PROJECT IDEA NOTE (PIN)

Description of size and quality expected of a PIN

Basically a PIN will consist of approximately 5-10 pages providing indicative information on:

- **A.** Project participants
- **B.** Project description, type, size, location and schedule
- **C.** Avoided / reduced GHG emissions
- **D.** Financial aspects
- **E.** Expected environmental and socio-economic benefits
- **F.** Risks
- **G.** Other relevant information

A. PROJECT'S PARTICIPANTS

Name of the Project Participant	Development Bank of Mauritius (DBM) + Maurice Ile Durable (MID) Fund
Role of the Project Participant	a. Project Operator b. Owner of the emission reduction credits c. Seller of the emission reduction credits
Organizational category	Private/Public
Temporary Contact person	Mr. Desha MID Fund Projects Coordinator – supervises all MID projects
Address	La Chaussée Street, Port Louis, Mauritius
Telephone/Fax	+203 211 53 57
E-mail and web address, if any	www.dbm.mu
Main activities *Describe in not more than 5 lines*	The Government of Mauritius appointed the DBM to drive phase 1 of a national SWH project. DBM is currently managing a grant subsidy scheme for SWHs on a gratis basis, without financial assistance from the state. This situation is not sustainable, however, as DBM management is reluctant to spend scarce resources on unprofitable activities. Phase 2 will therefore be with or without DBM, but in all cases will have to involve an interested party. This party could be interested by CER revenue sharing for example. **DBM:** A nationally owned financial institution and a strategic partner in providing an array of flexible support facilities to all individuals, associations or companies, big and small, engaged in the socioeconomic activities. Products: Loans, credits, leases, saving accounts, and special projects (e.g., soft loans for SWH). **MID Fund:** The "Maurice Ile Durable" or "Mauritius Sustainable Island" Fund was established by the Government of Mauritius to promote and support high priority national projects in line with national sustainable development frameworks, with a particular focus on energy efficiency and renewable energy investments. There are two main actors in MID projects - the Fund itself, which provides grant finance, and the project "driver" or manager who makes sure that the funds are properly used. Three projects have been identified at initiation: 1. Provide grants to support the acquisition of Solar Water Heaters (SWH) – First phase completed, 25,000 grants of Rs. 10,000 were allocated to home-owners. 2. Provide financial assistance to bus companies and owners to acquire new modern buses – more comfortable and economical (project under review by consultants) 3. Distribution of 1 millions CFL lamps to home-owners (NB: this project was started under the CDM but dropped as the Central Electricity Board could not support the operational burden of complete monitoring).
Summary of the financials *Summarize the financials (total assets, revenues, profit, etc.) in*	• DBM Group operating profit before provisions is Rs. 118.7 M. The restated figure for the year 2006 was Rs. 122.1 M. • Profit after tax of the Group is Rs. 241.7 M compared to Rs. 213.7 M for

not more than 5 lines	the previous year. • Group's total assets in 2007 aggregated to Rs. 13.4 billion compared to Rs 12.4 billion in 2006. • Loan portfolio was Rs. 4.7 billion gross and Rs. 3.9 billion net in 2007. The amount in 2006 was Rs. 6.9 billion gross and Rs 5.5 billion net. The figures for the year 2007 exclude the loan balances for First City Bank, which have been reclassified as 'assets held for sale'. • Savings and fixed deposits placements made by customers were Rs. 7.4 billion in 2006. • After adjusting for First City Bank, the figure is Rs. 3.8 billion in 2007. Please refer to DBM Annual Report 2007 for detailed information.
Summary of the relevant experience of the Project Participant *Describe in not more than 5 lines*	DBM has been managing a SWH soft loan scheme for 17 years and is currently administering the MID Fund SWH subsidy program for phase 1. Mr. Desha, the MID Fund Head of Operations, will be the temporary contact person for this project and will liaise with the DBM on matters related to the CDM aspects.

B. **PROJECT DESCRIPTION, TYPE, LOCATION AND SCHEDULE**

OBJECTIVE OF THE PROJECT *Describe in not more than 5 lines*	The project objective is to reduce the national consumption of imported LPG and electricity by ramping up the diffusion of solar water heaters (SWH) among Mauritian households and industries. This will be accomplished through a national SWH financing scheme, partially financed through CERs that will incrementally displace grant subsidies over the program lifetime which are currently provided by the Government via the MID Fund and disbursed by DBM.
PROJECT DESCRIPTION AND PROPOSED ACTIVITIES *About ½ page*	DBM has offered concessionary loans to support households to purchase SWH systems since 1991. DBM manages a MID Fund grant of about 250 millions (€ 6.25 million) aimed at supporting a national SWH financing program. This program aims to phase out use of cheaper, but more carbon intensive LPG and/or conventional electric water heaters. Eligible households can receive a one-time Rs. 10,000 subsidy for purchasing a SWH unit through the DBM. The first phase of the program targets some 25,000 households. The island counts 337,242 households as of Mid-2007 all of which would be potential targets for this CDM activity. Industries, offices and commercial buildings account for another potential sector in which to develop the CDM and make up another potential 300,000 (household equivalent) SWH units. Depending on how additionality can be demonstrated, the CDM project may or may not include phase 1; phase 2 of the program is currently under review, however, and could integrate CDM into the program design. CERs generated by the project can be used to incrementally phase out the subsidy scheme or increase/maximize its scope to make SHW units more accessible to all households. The Government of Mauritius has not yet decided which organization shall

	manage phase 2 of the SWH financing program. For the time being, DBM is assumed to remain the project promoter, yet the project concept could proceed under another organization's supervision. The subsidy mechanism for phase 1 of the project worked as follows: 1. The Government capitalizes the MID fund from the national budget and contracts DBM to manage grant subsidy funds. 2. The potential grant beneficiaries contact the DBM and fill in a request for the grant, backed by proof of acquisition of the SWH from a registered shop. 3. DBM checks the submission, verifies that the SWH has been bought or ordered, and that the applicant has not already asked for a grant and is eligible for the subsidy (i.e. assist households consuming hot water). In order to achieve this, a basic questionnaire has to be filled in by the applicant. 4. The money is disbursed and the user buys its SWH. Under phase 2, the MID fund is expected to provide Rs. 1 billon to the SWH grant fund. The subsidy mechanism as described above for phase 1 is open to changes and improvements in design and delivery for phase 2. The scope of program will also change, as grant beneficiaries will also encompass industrial and commercial purchasers of SWHs as well as households. This will affect the baseline and project boundary. Industrial sized SWH will be used to pre-heat water to 82 degrees Celsius for steam generation or for direct process uses, thereby reducing consumption of fossil fuels that would otherwise be needed to boil water. DBM is kept as the potential project promoter for it has all the necessary experience, has been involved with phase 1 (that it could try to get credit for) and could be interested to continue with this project if it were to be paid (by CER proceeds for example) to undertake the grant management scheme – something for which it is not being paid for in phase 1.
TECHNOLOGY TO BE EMPLOYED[1] *Describe in not more than 5 lines*	Solar Water Heaters used by households, industries and commercial buildings instead of LPG or Electricity driven Water heaters. No specific brand or type of SWH will be favored in the framework of this program – some minimum technical requirements will be set in the framework of the CDM/PDD. The grant will be fixed for households and adjusted for commercial and industrial sites so as to reflect the size differential. Baseline standards will have to be set and a baseline study undertaken in order to produce the PDD.
TYPE OF PROJECT	
Greenhouse gases targeted CO_2/CH_4/N_2O/HFCs/PFCs/SF_6 *(mention what is applicable)*	CO_2
Type of activities Abatement/CO_2 sequestration	GHG's abatement. The GHG reductions of the project will come from avoided gas consumption and electricity generation savings

[1] Please note that support can only be provided to projects that employ commercially available technology. It would be useful to provide a few examples of where the proposed technology has been employed.

Field of activities	Energy efficiency - demand-side management.
LOCATION OF THE PROJECT	
Country	Republic of Mauritius
City	All cities and towns in Mauritius
Brief description of the location of the project *No more than 3-5 lines*	Mauritius is a 2,040 km² Island in the Indian Ocean with a population of about 1,200,000 inhabitants. The Republic of Mauritius is the project boundary, which is comprised mainly of Mauritius Island and Rodrigues Island.
EXPECTED SCHEDULE	
Earliest project start date *Year in which the plant/project activity will be operational*	1st Jan 2010 – by this time the first phase of the MID fund program will be finished (grants for 25,000 units). The idea is for the project to launch a second phase to cater for 100,000 grants from the MID fund. At this stage, the Government will increase the scope of the entities having access to the grant from "domestic users" to "any user": domestic, commercial and industrial.
Estimate of time required before becoming operational after approval of the PIN	Time required for financial commitments: 3 months Time required for legal matters: 3 months Time required for construction: 0 months
Expected first year of CER/ERU/VERs delivery	2011
Project lifetime *Number of years*	20 years
Expected Crediting Period for CDM project:	10 years fixed crediting period
Current status or phase of the project	• Pilot Phase • Pre-feasibility of financial scheme Since the project represents a continuation of current undertaking and will not involve building or setting up "concrete" things the stage reached is actually 2nd of 3 stages (i.e. 3rd stage = feasibility acceptance by Cabinet of Ministers)
Current status of acceptance of the Host Country	No firm proposal put forward to Ministry of Environment (DNA).
The position of the Host Country with regard to the Kyoto Protocol	The Host Country acceded to the Kyoto Protocol in 2001

C. AVOIDED / REDUCED GHG EMISSIONS

ESTIMATE OF GREENHOUSE GASES ABATED/ CO_2 SEQUESTERED *In metric tons of CO_2-equivalent, please attach calculations*	Annual (Increases over first 3 years and then stabilizes): Year 1 = 13,522 tCO_2-equivalent Year 2 = 27,045 tCO_2-equivalent Year 3 (stabilized) = 30,050 tCO_2-equivalent Up to and including 2012: 70,617 tCO_2-equivalent Up to a period of 7 years: 190,815 tCO_2-equivalent
BASELINE SCENARIO	

Baseline methodology to be used

The methodology perhaps most directly applicable to this project (NM0263) is under development, having been rejected by the Meth Panel in September 2008. The latest Meth Panel recommendations dated Aug 29-2008 herein to be taken into account. However, as a small-scale activity, this project is covered by an existing Approved CDM Small-Scale Methodology - I.C./Version 14: "*Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories*" *– Renewable energy project*.

What modifications the project would induce?

This project will induce a profound change in Mauritius' electricity and hot water consumption patterns. First, it will boost the solar energy commercial sector and render the old (electric and gas) heating systems obsolete. This CDM project will help a third of the population have access to SWH and will help some industries to reduce their energy needs and therefore be more competitive. As for commercial buildings, the needs for hot water is quite low when compared to the domestic and industrial sectors, but by opening the grant to the public at large, some commercial building developers will be interested and motivated to participate.

What would the future look like without the proposed CDM project?

In the absence of the SWH scheme, domestic water heating would continue to be consumed using LPG or grid-connected electricity carriers and a very little amount of SWH (bought by the higher revenues households only). This situation will keep Mauritius' atmospheric GHG emissions as electric water heaters emit more CO_2 than SHW systems.

Note: In the absence of empirical data to establish the baseline scenario for water heating in Mauritius,[2] import data for gas and electric water heaters have been compiled (see Table 1).[3] Re-exportation of heaters is negligible and assumed to be zero in this analysis.[4] It is assumed here that the market responds well to the demand of heaters, and hence the import data are a good proxy for situational or end-use analysis. It is clear from Table 1 that gas heaters have superseded electric heaters as the prevalent form of water heating appliance (gas being subsidized by the State and therefore cheaper than electricity). The average ratio between total number of imported gas heaters and total number of imported electric heaters was 5.5 between 2001 and 2007, with the value being 4.5 for the past two years. For the baseline, the ratio of solar to electric to gas heaters is taken as 1 : 1.15 : 5.2. Those SWH that already exist on the market are included in the baseline, but not ones directly resulting from the pilot phase. The PDD will have to assess whether those can be included or excluded in the baseline. See Annex 2 for calculations.

ADDITIONALITY Please explain which additionality arguments apply to the project: (i) there is no regulation or incentive scheme in place covering the project (ii) the project is financially weak	The study entitled 'Attitude Survey on the Use of Solar Water Heaters – Final Report (2007)' prepared by KPMG for the Ministry of Public Utilities is the core document used for justifying barriers detailed below. • Not mandated by law or codes: No legislation or building codes make the use of SWH systems mandatory in Mauritius. • Investment barrier: Mauritian households generally perceive the cost of typical SHW units as being very expensive. The average payback period for

[2] A field survey is currently being carried out by the University of Mauritius, and results have been published in December 2008.

[3] Data obtained from Central Statistics Office website at http://www.gov.mu/portal/sites/ncb/cso/series/hs9903.htm - accessed 19 August 2008.

[4] For instance, 226 gas water heaters of household type were re-exported in 2004, constituting a mere 0.46% of total importation.

or not the least cost option (iii) country risk, new technology for country, other barriers (iv) other	a SHW unit without any rebate or subsidy is 6.2 or 12.8 years relative to electric or gas water heaters, respectivel[5]y. End-users generally opt for the least expensive, and more reliable technology option for water heating, namely gas or electric water heaters. The upfront capital investment for gas water heaters is more than one order of magnitude lower than for SHW units. • Barriers due to prevailing practice: Consumption of hot water using SWH is not common practice. SHW systems have a market penetration of around 8% of households. Estimates from trade data (2001-2007) show that gas and electric water heaters occupy at least between 50% and 62% of the household market. In the absence of a subsidy/rebate scheme, it is expected that the market penetration of instantaneous gas heaters will dominate the market for water heating. • Technological barrier: There is a perception by end-users that SHW systems are not reliable and do not perform as expected. Further, there is no mandatory quality standard imposed on manufacturers and suppliers of SHWs. • Other barriers: Respondents in the study mentioned in the above report on the deficiency of information regarding the use and benefits of SHW systems. Also, subsidy on LPG puts SHW units at a disadvantage, especially when there is already broad cultural acceptance of LPG in households. Close to 100% of households in Mauritius use LPG for cooking. This Governmental incentive has a positive impact on the baseline as it makes gas heater more economical than electrical heater and therefore drops the Emission factor of the "hot water production mix".
SECTOR BACKGROUND Please describe the laws, regulations, policies and strategies of the Host Country that are of central relevance to the proposed project, as well as any other major trends in the relevant sector. Please in particular explain if the project is running under a public incentive scheme (e.g. preferential tariffs, grants, Official Development Assistance) or is required by law. If the project is already in operation, please describe if CDM/JI revenues were considered in project planning.	The Government of Mauritius, as previously stated is trying to promote the usage of renewable energy and other energy efficient solutions in view of lowering demand for energy and in the framework of that policy, has issued a grant to the general public to provide incentive to users to switch to SWH instead of using fossil fuel intensive ones. The sector is not regulated as such as we are talking of a general commodity will probably never be. The DBM soft loan program exists and it is not foreseen that it will end in the near future.

[5] Reference: Study undertaken by Sanju Denapanray, UNEP CDM Cordinator in Mauritius – copy of calculations can be provided on demand.

D. FINANCIAL ASPECTS

TOTAL CAPITAL COST ESTIMATE (PRE-OPERATIONAL)	
Installed costs	33.3 US$ million (equipment = SWH)
Total project costs	33.3 US$ million
SOURCES OF FINANCE TO BE SOUGHT OR ALREADY IDENTIFIED	
Equity Name of the organizations, status of financing agreements and finance (in US$ million)	• Households will provide all the necessary money needed for the acquisition of the SWH (beyond grant offered by MID) • The DBM can also provide a soft loan to those households that do not have the necessary money to purchase the SWH upfront
Debt – Long-term Name of the organizations, status of financing agreements and finance (in US$ million)	MID fund grant of 1 billion Rs for the scheme. Partial replenishment of state fund by CER revenue while consequent savings on electricity and gas imports will "repay" the Government for capital and interest advanced through the fund.
Debt – Short term Name of the organizations, status of financing agreements and finance (in US$ million)	None
Carbon finance advance payments[6] sought. (US$ million and a brief clarification, not more than 5 lines)	None at present
SOURCES OF CARBON FINANCE Name of carbon financiers that your are contacting (if any)	None at present
INDICATIVE CER/ERU/VER PRICE PER tCO_2e[7] *Price is subject to negotiation. Please indicate VER or CER preference if known.*[8]	12 Euro per CER pre-2012; and 10 Euro per CER post-2012
TOTAL EMISSION REDUCTION PURCHASE AGREEMENT (ERPA) VALUE	
A period until 2012 (end of the first commitment period)	To be negotiated US$ / €
A period of 10 years	To be negotiated US$ / €

[6] Advance payment subject to appropriate guarantees may be considered.
[7] Please also use this figure as the carbon price in the PIN Financial Analysis Model (cell C94).
[8] The World Bank Carbon Finance Unit encourages the seller to make an informed decision based on sufficient understanding of the relative risks and price trade-offs of selling VERs vs. CERs. In VER contracts, buyers assume all carbon-specific risks described above, and payment is made once the ERs are verified by the UN-accredited verifier. In CER/ERU contracts, the seller usually assumes a larger component - if not all – of the carbon risks. In such contracts, payment is typically being made upon delivery of the CER/ERU. For more information about Pricing and Risk, see "Risk and Pricing in CDM/JI Market, and Implications on Bank Pricing Guidelines for Emission Reductions".

A period of 7 years	To be negotiated US$ / €

Please provide a financial analysis for the proposed CDM/JI activity, including the forecast financial internal rate of return for the project with and without the Emission Reduction revenues. Provide the financial rate of return at the Emission Reduction price indicated in section "Indicative CER/ERU/VER Price". DO NOT assume any up-front payment from the Carbon Finance Unit at the World Bank in the financial analysis that includes World Bank carbon revenue stream.

Provide a spreadsheet to support these calculations. The PIN Financial Analysis Model available at www.carbonfinance.org is recommended.

E. EXPECTED ENVIRONMENTAL AND SOCIAL BENEFITS

LOCAL BENEFITS E.g. impacts on local air, water and other pollution.	• Reduction in household accident related to gas
GLOBAL BENEFITS Describe if other global benefits than greenhouse gas emission reductions can be attributed to the project.	None foreseen
SOCIO-ECONOMIC ASPECTS	
What social and economic effects can be attributed to the project and which would not have occurred in a comparable situation without that project? Indicate the communities and the number of people that will benefit from this project. *About ¼ page*	• The sustainable benefits of this project are high. Out of 300,000 households in Mauritius, one-third would consume hot water services from a renewable resource – the sun. • Positive impact on electricity demand and therefore or investments needs into new power plants, consequent increase on the price of electricity and also on tax increases needed to partially finance investments (all population) • Local industries in Mauritius such as textiles production struggle to compete with other countries that have lower labor costs. Large capital investments in renewable energy are not possible for these cash starved companies. This will help companies stay in business and retain their employees.
What are the possible direct effects (e.g. employment creation, provision of capital required, foreign exchange effects)? *About ¼ page*	Higher income retained by savings on gas or electricity of population would net billions of Rupees in savings. For average households, energy cost savings would range from between Rs. 4,000 and Rs. 11,000 per year, the equivalent of nearly a month's average salary. This avoided expenditure would enable households to benefit from a higher standard of living and potentially boost local consumption. The program also stands to make a positive net impact on the balance of payments by lowering imports on gas (direct) and fuels like coal, HFO and kerosene (indirect through lowered electricity demand).
What are the possible other effects (e.g. training/education associated with the introduction of new processes, technologies and products and/or	• Increased awareness of eco-friendly equipment and general attitudes toward renewable energy technologies. Project impact would have positive leakage affects, due to a change in consumer mindsets.

the effects of a project on other industries)? *About ¼ page*	
ENVIRONMENTAL STRATEGY/ PRIORITIES OF THE HOST COUNTRY A brief description of the project's consistency with the environmental strategy and priorities of the Host Country *About ¼ page*	This project is the second phase of a scheme launched by the Government of Mauritius in the framework of Maurice Ile Durable action plan – a scheme designed to invest in the energy self sufficiency of the Island, Social improvement and increase competitiveness.

F. RISKS

Risks in the Project	Please describe the factors that may cause delays in, or prevent implementation of the project
Estimate the Degree of Risk	
Technical risk	Medium-Low – there are many water heaters types displaying various degrees of efficiency. The risk of the scheme at hand is for low quality SWH to swamp the market and bought thanks to the grant. The risk is that no norms are set in order to ensure some "lowest efficiency" factor, something that has not been done and has yet to be made.
Implementation risk	Medium – High. The overall structure of the project needs to be further defined as well as the roles of partner implementation agencies. Lack of precise structure is both a strength and weakness: while it allows for the best structure to be created among the financing and other partners, this could take some time and established structures comfort carbon investors. A more permanent project management structure will be put in place for phase 2 of the program.
Timing risk	None – as soon as finances are released, the project can start – technical and financial are the real risks here.
Financing risk	Medium-high. (Phase 2 of the project must be first validated by the Cabinet of Ministers). At this time, with upcoming electoral campaign, the timing of this decision taking is uncertain. The electoral campaign can either speed up this decision or put ot on stand by for a year and a half. The Government of Mauritius started the MID fund and phase 1 of the SWH financing scheme when the price of fossil fuels was high and rising. The current situation of lower fuel prices and reduced foreign direct investment might affect passage for such a large, ambitious project. This situation could create unexpected delays in setting up the project. Talks are in process with CEF Carbon of South Africa that could put together an interesting financing package.

G. OTHER RELEVANT INFORMATION

Please mention any additional information or precisions to justify the project under CDM

Annex 1 – Baseline: import data of water heaters in Mauritius

Table 1. Number of gas and electric water heaters imported in Mauritius: 2001-2007.

Type of heater	Year						
	2001	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Instantaneous gas water heater of household type	0	13291	25430	49560	34582	18408	21107
Instantaneous gas water heater, excluding household type	8571	42	247	48	216	20	44
Total gas water heater	8571	13333	25677	49608	34798	18428	21151
Electric instantaneous/ storage water heaters/ immersion heaters	8176	7037	5949	3886	3661	4304	4572
Total electric water heater	**8176**	**7037**	**5949**	**3886**	**3661**	**4304**	**4572**
Total Gas : Total Electric	**1.04**	**1.89**	**4.31**	**12.76**	**9.50**	**4.28**	**4.62**

Annex 2. SWH Baseline calculations

Data	Value	Unit	Average Cost, in Rs	Cost range, in Rs	units
Solar Water Heaters			22,500	15,000 to 30,000	
Average solar radiation in Mauritius	660	kWh/m^2/yr			
Heat Transfer efficiency	60	%			
Heat generated per m2	396	kWh/m^2/yr			
For 1.5 m2 panel	594	kWh/m^2/yr			
Equivalent electric heating			7,500	6,000 to 9,000	
Loss on grid	10	%			
Energy consumption	653.4	kWh/yr	**7**		**rs/kWh**
Grid emission factor	1.1	tCO2/MWh			
Emission per unit, per year	718.74	kgCO2e/MWh			
Equivalent LPG heating			2,500	2,000 to 3,000	
Net calorific value, NCV of LPG	13.7	kWh/kg			
Efficiency of conversion into heat	60	%			
Net heating value of LPG	8.22	kWh/kg			
Mass of LPG required to obtain same work as SWH of 1.5 m2 in Mauritius	72.263	kg/yr	**25**		**per kg**
LPG carbon emission factor	2.985	kgCO2e/kg			
Emission per unit	215.7	kgCO2e/yr			

Weighted average baseline

8% SWH (max)	0	kgCO2e/yr
73% LPG	163.94	kgCO2e/yr
19% Electric	136.56	kgCO2e/yr
W. Av. Baseline	300.5	kgCO2e/yr