of equipment
      - Provide updated information on renewable energy solutions worldwide
      - Assist in drafting of energy performance criteria
    - Component 2: Simulating Demand and Supply of Technology and Services
      - Provide statistical data of energy installations and consumptions in hotel complex
      - Initiate debate on architectural/energy efficiency conflicts in buildings
      - Provide costs and financial data on existing practices v/s energy efficient buildings
      - Work out cases studies at project pre-feasibility stage
      - Provide technical assistance for training of energy auditors
      - Obtain advice from FM specialised organisations abroad on energy management and energy efficiency schemes in buildings
      - Obtain energy incentive models for overseas institutions
    - Component 3: Information, Knowledge and Awareness
      - Assist in an information campaign on energy efficiency awareness
      - Liaison with equivalent organisations in Europe to tap off past experience in setting up awareness network and appropriate staffing
      - Liaison with major local FM operators to create in-house energy awareness schemes
      - Liaison with architects to promote the consideration of energy efficiency buildings at design stage

55. Total project cost is US$ 6,150,598 with US$ 912,411 from GEF. A total of US$ 5,238,187 will be available as co-financing contributions, of which confirmed co-financing is US$ 738,187 and an estimated US$ 4,500,000 of investment in energy efficiency improvements in buildings and appliances as a result of energy audits and awareness creation.

56. Parallel financing is provided in the form of on going related energy efficiency activities of the Mauritius Research Council (US$ 237,483) and the Central Electricity Board (US$ 1,314,773).

5. INSTITUTIONAL COORDI NATION AND SUPPORT

a) CORE COMMITMENTS AND LINKAGES

57. The latest version of t he United Nations Development Assistance Framework (UNDAF) for Mauritius focuses on environment as one of the goals of assistance, and it is stated that as part of the high level and specific co-operation strategies "The UNDP will promote adoption of techn ologies which are environment friendly and that will result in emission reduction". Environmental Protection is also one of the three programme areas selected for UNDP assistance in the Country Cooperation Framework (CCF), reflecting the high national prio rity accorded to it by Government. This project is also identified specifically as an important element in the CCF (2000) as well as the Multi-Year Framework (MYFF) by contributing towards capacity building as well as the removal of barriers to energy efficiency and energy conservation.

b) CONSULTATION, COORDINATION AND COLLABORATION BETWEEN IAS, AND IAS AND EXAS, IF APPROPRIATE.

58. There are no other energy efficiency projects planned or under implementation by other implementing agencie s in Mauritius.

C) PROJECT IMPLEMENTATION ARRANGEMENT

59. The project will be nationally executed with UNDP Country Office Support (Country Support to NEX modality). The Ministry of Public Utilities will be the Executing agency for t he project. A Project Management Unit (PMU) will be established within the Ministry of Public Utilities to implement the project. The PMU will be responsible for the delivery of all project outputs through direct action or hiring of necessary experts.

60. A National Steering Committee (NSC) will be established to provide e xpert and technical guidance to the PMU in the implementation of the project. The NSC will be chaired by the National Project Director (Ministry of Public Utilities) and will include rep resentatives from the Ministry of Public Utilities, the State Law Office, UNDP and other relevant stakeholders. This NSC will give advice to the Project Manager, thus supporting the decision-making process. Ultimate responsibility for day-to-day decisions lies with the PMU, which will equally carry the responsibility for delivery of project outputs.

61. The private sector will be closely associated with the project implementation. The company Okipoo Ltd, which works in Mauritius in the field of energy savi ng, will be a private sector representative in the NSC as a technical advisor. That it will work closely with the PMU and the Ministry of Public Utilities to establish awareness-raising and co-ordination mechanisms with the private sector to mainstream the project with them. Okipoo Ltd is contributing US$ 180,000 of financing to the project. The private sector contribution to project outputs are listed in Annex E.

The project implementation structure is shown diagrammatically below:

6. REQUIRED ATTACHMENTS

a) Report on the Use of Project Preparation Grant (if used)

See Annex H

b) Country Endorsement Letter (RAF endorsement letter if BD or CC project)

See Annex E

c) Confirmed letters of commitments from co-financiers (with English translations)

See Annex E

d) Agency Notification on Major Amendment and provide details of the amendment, if applicable.

N/A

PART II - RESPONSE TO PROJECT REVIEWS

a) Convention Secretariat comments and IA/ExA response

b) STAP expert review and IA/ExA response (if re quested)

c) GEF Secretariat and other Agencies' comments and IA/ExA response

UNDP Responses to GEFSEC MSP Agreement Review Sheet (17 July 2006)

P.5 states that the project will "reinforce the development of a market approach to improving residential and non-residential building energy efficiency in the existing stock and future buildings." What "market approach" does this refer to? This does not appear to be consistent with the primarily "regulatory approach" of the project design (see below).

UNDP Response:
Currently - in the building sector in Mauritius - energy efficiency technologies and techniques are not being applied due to numerous barriers. These barriers will be addressed by a suite of interventions, most of which are regulatory measures such a s enforcing building regulations and codes, setting standards for energy audits etc. The successful implementation of these measures will unlock the market for energy efficient technologies and techniques. Under a functioning regulatory framework market fo rces can unfold; this is what the "market approach" refers to.

GEFSEC comment:
The outputs and activities are strong under Components 1 and 2 but weak under Component 3. Please sharpen barrier identification and activities of Component 3. The results need to be tangible with measurable indicators.

UNDP Response:
Component 3 focuses on a cost-benefit analysis of EE measures and a comprehensive marketing campaign. A cost-benefit analysis has been identified as the most appropriate tool for convincing service suppliers and policy makers. The marketing and branding campaign is the best instrument to increase awareness. Indicators to be used to measure achievement of outcome 3 and associated outputs are as follows:
End-term target: *Number of commercial actors in building energy saving sector increased by a factor of 10 since start of project*
Mid-term target: *Number of commercial actors in building energy saving sector increased by a factor of 5 since start of project*
End-term targets*: All relevant government p olicy papers under development through the project term from year 2 refer to results of the cost benefit studies.*
Suppliers use reports in marketing of relevant products
Mid-term targets*: Results of analytical studies on local energy performance widely ava ilable online, and immediately on request of EEU*

***End-term targets**: Average "energy saving awareness score [1]" tripled*
***Mid-term targets**: Average "energy saving awareness score " doubled*

GEFSEC comment:
Please elaborate on the financial sustainability of the EE Unit and its operations. What kind of commitment does the government have to maintain the EE Unit after the project is over? It is stated on p. 9 that "While activity 1.1.1 aims as sustainability of the Unit from a legislative perspective, from year 2, activity 1.1.2 will prepare and secure necessary funding/revenue mechanisms for the ongoing work of the EEU....". Please clarify, in the context of the mandate of EEU -- if it is intended as a regulatory/monitoring body, public funding for its continuing operation seems essential.

UNDP Response:
The Project Management Unit would work on the operational and legislative framework for the setting up of the Energy Efficiency Unit (EEU). The EEU would come into operational by the end of the third year of the project in order to ensure its sustainability. The EEU would be set up as a unit under the Ministry of Public Utilities.
Under the output 1.1, the necessary piece of legislation will be drafted, and the organizational chart and the scheme of service of the technical staffs of the EEU will be prepared and approved.

GEFSEC comment:
The M&E plan needs to comply with GEF policy of M&E, including having a separate budget for M&E.

UNDP Response:
The entire M&E section has been updated and an M&E budget has been included.

GEFSEC comment:
Indicator for Outcome 2 (p. 35): At least 50 energy audits carried out, "with 30 going forward to investment". Does this mean 30 investments will have been made by project end? Please clarify.

UNDP Response: Yes, the end-term target is that 30 investments have been made by end of project.

GEFSEC comment:

Financing Plan
GEF: Project 0.975m + PDF-A 0.025m
Co-financing:
Govt (in kind and cash): 0577m
Others (in kind and cash): 4.68m
Total: 6.257m

[1] The system for scoring, including weighting of factors, is to be determined during execution. Scores will be assigned based on results of the start of project survey, and compared to that in mid-term and end-term surveys. Factors which are likely to be used include:

· Information material about energy saving received by decision-making stakeholder (yes=1, no=0)

· Stakeholder has received and understands direct information about energy saving (yes=1, no=0)

· User has received indirect information about energy efficiency (yes=1, no=0)

· Evidence of application of lessons learned from increased awareness (yes=2, no=0)

The above figures from the project cover page are inconsistent with the project -financing plan on pp. 21-22. Please also specify how much is cash and how much is in kind.

UNDP Response:
The financial figures on the cover page and the document as a whole (i.e. section on financing and budget in Part I of this document as well as corresponding figures in the annex with the incremental cost table) have been checked and updated. The tables specify whether the amounts are in -kind or cash.

PART III – ANNEXES

ANNEX A BARRIERS TO ENERGY EFFICIENCY IMPROVEMENTS

Policy barriers

- Mauritius does not have coherent and effective policies to support energy efficiency in buildings. This relates to targets, mechanisms for the implementation and monitoring of activities to promote the reduction of greenhouse gas emissions resulting from energy use in buildings. *This barrier is tackled in component 1: building regulations and codes, and through activities aimed at information and awareness to inform policy development under component 3: information, knowledge and awareness.*
- Current building codes were last updated about 10 years ago, and these are based on approaches from before independence (i.e. pre 1968). The codes therefore make no reference to energy saving and building energy performance, and consequently buildings are designed and built without any regard to energy performance. *This barrier is tackled in component 1: building regulations and codes.*
- Very high import taxes / tariffs are levied on some energy saving materials and equipment, while other products with poor energy performance have low tariffs. Cost-benefit data is not available to the government to allow for the most economically beneficial tariffs to be set. *This barrier is tackled in component 1: building regulations and codes through activities focused on policy development, and in component 3: information, knowledge and awareness through activities on information for sound policy development.*
- Appliances such as electric boilers, ovens and stoves, air conditioners, dishwashers, home cinema, and home office equipment are rapidly gaining in popularity in middle-income households, and are replacing older and smaller units. There are however no efficiency standards for appliances, and no energy labelling requirements which could inform consumers. *This barrier is tackled through activities aimed at information and awareness to inform policy development under component 3: information, knowledge and awareness.*
- Government institutions responsible for housing, rural development, land use, environment and energy, while working effectively in their particular sector, are insufficiently co-ordinated. Macro-economic benefits from improved building efficiency are therefore hidden and integrated energy efficiency policies have not been developed. *This barrier is tackled in component 1: building regulations and codes.*
- Existing building standards appear to be ineffectively enforced. *This barrier is tackled in component 1: building regulations and codes.*

Finance barriers

- While the banking sector is generally healthy, and leasing companies already operate in the appliance market (for example providing lease finance for air conditioners), energy efficiency in buildings (including building fabric, equipment and people) does not currently make economic sense to end users and agents through the entire supply chain. *This barrier is tackled in component 2: stimulating demand and supply of technology and services.*
- Since the banking sector is not aware of risks and rewards for energy saving in buildings, there is a generally poor access to capital for energy efficiency-related investments. *This barrier is*

tackled through activities aimed at raising the awareness of the banking sector under component 3: information, knowledge and awareness.

Business and management skills barriers

- Supply chains and an effective delivery infrastructure for expertise, hardware and energy services related to energy efficiency does not exist, and appropriate incentives are lacking in some cases. In effect the market for energy efficiency virtually does not exist because suppliers do not appreciate the nature and scale of the market, and consumers / end-users do not appreciate the nature and scale of benefits. One symptom is that there is virtually no local engineering expertise capable of doing investment quality energy audits (i.e. audits which make a bankable investment case to client and bank). *This barrier is tackled in project component 2: stimulating demand and supply of technology and services.*

Information, knowledge and awareness barriers

- There appears to be some lack of awareness and knowledge among suppliers of equipment and services. Potential energy savings from design, use of materials, etc., are not well known amongst those responsible for design, specification and selection. *This barrier is directly tackled through activities within project component 3: information, knowledge and awareness, and indirectly in project component 2: stimulating demand and supply of technology and services.*
- While technology and techniques for energy saving in buildings are well developed in other countries, and know-how exists, even in other countries with similar climates (even on other tropical islands) there is a lack of local know-how, indigenous techniques and technology, and local innovation. *This barrier is addressed within project component 2: stimulating demand and supply of technology and services.*
- As mentioned above new and larger appliances are rapidly gaining in popularity in middle-income households, and are replacing older and smaller units. No energy information is supplied to consumers at the point of sale to inform them of the running cost implications of energy for these appliances. Without point of sale information through labelling systems, purchasing decisions are made purely on cost and aesthetic grounds. *This barrier is tackled in policy dialogue activities under component 3: information, knowledge and awareness.*

Technology barriers

- While technologies for energy efficient buildings are generally mature and commercially proven, the level of local technical skills needed to specify, install, operate and maintain them is low. *This barrier is addressed within project component 2: stimulating demand and supply of technology and services.*
- Without sufficient demand-pull, local markets for energy saving technologies and techniques are small under present circumstances, and thus do not benefit from economies of scale. Demand therefore remains low because costs are relatively high. *This barrier is addressed within project component 2: stimulating demand and supply of technology and services.*

ANNEX B INCREMENTAL COST REASONING

Component	Baseline	Alternative	Increment
Global Environmental Benefits	Barriers limit investment in energy efficiency in buildings. In the baseline domestic and commercial sector energy consumption increased from the present level of 640 and 537 GWh to 995 and 960 GWh respectively by 2015.	Market barriers are substantially reduced, resulting in increased building energy efficiency and reduced GHG emissions associated with fossil fuel based generation. In the GEF alternative, domestic and commercial energy use in 2015 is 860 and 825 GWh respectively.	Significant GHG emission reductions are attained. CO_2 equivalent emission reductions over a 10 year period as a result of this project are projected to be between 126,000 and 245,000 tons.
Domestic Benefits	No significant domestic benefits have been identified under the baseline	In addition to increased employment and better balance of payments, technologies introduced through this project will increase industrial capabilities and improve local air quality through lower emissions of SO_2, NO_x and particulates.	Increased local employment, added fuel security, improved industrial capabilities, better local air quality
Components / Outcomes			
1: Building regulations and codes for energy saving are developed, enacted and sustainably enforced	Under the baseline there is no investment in the development and enforcement of building standards for energy efficiency. No specialized project management unit dealing with energy efficiency is established, building codes are not developed, and no overall review of taxation and labelling	The establishment of an Energy Efficiency Unit (EEU) under the Ministry of Public Utilities to develop and implement DSM measures and the development of building regulations and codes and strengthening of enforcement, and analysis of taxation and labelling mechanisms	Establishment of a PMU that will be absorbed into the newly established EEU Analysis is carried out and technical support and training is provided to develop building codes and regulations and their enforcement
	Cost: -	US$ 419,250	US$ 279,250 (GEF) US$ 95,000 (Government) US$ 45,000 (private sector)

2: Demand and supply for energy saving services and technology stimulated	No significant efforts are taken to stimulate demand and supply for energy saving services and technology (beyond awareness raising activities described under outcome 3 below)	National standard for energy audits and pro gramme of certification of energy auditors established, investment grade energy audits and feasibility studies stimulated through contingency support scheme, standard designs developed for low and middle income housing, schools, and other building needs developed and in use, appliance selection and installation guidelines for key products made available at points of sale	Analysis is carried out and technical support and training is provided on standards for auditing and energy guidelines for appliances
	Cost: -	US$ 5,069,187	US$ 428,000 (GEF) US$ 96,187 (Government) US$ 4,500,000 (end users) US$ 45,000 (private sector)
3: Building engineers, architects, compliance officers, policy makers, financial sector, suppliers and public are convinced of importance and market opportunities for building energy saving	Limited awareness raising activities implemented by the Government and related organisations (Central Electricity Board)	Information on local costs and benefits of DSM and building energy efficiency well known by service suppliers and policy makers, awareness of building energy saving opportunities improved.	Cost-benefit analysis of EE investments is carried out Awareness and information packages for decision-makers, end-users and other stakeholders
	Cost: US$ 135,318 (CEB)	US$ 373,669	US$ 71,669 (GEF) US$ 76,682 (Government) US$ 90,000 (Private sector)
4: Monitoring, learning, adaptive feedback and evaluation	No structured evaluation, learning and dissemination activities.	Lessons learned documented prov ide a basis for EE policy making inside and outside Mauritius	
	Cost: -	US$ 118,492	US$ 83,492(GEF) US$ 35,000 (Government)
Project management	**Cost:** -	US$ 170,000	US$ 50,000 (GEF) US$ 120,000 (Government)
TOTAL Cost	**Total baseline costs:** **US$ 135,318 USD**	**Total project costs:** **US$ 6,150,598**	**Total Incremental costs:** **USD 912,411 from GEF (15%)** **USD 5,102,869 from local sources**

ANNEX C LOGICAL FRAMEWORK

Project Strategy	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Goal			
To reduce GHG emissions sustainably through a transformation of the building energy efficiency market for existing and new buildings	**10-year target** CO_2 equivalent emissions are reduced by an accumulated total of 245,00 tonnes over 10 years **End-of-project target:** 42,000 tonnes of CO_2 avoided due to 30 verified investments in energy efficiency measures in buildings **Mid-project target:** 9,000 tonnes of CO_2 avoided 5 verified investments in energy efficiency measures in buildings	Yearly reports giving reductions in tonnes CO_2 submitted to UNDP office prepared by Project Management Unit (PMU) Impact report submitted to UNDP by government 7 years after project completion Annual reports from PMU submitted to UNDP office. Mid term and terminal evaluations of usage undertaken via user survey to assess experience and technology performance	Effective enforcement of regulations and standards is sustainably maintained after the end of the project Project support is consistent throughout project by government and donors and afterwards by government Electricity prices remain stable or continue to rise and act as an incentive for investment in energy saving.

Project Strategy	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Outcomes			
Outcome 1: Building regulations and codes for energy saving are developed, enacted and sustainably enforced.	**End-term target:** Regulations and codes developed during project are enacted, and enforced in 100% of building permits issued Over 90% compliance to building regulations The future of the Energy Efficiency Unit ensured through government budget allocations Draft legislation for appliance labelling systems created **Mid-term target:** Building regulations and codes drafted and necessary legislation enacted	Copy of regulations Annual report from PMU, including results of randomised survey of compliance to building regulations Copy of government budget and planning Copy of draft legislation	Ongoing support from government and concerned stakeholders Regulations developed by stakeholders are adopted by government

Project Strategy	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Outcome 2: Demand and supply for energy saving services and technology stimulated	**End-term target:** At least 10 trained and competent local energy auditors have met sufficiently high standards to be included on the approved list maintained by the PMU At least 50 energy audits have been carried out under the energy audit scheme, with 30 going forward to investment At least 10 architects qualify as energy saving experts **Mid-term target:** At least 10 local engineers are working to qualify as approved energy auditors 20 energy audits have been carried out under audit scheme	Project reports by PMU Terminal evaluation Project reports by PMU Terminal evaluation	Ongoing growth or sustaining of energy (electricity) prices
Outcome 3: Building engineers, architects, compliance officers, policy makers, financial sector, suppliers and public are convinced of importance and market opportunities for building energy saving	**End-term target:** Number of commercial actors in building energy saving sector increased by a factor of 10 since start of project **Mid-term target:** Number of commercial actors in building energy saving sector increased by a factor of 5 since start of project	Report on survey comparing results from start of project to end of project Report on survey of commercial actors comparing data from start of project to mid-term	
Outcome 4: Monitoring, learning, adaptive feedback and evaluation	**Target:** Measured indicators of project outputs and project impacts At least 2-3 project technical reports and/or publications	Baseline and end-of-project indicator studies Mid-term and final evaluation reports Project technical reports and publications	

Project Strategy	Objectively Verifiable Indicators	Sources of Verification	Assumptions
Outputs			
Output 1.1: Energy Efficiency Unit (EEU) established and functioning according to mandate	**End-term targets**: The ongoing existence of the EEU is assured after the end of the project	Budgets allocated in government plans	
	EEU has successfully involved stakeholders from all Government ministries and agencies and is positively evaluated by them	Reports from PMU Result of evaluation	
	Mid-term targets: EEU is operating effectively (other outputs indicators are achieved)		
Output 1.2: Building regulations and codes developed and enacted	**End-term targets**: Regulations / codes in force and receiving support from all government stakeholders	Regulations / codes Minutes from meetings	
	Mid-term targets: Task-force established, 12 meetings held (every 2 months), and presentations given by all key stakeholder groups	Copies of presentations available on project website	
	Report on state of the art in tropical building efficiency regulations / codes prepared (end of month 6)	Report	
	Regulations enacted end of year 1	Legislation	

Output 1.3: Compliance enforcement capabilities among municipal building code enforcement agencies reinforced	**End-term targets**: Compliance levels with building standards >90% in all new buildings	Reports from municipal building agencies	
	Ongoing budgets allocated to sustaining compliance enforcement	Government budget reports	
	Mid-term targets: Review of compliance levels with existing permit system complete, all viable recommendations implemented for improving compliance.	Report	
	Compliance levels increased by a factor of a least 2 from baseline	Reports from municipal building agencies	
Output 2.1: National standard for energy audits and programme of certification of energy auditors established	**End-term targets**: At least 20 local experts completed certification course, and 10 qualified.	List of approved auditors Training course reports	
	Since year 2, course and certification programme has been fully commercial.	Training reports	
	Mid-term targets: Report on best practice available month 6.	Report	
	Audit training material developed, and positively evaluated by international expert peer review (month 12)	Audit material	
	Excluding costs for material development, training course fully commercial, and sustainable, with at least 10 local experts following it.	Applications for course Training reports	
Output 2.2: Number of investment grade energy audits and feasibility studies through audit scheme increased	**End-term targets**: Full utilization of initial GEF seed fund (approximately 50 audits supported, 30 fully)	Records from fund, reported by PMU Copies of audits	
	If necessary, further local funding secured	Business plans / policy / donor support letter	
	Mid-term targets: 20 energy audits have been carried out under audit scheme	Copies of audits	

Output 2.3: Standard designs developed for low and middle income housing, schools, and other building needs developed and in use	**End-term targets**: 100% of new low income buildings constructed through the National Housing Development Corporation incorporate energy saving / comfort measures as a result of this project	Reports from PMU	
	Designs have become de facto norm for off the shelf construction	Terminal evaluation report	
	Mid-term targets: Standard designs available, and in process of adoption in relevant Ministries	Designs, minutes of meetings and draft plans	
	Standard design summaries provided together with building permits in 100% of cases	Reporting from municipal building permitting authorities	
Output 2.4: Appliance selection and installation guidelines for key products available at points of sale	**End-term targets**: Guidelines available in all retail stores selling relevant appliances, annual printing >10,000 copies self-funded (sponsorship)	Records from PMU	
	Copies of guidelines disseminated through suppliers of services		
	Mid-term targets: Draft guidelines for top 5 appliances developed	Copies of guidelines	
	Sponsorship secured for printing of all guidelines from private sector	Records from PMU	

Output 3.1: Costs and benefits of building energy efficiency measures well known by service suppliers and policy makers	**End-term targets**: All relevant government policy papers under development through the project term from year 2 refer to results of the cost benefit studies. Suppliers use reports in marketing of relevant products **Mid-term targets**: Results of analytical studies on local energy performance widely available online, and immediately on request of PMU	Policy papers Records of requests for documents	
Output 3.2: Awareness of building energy saving opportunities improved	**End-term targets**: Average "energy saving awareness score[2]" tripled **Mid-term targets**: Average "energy saving awareness score " doubled	Results of survey Results of survey	
Output 4.1: Monitoring and Evaluation work plan implemented	**Target:** Methodological tool (logframe) of measuring project performance and impacts has been formulated Measured indicators of project outputs and impacts	Baseline and end-of-project study Evaluation reports	
Output 4.2: Lessons learned collected, prepared and disseminated	**Target:** At least 2-3 project technical reports and/or publications that are made available online and/or in hard copy	Project technical reports Project publications and leaflets	

[2] The system for scoring, including weighting of factors, is to be determined during execution. Scores will be assigned based on results of the start of project survey, and compared to that in mid-term and end-term surveys. Factors which are likely to be used include:

· Information material about energy saving received by decision-making stakeholder (yes=1, no=0)

· Stakeholder has received and understands direct information about energy saving (yes=1, no=0)

· User has received indirect information about energy efficiency (yes=1, no=0)

· Evidence of application of lessons learned from increased awareness (yes=2, no=0)

ANNEX D BASELINE AND EMISSION REDUCTION CALCULATIONS

System Boundary
The geographical boundary of the proposed project is the national territory of Mauritius.

The Baseline
In the presence of barriers to a functioning market in building energy efficiency investments in energy efficiency products and services would not take place and energy growth would continue as per the forecasts of the CEB. This baseline would be characterised by:

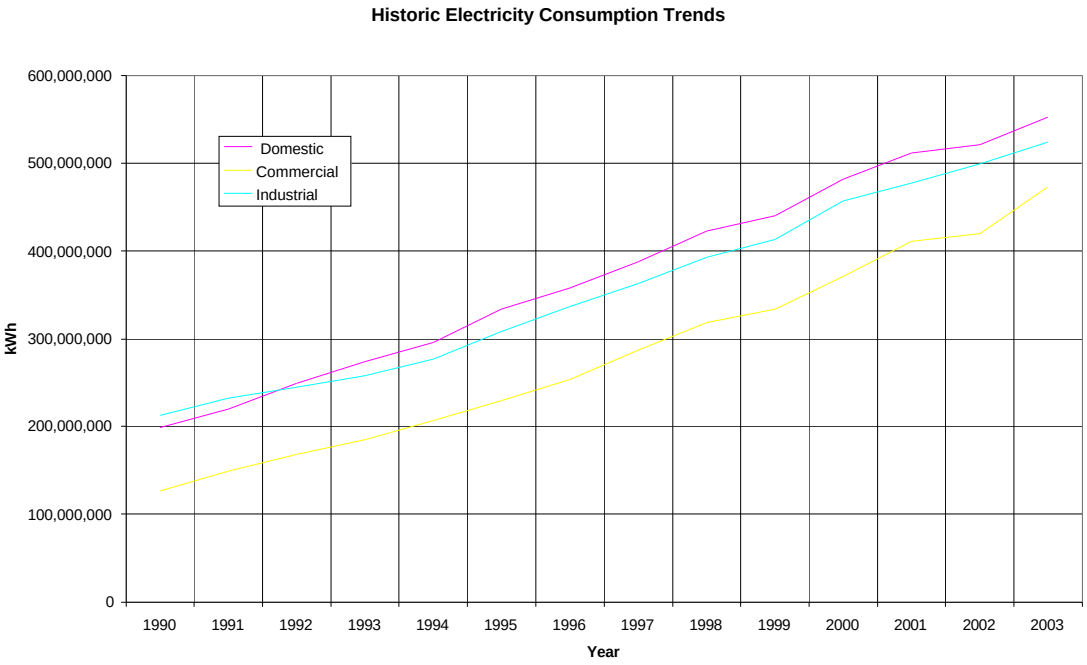
- Growing reliance on fossil fuel generated electricity, with new generation capacity provided by coal and fuel oil.
- Significant growth in the development of housing and other developments such as business parks and integrated holiday resorts as a result of land becoming available that was formerly under sugar cane cultivation.
- Continuing of transformation of the local style of living with a pronounced split of the extended family structure leading to greater demand for housing, and the tendency for more people to opt for community living in apartments in urban areas.
- The gap between urban and rural areas in terms of facilities and amenities is gradually decreasing, and Government rural development plans are specifically targeting rural development. This means growing demand for electricity to fuel employment -generating activities in rural clusters.
- According to the CEB Integrated Electricity Plans for 2003 -2012, growing demand for electricity means capacity additions between 2006 and 2012 are likely to be about 230 MW (130 MW under low demand scenarios, and 310 MW under high demand scenarios).
- Virtually no local capacity for energy efficiency services including identification, design, and implementation of energy saving in buildings - due to the various market barriers. Investment in building energy efficiency will be rare, allowing little or no appreciable creation of local project development capacity. As a result, the scale and experience base of technology development will remain low.
- CO_2 emissions for the country will continue to grow, and will be driven by a primarily fossil fuel based electricity path for the country.

Based on data from the CEB, over the past decade, electricity demand in Mauritius has grown at an average annual cumulative rate of over 8%. The historical growth in electricity consumption according to type of end-user (domestic or residential, commercial – which includes public sector consumers, and industrial) are shown in the figure below.

CEB forecasts are that energy generation requirements will increase by approximately 60% over the next 10 years, representing an average increase of 17 MW per year, and equivalent to an average cumulative annual growth rate of over 4.5%.

In order to estimate consumption growth from the residential and commercial sectors over the next 10 years, the following procedure has been followed:

Figure: Growth in electricity consumption by sector



For the commercial sector:

- There are two drivers responsible for the growth in the domestic electricity consumption:
  - Number of commercial consumers; and
  - Average commercial electricity consumption.
- Based on linear extrapolation, the number of commercial consumers in 2015 will be approximately 40,000 (up from 17,603 in 1990 and 28,797 in 2003), which represents the addition of about 10,000 new additions to the commercial building stock.
- Based on CEB historical data, the average consumption per commercial customer in 1990 was 7,200 kWh per year, and in 2003 was 16,400 kWh. During this period growth has been virtually linear. Continuing the same trends, consumption per customer is likely to b e about 24,000 kWh in 2015.
- The commercial baseline consumption forecast in 2015 is thus likely to be approximately 960 GWh.

For the residential sector:

- There are two drivers responsible for the growth in the domestic electricity consumption:
  - Number of consumers which is itself driven by the number of households; and
  - Average household electricity consumption, which depends on end -use patterns such as appliance ownership and usage and average floor area of dwellings.
- The number of housing units, households and household size is given in the table below. Based on estimations given in the Analysis report of the Housing and Population Census 2000 (volume II – Housing and Household Characteristics), April 2003, an additional 96,000 houses will need to be built between 2005 and 2015 (including stock replacement of approximately 25,000).

Table: Housing units, households and household size

Year	1990	2000
Housing Units	223,821	297,671
Households	236,110	296,294
Household Size	4.5	3.9

- Based on CEB historical data, the average household used about 1,175 kWh of electricity in 1992 and in 2003 used 1,770 kWh per year. Continuing the same trends, consumption per household is likely to be about 2,400 kWh in 2015.
- The household baseline consumption forecast in 2015 is thus likely to be approximately 990 GWh per year.

These forecasts of probable electricity demand growth based on linear growth correlate well with the total demand predictions over the next 10 years of the CEB.

The cost of the baseline includes the planned investments from the CEB into demand side management.

The GEF Alternative

The proposed GEF activities tackle the identified barriers to the widespread and market-based improvement in building energy efficiency in Mauritius. The project impact on the future has been estimated, based on the following assumptions:

- The average energy saved in new buildings in both the commercial and residential sectors over 10 years will be 25%. This figure is based on experience in Reunion where the impact of building codes for energy efficiency resulted in a **measured** average saving of 25% over a similar period.
- Based on experiences with demand side management in other countries a positive impact of 10% reduction in the growth of electricity use over 10 years is possible. For the residential sector, this would mean a *per household* consumption growth from current levels (1770 kWh / household) to a level of 2160 kWh over 10 years instead of a projected level of 2400 kWh without the project (this equates to a growth in consumption per household over the period of about 22% as opposed to the baseline growth over the same period of 36%). For the commercial sector the *overall* projected consumption of the sector grows by 78% under the baseline against 56% under the alternative.

The project impact on the baseline under the alternative is shown in the figure below. The impact equates to an overall 14% reduction compared to 2005 levels in 2015. This curve matches well with the 'low' growth consumption forecast from the CEBs Integrated Electricity Plan of 2003
.

Market barriers are substantially reduced in the alternative, resulting in increased building energy efficiency and reduced GHG emissions associated with fossil fuel based generation. In the GEF alternative, domestic and commercial energy use in 2015 are 860 and 825 GWh respectively.

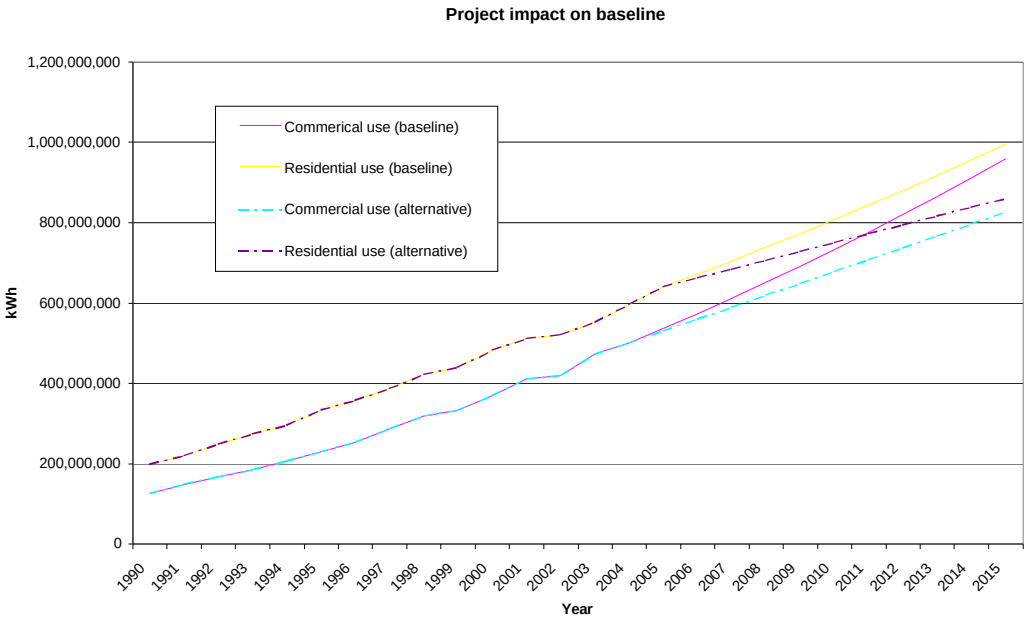


Figure: Project impact on energy consumption

Global Benefits

The project activities result in a reduction of approximately 42,000 tons of CO_2 equivalent during the four-year project period. Over 10 years from the start of the project indirect and direct emission reductions have been estimated to lie between 126,000 and 245,000 tons of CO_2e.

This calculation is based on the project-level calculation formula provided by the GEF for direct, direct post-project, and indirect CO_2 reductions. The field data was gathered during implementation of the PDF-A project.

Emission factors were determined by assuming baseline capacity to come from new investment in a combination of coal and fuel oil. Levels were set at 50% from each source, bearing in mind the differing characteristics of coal and fuel-oil generation to meet baseline and peak demand cost effectively so a balance will be used. An average emission factor using data from the IPCC with the above assumption is 85 $kgCO_2eq$ / GJ. This can be seen as a conservative minimum from the point of view of emission reductions since it is expected that the bias for new generation will be towards coal imported from South Africa, which is cheaper than diesel.

Direct reductions

The *direct reductions* that can be attributed as a result of this project are expected to be 42,000 tonnes (cumulative over the 4 year project period) as a result of partial compliance with the building regulations to be developed for new buildings and a small impact of other project activities on growth of consumption in the existing building stock. There are no *direct post-project* investments anticipated (no revolving fund or guarantee fund is created).

Indirect emission reductions – top down
Starting from resources, and based on assessments carried out in preparation for the project a conservative minimum impact on the energy consumption from commercial and residential buildings can be developed. Over both existing and new buildings this reduction is estimated to reach 14% of total consumption by 2015. This emission reduction impact is thus an estimated cumulative total of 410,000 tonnes of CO_2eq. A GEF causality factor of 60% is taken since the project impact is considered to be "substantial but modest". The attributable impact is thus 245,000 tonnes of CO_2eq.

Indirect emission reductions – bottom up
Based on a replication factor of 3 and the direct impact of 42,000 we expect an additional indirect reduction of at least 126,000 tonnes.

Calculations
The outcome of the calculations are shown in the following table:

Sources of reduction	Saving (MWh)	Emission ratio (kgCO2eq / GJ)	GEF Contribution factor	Total (tons CO_2)
Direct (3 years)	140,000	85	1	**42,000**
Indirect – top down (10 yrs)	1300,000	85	0.6	**245,000**
Indirect – bottom up (10 yrs)	420,000	85	1	**126,000**
TOTAL				**126,000 to 245,000**

Note: in the above table the indirect emissions include the project period

Additional benefits
This project will bring many additional domestic benefits to Mauritius. Energy efficiency has been shown to help increase industrial capabilities, provide employment for local people in design, manufacturing, and operation, and bring a high level of local satisfaction. Displacement of fossil fuel (principally coal) will result in reduced emissions of sulphur and nitrogen oxides, and particulates.

Costs
For the baseline and alternative cost calculations investment costs in new buildings, services and appliances has not valued. Under the alternative a contingent support mechanisms is established under which 50 audits will be supported leading to total investments in energy saving estimated at an audit to investment ratio of 1:30.

The total cost of the GEF alternative is estimated at US$ 6,150,598 with a baseline cost of US$ 135,318, counterpart-funded incremental cost of US$ 5,102,869 and a GEF contribution of US$ 912,411.

ANNEX E LETTERS OF ENDORSEMENT AND CO-FINANCING

Ministry of Economic Development, Financial Services and Corporate Affairs
Republic of Mauritius

Endorsement Letter

MEDFSCA/TA/2004/13/0

October 23, 2003

Mrs Rose Gakuba
Resident Representative
UNDP Office
Port Louis

Dear Mrs Gakuba,

UNDP/GEF/PDF-A - Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings in Mauritius

As you are aware, the Republic of Mauritius is devoid of natural resources and depends on imports for its energy needs. There is thus the need to develop a holistic approach to energy efficiency and energy conservation and integrate national and cross-sectoral policies with a view to ensure greater coherence.

2. In this context, on behalf of Government of Mauritius, and in my capacity as GEF Operational Focal Point, I wish to endorse and forward you the "PDF-A for Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings in Mauritius", to be presented through the United Nations Development Programme (UNDP) Office to the GEF for consideration and funding.

3. We look forward to your kind consideration in this matter.

Yours sincerely,

G. Wong So
Director-General
& GEF Operational
Focal Point

MEDFSCA Emmanuel Anquetil Building, Port Louis, Mauritius tel (230) 201 1200 fax (230) 212 4734
All correspondence should be addressed to the Director, Ministry of Economic Development, Financial Services and Corporate Affairs

MINISTRY OF FINANCE AND ECONOMIC DEVELOPMENT

Government Centre, Port Louis, Mauritius

In reply please quote
TA/20/4/13/10 V2

23 October 2006

Re-endorsement Letter

Ms Monique Barbut
CEO and Chairperson
Global Environment Facility
1818 H Street, NW
Washington, DC 20433
USA

Dear Madam

UNDP/GEF -Removal of barriers to energy efficiency and energy conservation in buildings in Mauritius

As you are aware, the 'UNDP/GEF – Removal of barriers to energy efficiency and energy conservation in buildings in Mauritius' project aims at overcoming the barriers to energy efficiency in buildings and reinforcing the development of a market approach to improving residential and non-residential building energy efficiency in both existing stock and future buildings.

2. In this context, the Government of Mauritius is re-endorsing the "*Removal of barriers to energy efficiency and energy conservation in buildings in Mauritius*" project. The parallel financing activities and in-kind contribution, which may be construed as Government contribution towards the implementation of the project are as follows: -

	Institution	Amount Rs₦
(i)	Ministry of Public Utilities (in-kind)	10.0
(ii)	Ministry of Environment & NDU (in-kind Rs 1.0 M)	2.5
(iii)	Central Electricity Board	39.0
(iv)	Mauritius Research Council	7.02

3. It is understood that Mauritius, under the Resource Allocation Framework, could receive grant funding up to US$ 3.1 million for the Climate Change Focal area for the GEF-4 funding cycle (2006-2010). It is proposed to utilise US$975,000 from the Resource Allocation Framework for the "*Removal of barriers to energy efficiency and energy conservation in buildings in Mauritius* "project.

Yours faithfully,

P. Ujoodha
Ag Director General &
GEF Operational Focal Point

Copy: The Resident Representative, UNDP Office, Anglo Mauritius House, Port Louis, Mauritius

For any query, please phone (230) 201-1260 or fax (230) 2124124 or email: med@mail.gov.mu

GOVERNMENT OF MAURITIUS

MY REF. MRU/I/18/7/1 V.5

YOUR REF.

Date 28 November 2005 .....20.....

From : Permanent Secretary, Ministry of Public Utilities

To : Financial Secretary, Ministry of Finance and Economic Development

SUBJECT : ***PDF-A-UNDP/GEF- Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings in Mauritius***

Please refer to this Ministry's memorandum of November 24, 2005 on the above subject.

2. We wish to inform you that the Rs 10.M from this Ministry towards the implementation of the project would be as in-kind services.

3. As regards the contribution to be expected from the Ministry of Environment and NDU, this should read as Rs 2.5 M instead of Rs 1.0 M. Accordingly, the table at paragraph 4 of our memorandum of November 24, together with the corrected contribution, is reproduced below:

		Million (Rs)
(i)	Ministry of Public Utilities	10.0
(ii)	Ministry of Environment & NDU	2.5
(iii)	Central Electricity Board	39.0
(iv)	Mauritius Research Council	7.02

R. Mungur
for Permanent Secretary

10/18/2005 16:45 230-6011180 CEB CP&R DEPT PAGE

REPLY TO BE ADDRESSED TO UNDERSIGNED

Annex II

Central Electricity Board

P.O. Box 40 – Royal Road – Curepipe
MAURITIUS

TEL. NO. 601 1100 / 675 5010
TELEFAX NO. (230) 675 7958 / 7969
E-MAIL : ceb@intnet.mu
W. SITE: ceb.intnet.mu
VAT Reg No. VAT22000591

OUR REF :

YOUR REF

18 October 2005

The Permanent Secretary
Ministry of Public Utilities
Air Mauritius Centre
Port Louis
Fax: 208 6497

Attention of Mrs R.Gaya

Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings in Mauritius

Dear Sir

f(376)

We refer to your letter of 27 September 2005 and wish to inform you that our planned expenditure in respect of energy saving or renewable energy projects over the next three financial years amounts to Rs ~~42.6~~ 39.0 million, the details of which are attached hereto.

At this stage, it is expected that all the planned expenditure will be met from CEB's own funds.

Yours faithfully,

Ravin Dajee
General Manager

Central Electricity Board

2006-2008 Budget for Energy Savings Initiatives

Year	Project Description	Planned Expenditure (Rs Million)	Funding / Remarks
2006	Energy Efficiency Campaign	1.0	CEB will fund only 20% of project value
		1.0	
2007	Interconnection for Bagasse-Coal Power Plant (Savannah-Union Vale)	20.0	50% of interconnection costs
	Media Campaign - Residential Sector	1.5	Will be spread over the year at bi-monthly interval
		21.5	
2008	Interconnection for Wind Farm (Bigara-Woolon)	15.0	50% of interconnection costs
	Media Campaign - Residential Sector	1.5	Will be spread over the year at bi-monthly interval
		16.5	
	TOTAL	39.0	

MAURITIUS RESEARCH COUNCIL
OUR VISION : TO BE THE DRIVING FORCE BEHIND RESEARCH FOR NATIONAL DEVELOPMENT

14 October 2005

MRC/RPR-RB01

The Permanent Secretary
Ministry of Public Utilities
Level 10, Air Mauritius Centre
President John Kennedy Street
Port Louis

Attention: Mrs R. Gya

Fax: 208 6497; 210 7408

Dear Sir

Re: Removal of Barriers to Energy Efficiency and Energy Conversation in Buildings in Mauritius

(376) Further to your letter dated 27th September 2005, regarding the planned expenditure of the Council in respect of energy savings and renewable energy projects over the next three financial years, we are enclosing below our projections.

1. **Solar Thermal Energy for production of electricity, desalinated water, hot and chilled Water**

	Rs
Prefeasibility Study Ongoing	165,000
Projected for detailed feasibility studies over 3 years	3,000,000
Funding of two PhD projects over 3 years	240,000

2. **Deep Ocean Water Air conditioning**

Prefeasibility Study Ongoing	275,000
Projected for detailed feasibility studies over 3 years	3,000,000
Funding of two PhD projects over 3 years	240,000
	7,020,000

Please also note that the Council can consider funding of projects relating to removal of barrier to energy efficiency and energy conservation in buildings under different research grant schemes.

Yours faithfully

Dr K Heeramun
For Executive Director

ALL CORRESPONDENCE SHOULD BE ADDRESSED TO THE EXECUTIVE DIRECTOR

La Maison de Carné, Royal Road, Rose Hill, Mauritius

14/10/05

M.G. Form 2

GOVERNMENT OF MAURITIUS

MY REF. GEF/UNDP/8

YOUR REF. MPU/1/18/7/1 V5

Date: 17 October 2005

From : Permanent Secretary, Ministry of Environment and National Development Unit

To : Permanent Secretary, Ministry of Public Utilities **(Attn: Mrs Gya)**

Subject: Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings in Mauritius

f (336) We refer to your letter dated 27 September 2005

2. The Ministry of Environment and NDU is planning to implement the EIP 2 project 'Setting Up of a National Cleaner Production Centre' in collaboration with the National Productivity and Competitiveness Council during the course of this financial year. One of the main activities of the centre will be to create awareness on energy saving opportunities among household, the commercial and industrial sectors and to promote the use of energy efficient technologies. It is considered that these activities are directly related to those being proposed in the above-mentioned project. The cost estimate for the implementation of these activities is Rs 1.5 million.

3. The expected in-kind contribution of the Ministry of Environment & NDU for the implementation of the project is estimated to Rs 1 million. It is mainly related to 'Improving Awareness of Building Saving Opportunities'.

4. We deeply regret for the delay in our reply.

D. Boodhun (Mrs)
for Permanent Secretary

Ministry of Public Utilities
RECEIVED
17 OCT 2005
MAURITIUS

okipoo

22nd September 2005

O/Ref: D23I5CP6_1

UN Resident Coordinator
UNDP Resident Representative
Anglo Mauritius House
P. O. Box 253
Port Louis

For the attention of Mrs. Aase Smedler

Dear Mrs. Smedler,

Subject : Letter of financial commitment for the UNDP-GEF Medium –Size Project on Energy Conservation and Energy Efficiency in Buildings in Mauritius

This is to certify that Okipoo Ltd is committed to provide an amount of US$ 180,000 for the implementation of the 'UNDP-GEF Medium-Size Project on Energy Conservation and Energy Efficiency in Buildings in Mauritius'. The funds will be spent according to the budget and business plan of the project document.

Yours faithfully,

Stéphane Rouillard
Managing Director

c.c.: Mr. G. Wong So – Director-General, Ministry of Finance and Economic Development and GEF Operational Focal Point

Mr. S. K. Pather – Permanent Secretary, Ministry of Public Utilities

Victoria Avenue
Quatre Bornes
Mauritius
t – (230) 401 2400
f – (203) 464 0849
e – info@sbcl.mu

ANNEX F TOTAL BUDGET WORK PLAN

Award ID:	00048159
Award Title:	PIMS 3001 Mauritius Energy Efficiency in Buildings
Project Title:	Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings (00058173)
Project ID:	00058178
Executing Agency:	Ministry of Public Utilities (MPU)

GEF Outcome / Atlas Activity	Responsible Party (Implementing Agent)	Fund ID	Donor name	Atlas Budgetary Account Code	ERP/ATLAS Budget Description/Input	Amount (USD) Year 1 (2007)	Amount (USD) Year 2 (2008)	Amount (USD) Year 3 (2009)	Amount (USD) Year 4 (2010)	Total (USD)	Budget note no.:
Outcome1: Building regulations and codes	MPU	62000	GEF	74100	Professional services	2,000	6,000	9,000	3,000	20,000	5
				71200	International consultants	0	66,400	24,200	79,400	170,000	1
				71300	National consultants	3,000	20,000	20,000	17,000	60,000	2
				71600	Travel	0	2,500	2,500	2,500	7,500	1
				72200	Equipment	500	1,500	1,500	6,250	9,750	4
				72500	Supplies	100	500	500	400	1,500	
				74200	Audiovisual & print	100	1,000	1,500	400	3,000	
				74500	Miscellaneous Expenses	450	2,500	2,000	2,550	7,500	
					Sub-total outcome 1	**6,150**	**100,400**	**61,200**	**111,500**	279,250	
Outcome 2: Stimulating demand and supply of technologies and services	MPU	62000	GEF	74100	Professional services	700	4,300			5,000	5
				71200	International Consultants	0	22,000	12,750	2,250	37,000	1
				71400	Contractual services-individuals	6,500	28,000	33,365	37,135	105,000	2
				71600	Travel	0	2,500	2,500	2,500	7,500	1
				72200	Equipment	0	15,000	0		15,000	4
				72500	Supplies	50	250	250	450	1,000	
				72600	Grants	0	80,000	90,000	80,000	250,000	
				74200	Audiovisual & print	100	1,000	1,500	400	3,000	
				74500	Miscellaneous Expenses	500	1,500	1,500	1,000	4,500	
					Sub-total outcome 2	**7,850**	**154,550**	**141,865**	**123,735**	428,000	

Outcome 3: Information, knowledge and awareness	MPU	62000	GEF	74100	Professional services	300	4,000	4,000	1,700	10,000	5
				71200	International Consultants	0	10,000	10,000		20,000	1
				71400	Contractual services - individuals	1,000	9,000	9,619	8,000	27,619	2
				71600	Travel		2,000	500		2,500	1
				72500	Supplies	100	1,000	500	400	2,000	
				74200	Audiovisual & print	100	500	3,550	400	4,550	
				74500	Miscellaneous Expenses	200	1,500	2,000	1,300	5,000	
					Sub-total outcome 3	**1,700**	**28,000**	**30,169**	**11,800**	71,669	
Outcome 4: Monitoring, learning and evaluation	MPU	62000	GEF	71200	International Consultants	0	12,000	13,000		25,000	1
				71300	Local Consultants	1,500	15,000	15,992	8,500	40,992	2
				71600	Travel	0	1,500	1,000		2,500	1
				74100	Professional services	200	1,500	2,000	1,300	5,000	
				74200	Audiovisual & print	200	1,500	2,000	1,300	5,000	
				74500	Miscellaneous Expenses	200	1,500	2,000	1,300	5,000	
					Sub-total outcome 7	**2,100**	**33,000**	**35,992**	**12,400**	83,492	
Project Management Unit	MPU	62000	GEF	71400	Contractual services - individuals	1,800	11,500	21,611	9,700	44,611	3
				74200	Audiovisual & print	200	1,000	1,389	800	3,389	
				74500	Miscellaneous Expenses	200	500	500	800	2,000	
					Sub-total PM	**2,200**	**13,000**	**23,500**	**11,300**	50,000	
					TOTAL	**20,000**	**328,950**	**292,726**	**270,735**	912,411	

Notes to the table:

(1) Assumed is a daily fee for international consultants of US$ 600. International expertise is expected to be hired for the following areas:
- Outcome 1: - Two advisors on building codes and regulations (52 person.weeks)
- Development of training materials (4 person.weeks)
- Outcome 2: - Appliance standards and labelling (12 person.weeks)
- Outcome 3: - Marketing and awareness campaigning (7 person.weeks)
- Outcome 4: - Mid-term and final evaluations (8 person.weeks)

The budget line 71600 is for the travel of international consultant s to and from Mauritius as well as their daily subsistence allowance

(2) The following services from national consultants (or locally contracted individuals) are foreseen:

- Outcome 1:
  - Expert policy processes (9 weeks)
  - Expert audit compliance mech anisms (8 weeks)
  - Expert buildings and energy (16 weeks)
- Outcome 2:
  - Expert best practice surveys (4 weeks)
  - Expert training material development (12 weeks)
  - Expert audit scheme (36 weeks)
  - Expert standards design (20 weeks)
  - Expert hous ing survey (12 weeks)
- Outcome 3:
  - Expert cost-benefit analysis (8 weeks)
  - Expert marketing and branding (13 weeks)
- Outcome 4:
  - Evaluations (12 weeks)
  - Baseline and end-of-project impact studies (15 weeks)
  - Lessons learned and technical repo rts (14 weeks)

A Technical Advisor and Administrative Support consultant will provide 136 person.weeks each of services under the four outcomes. In addition, the Project Manager (see note 3 below) will spend time on specific technical assistance activitie s under Outcomes 1-4, an estimated 62 person.weeks

(3) This is time the Project Manager will spend on management tasks, an estimated 78 person.weeks

(4) Outcome 1: expandable equipment: $ 4,750; non -expandable equipment $ 5,000. Outcome 2: software for m anaging the audit scheme: $ 15,000

(5) Professional Services for organizing training on building codes & regulations and their enforcement (outcome 1), training of energy auditors for certification, training on energy-efficient building design and on appl iance standards and labelling (outcome 2) and cost -benefits of energy -efficient investment and DSM measures (outcome 3).

ANNEX G TERMS OF REFERENCE OF PROJECT STAFF (PROJECT MANAGEMENT UNIT) AND STEERING COMMITTEE

The **National Project Director** will be a high-level member of the Governmental-executing agency and will be responsible at the highest level for ensuring that the project implementation follows national policy and standards. This is a part time position continuing for the duration of the project. He or she will dedicate approximately 20% of their time to the project and will report directly to the Project Steering Committee. Key tasks will be:

- To have overall responsibility for the implementation of the Project
- To supervise the Project Manager through meetings at regular intervals to receive project progress reports and provide guidance on policy issues
- For certifying the Work plan, Financial Reports and Request for advance of funds under the project, ensuring their accuracy and in accordance with the project document; the NPD shall be the authorized signatory for contracting services under the project following endorsement by the Government and UNDP
- To chair the Steering Committee and represent the project at the tripartite meetings
- To take the lead in developing linkages with the relevant baseline programmes regarding energy efficiency in Mauritius maximizing complementarities.
- He or she will also represent the project at high-level national and international meetings and will keep the Minister of Public Utilities updated on project advances and challenges as needed.

The **Project Manager** will be responsible for the overall management and coordination of the project activities. He/she shall report to the National Director. This is a full-time position for the duration of the project. He/she will manage and provide supervision of project implementation liaising directly with the Project Director, Members of the Project Steering Committee, the Implementing Agency, and co-funders. He/she will undertake yearly operational planning and provide guidance on its day-to-day implementation. In doing this he/she shall be responsible for the effective and efficient implementation of the project activities to achieve stated objectives and for all substantive and managerial reports from the Project. Further key responsibilities include:

- Preparing a detailed annual work plan for the project;
- Work closely with project partners to closely coordinate all the actors involved with achieving Project Outcomes, Outputs and Activities;
- Mobilize all project inputs in accordance with UNDP procedures for nationally executed projects;
- Finalize the ToRs for the consultants and subcontractors;
- Coordinate the recruitment and selection of project personnel;
- Supervise and coordinate the work of all project staff, consultants and sub-contractors;
- Supervise the work of all PMU staff, including national staff;
- Prepare and revise project work and financial plans, as required Government and UNDP;
- Manage procurement of goods and services, including preparation of bidding documents, under UNDP's and required government's guidelines and oversight of contracts;
- Ensure proper management of funds consistent with UNDP requirements, and budget planning and control;
- Establish project reporting and monitoring of the validity of project assumptions and in dialogue with the project steering committee and the UNDP adapt the activities so as to ensure project success;
- Arrange for audit of all project accounts for each fiscal year;

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- Prepare and ensure timely submission of quarterly financial consolidated reports, quarterly consolidated progress reports, annual project implementation review reports, annual work plans and other reports as may be required by UNDP.
- Disseminate project reports to and respond to queries from concerned stakeholders;
- Report progress of the project to the Steering Committee, technical meetings, and other appropriate forums;
- Oversee the exchange and sharing of experiences and lessons learned with relevant conservation and development projects nationally and internationally.
- Organization and supervision of workshops and training needed during the project
- Liaison with relevant ministries, national and international research institutes, NGOs and other relevant institutions in order to involve their staff in project activities, and to gather and disseminate information relevant to the project
- Undertake procedure towards the setting-up and legalization of the EEU;
- Setting up small working groups for specific works;
- Undertaking any other activities that may be assigned by the Steering Committee.

The **National Steering Committee** will support to the project manager for successful implementation of the project and will, *inter alia*,

- Monitor the progress of the work, validate outputs and ensure that the project develops in accordance with national development objectives, goals and policies.
- Provide guidance, advice, and support to the consultants and approve their work plans
- Pay special attention to the assumptions and risks identified in the project, and seek measures to minimize these threats to project success and remove bottlenecks and advise on timely steps to be taken to progress in the project and attempt to resolve conflicts, if any.
- Recommend any actions to be taken at the level of Cabinet of Ministers, as appropriate
- Ensure collaboration between institutions and free access on the part of project actors to key documents

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ANNEX H REPORT ON THE USE OF THE PROJECT PREPARATION GRANT

PDF/PPG STATUS REPORT

GEFSEC PROJECT ID: 2241
UNDP PROJECT ID: PIMS No. 3001, Proposal Id: 00034153, Project Id: 00036090
COUNTRY: Mauritius
PROJECT TITLE: Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings
OTHER PROJECT EXECUTING AGENCY: Ministry of Public Utilities
GEF FOCAL AREA: Climate change
GEF OPERATIONAL PROGRAM: OP-5
STARTING DATE: July 2004
DATE OF OPERATIONAL C LOSURE: September 2006
DATE OF FINANCIAL CLO SURE: December 2007

Report submitted by:		
Name	**Title**	**Date**
Yosuke Fukushima	Environment Programme Officer	04/06/2007

PART I - PREPARATORY ASSISTANCE ACHIEVEMENTS

A- SUMMARY OF ACTUAL ACHIEVEMENTS OF PREPARATORY PHASE (OUTPUTS AND OUTCOMES), AND EXPLANATION OF ANY DEVIATIONS FROM EXPECTED OUTCOMES

The main outcome of the PDF A was the formulation of a medium-sized project (MSP) on energy efficiency and conservation in commercial and residential buildings in Mauritius. The following activities were carried out:

1. Assessment of current situation in relation (definition of baseline data)
2. Identification of and consultation with stakeholders to formulate the MSP (through a workshop)
3. Write-up of the MSP proposal (Brief) according to the GEF criteria and guidelines

Table 1: Completion status of Project Activities

Approved			**Actuals**			
Proposed Activities at Approval	***GEF Financing***	***Co-financing***	***Status of activities***	***GEF financing committed***	***Co-financing committed***	***Uncommitted GEF funds***
1. Baseline assessment	12,000	8,500	Completed	12,000	8,500	N/a
2. Stakeholder identification & consultation	2,000	7,300	Completed	2,000	7,300	N/a
3. Write-up MSP proposal	9,000	4,200	Completed	9,000	4,200	N/a
Total	**25,000**	**20,000**	Completed	**25,000**	**20,000**	

B – RECORD OF STAKEHOLDER INVOLVEMENT IN PROJECT PREPARATION

A very diverse group of stakeholders was consulted throughout project development. During the PDF-A the national and international experts held interviews with over 20 stakeholders, and a multi-sectoral workshop was held on the 9th of March 2005 to validate findings and discuss the project strategy with a diverse participation of over 40 stakeholders. During this workshop all stakeholders received a full copy of the draft MSP executive summary, and had the opportunity of giving their opinions and ideas within smaller working groups. This resulted in adjustment and improvement of the proposal.

Main stakeholders include:

- Ministry of Public Utilities
- UNDP
- Department of Environment,
- Ministry of Local Government,
- Ministry of Finance and Economic Development,
- Town and Country Planning Board,
- Central Statistical Office,
- Mauritius Research Council,
- University of Mauritius,
- National Housing Development Corporation,
- Central Electricity Board,
- Development Bank of Mauritius,
- Mauritius Association of Architects,
- Institution of Engineers,

- Private companies – building contractors, equipment suppliers, consultants
- Private architects

PART II - PREPARATORY ASSISTANCE financial delivery

Table 2 – PDF/PPG Input Budget – Approvals and commitments

Input Description*	**Approved**			**Committed**		
	Staff weeks	*GEF financing*	*Co-finance*	*Staff weeks*	*GEF financing*	*Co-finance*
Personnel						
Local consultants	12		7,500	12		7,500
International consultants	6	20,000	4,200	6	20,000	4,200
Training		2,000			2,000	
Office Equipment			5,000			5,000
Travel		3,000	1,600		3,000	1,600
Miscellaneous			1,700			1,700
Total	**18**	**25,000**	**20,000**	**18**	**25,000**	**20,000**

Notes:

- There were no unspent PDF/PPG funds at the time of financial closure
- There were no major deviations of actual disbursement from what was planned

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Table 3: Actual PDF/PPG co-financing

Co-financing Sources for Preparatory Assistance				
Name of Co-financier (source)	Classification	Type	Amount	
			Expected ($)	Actual ($)
UNDP	Multilateral	Cash	15,000	15,000
Government	National government	In-kind	5,000	5,000
		Total co-financing	**20,000**	**20,000**

Notes:

- There were no major deviations of actual disbursement from what was planned

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SIGNATURE PAGE

Country: Republic of Mauritius

UNDAF Outcome Indicators:

Expected Outcome(s)/Indicators:
(i) Building regulations and codes for energy saving are developed, enacted and sustainably enforced; (ii) Demand and supply for energy saving services and technology stimulated; (i ii) Building engineers, architects, compliance officers, policy makers, financial s ector, suppliers and public are convinced of importance and market opportunities for building energy saving.

Expected Output Indicators:
1.1. Energy Efficiency Unit (EEU) established and functioning ; 1.2. Building regulations and codes developed and enact ed; 1.3. Compliance enforcement capabilities of municipal building code enforcement agencies reinforced : 2.1. National standard for energy audits and programme of certification of energy auditors established ; 2.2. Number of investment grade energy audits a nd feasibility studies through audit scheme increased ; 2.3. Standard designs developed for low and middle income housing, schools, and other building needs developed and in use ; 2.4. Appliance selection and installation guidelines for key products availabl e at points of sale; 3.1. Costs and benefits of building energy efficiency measures well known by service suppliers and policy makers; 3.2. Awareness of building energy saving opportunities improved .

Implementing Partner: Ministry of Public Utilities
Government Coordinating Agency: Ministry of Finance and Economic Development

Project Title: Removal of Barriers to Energy Efficiency and Energy Conservation in Buildings in Mauritius
GEFSEC Project ID: 2241
UNDP Project ID: 00058178
Proposal ID: 00048159
PIMS ID: 3001
Project Duration: 3 years
Management Arrangement: National Execution

Total Project Budget: US**$ 6,150,598**
Allocated Resources:
- Government: US$ 5,238,187
- Regular (GEF): US$ 912,411
- Others US$ 4,680,000

Parallel Funding (Government): US$ 1,552,256

Agreed by:

On behalf of:	Signature	Date	Name/Title
Coordinating Agency			Mr Ali Mansoor, Financial Secretary, Ministry of Finance & Economic Development
Executing Agency			Mr Soopramanien Kandasamy Pather Permanent Secretary Ministry of Public Utilities
UNDP			Mr. Claudio Caldarone UN Resident Coordinator, UNDP Resident Representative