CLEAN DEVELOPMENT MECHANISM
SMALL-SCALE PROGRAM ACTIVITY DESIGN DOCUMENT FORM
(CDM-SSC-CPA-DD) Version 01

CONTENTS

Annexes

NOTE:

(i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.

(ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)[1,2] that is specific to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

[1] The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

[2] At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as a completed CDM-CPA-DD (using a real case).

SECTION A. General description of small scale CDM programme activity (CPA)

A.1. Title of the small-scale CPA:

Installing Solar Water Heating Systems in Ho Chi Minh City, Viet Nam

Version 01
13 February 2009

A.2. Description of the small-scale CPA:

The purpose of this proposed small-scale CDM Programme Activity (hereafter referred to as "CPA") is to install new solar water heating (SWH) systems in Ho Chi Minh City (HCMC) through a subsidy programme coordinated by the Energy Conservation Center of Ho Chi Minh City. The cost of the SWH systems will be subsidised as an incentive to encourage people to install SWH systems. The SWH systems will reduce demand for electricity used for heating water, thereby reducing emissions of greenhouse gases (GHG).

With the rapid growth of the economy in Viet Nam, electricity demand is increasing. The Vietnamese Government estimated the annual growth in electricity demand to be about 11% from 2005 to 2010. About half of the electricity distributed by Electricity of Viet Nam (EVN) is sold to households. Along with the rapid economic growth, home electronics, such as televisions, air-conditioners and electronic water heaters have become widely used among Vietnamese people. Especially in urban areas, electric water heaters are commonly used for providing hot water for showers and the electricity consumed for water heating accounts about 15% of the total electricity consumption of one family. Therefore, implementing energy saving measures for electricity consumption from water heating is an important task in Viet Nam.

The coordinating entity of this CPA is the Energy Conservation Center (ECC) of Ho Chi Minh City. The ECC is aiming to install 16,940 SWH systems into households, kindergartens and small hotels in HCMC under this CPA. Because HCMC is the biggest commercial city in Viet Nam and it accounts 25% of total electricity consumption in Viet Nam, the ECC recognizes the importance of promoting energy saving measure in HCMC prior to other provinces. According to the plan, the ECC will install 16,940 SWH systems. Due to budgetary limitations, the ECC is planning to install the systems over a five (5) year period.

Through this CPA, the energy demand for providing heated water will come from solar energy, a renewable resource with no GHG emissions. This energy will displace 211,565MWh of electricity which would have been consumed from the Vietnamese national grid over seven (7) years. GHGs associated with electricity production will be reduced as a result, at 110,014 tCO_2 over seven (7) years.

This CPA will contribute to the sustainable development of Viet Nam in the following ways:

Economic dimension –Current electricity supply is not enough to meet projected demand especially in the southern region of Viet Nam. The Vietnamese Government is promoting energy conservation as well as expanding the electric supply capacity in order to support the rapid development of the economy. The

CPA will reduce energy consumption for water heating for household use in HCMC and help secure the electricity supply required for the country's continued economic growth.

Environmental dimension – The CPA will reduce electricity consumption, and thereby reducing the amount of greenhouse gases (GHG) produced by fossil fuel combustion at the national electricity grid. Through promotional activities in the mass media such as television and newspaper advertisements to enhance the use of SWH systems, the ECC will communicate the economic and environmental benefits of the SWH systems. This publicity will widely raise awareness of renewable energy and energy conservation among the Vietnamese people.

Social dimension – The use of electric water heaters in the bathroom sometimes causes electric shock, which is a common concern for people who have small children. The introduction of SWH systems will provide a safe and steady supply of hot water and hence increase the quality of life of people in Viet Nam.

Through the programme jobs will be created in the solar sector, with training provided for technicians to install and maintain the SWH systems.

A.3. Entity/individual responsible for the small-scale CPA:

The coordinating entity for this CPA is the Energy Conservation Center (ECC) – Ho Chi Minh City

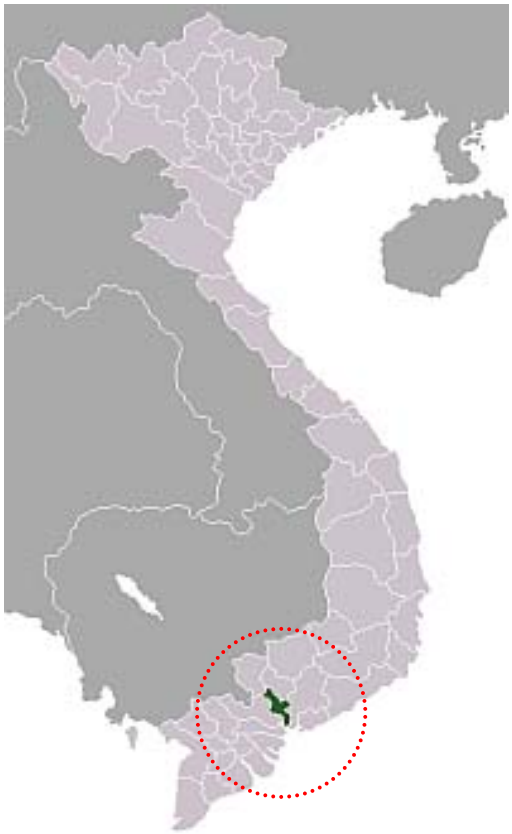
A.4. Technical description of the small-scale CPA:

A.4.1. Identification of the small-scale CPA:

A.4.1.1. Host Party:

Socialist Republic of Viet Nam

A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):



Ho Chi Minh City (highlighted)
Image courtesy of Wikipedia

The geographic boundary of this CPA is the boundary of Ho Chi Minh City.

Location:
Ho Chi Minh City, Viet Nam
Coordinates: 10°45'N 106°40'E

A.4.2. Duration of the small-scale CPA:

A.4.2.1. Starting date of the small-scale CPA:

01 January 2009

A.4.2.2. Expected operational lifetime of the small-scale CPA:

15 Years

A.4.3. Choice of the crediting period and related information:

Renewable crediting period

A.4.3.1. Starting date of the crediting period:

Date of registration

A.4.3.2.Length of the crediting period, first crediting period if the choice is renewable CP:

7 Years

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

Year	Annual estimation of emission reductions in tonnes of CO_2e
1	2,445
2	7,334
3	14,180
4	21,514
5	21,514
6	21,514
7	21,514
Total estimated reductions (tCO_2e)	**110,014**
Total number of crediting years	7
Annual average over the crediting period of estimated reductions (tCO_2e)	**15,716**

A.4.5. Public funding of the CPA:

This proposed CPA will not receive any public funds resulting from official development assistance from Parties included in Annex I to the Convention.

A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component

This proposed CPA is not a de-bundled component of a large scale activity. There is no other activity[3] which has the ECC as the activity implementer, nor has the ECC as a coordinating or managing entity of a large scale Programme of Activities (PoA)[4] of the same sectoral scope.

A.4.7. Confirmation that the small-scale CPA is neither registered as an individual CDM project activity nor is part of another Registered PoA:

This proposed CPA is neither registered as an individual project activity, nor is it part of any other Registered PoA.

SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions

B.1. Title and reference of the Registered PoA to which small-scale CPA is added:

Installing Solar Water Heating Systems in the South of Viet Nam

Version 01
13 February 2009

B.2. Justification of the why the small-scale CPA is eligible to be included in the Registered PoA :

This proposed CPA meets eligibility criteria for inclusion of the CPA described in Section A.4.2.2 of the CDM-SSC-PoA-DD:

-This CPA will install new SWH systems in Ho Chi Minh City, which is located in the South of Viet Nam.
-This CPA will be coordinated by the ECC.
-The SWH systems under this CPA are installed by SWH system distributors certified by the ECC
-The SWH systems under this CPA are registered under the installation program of the ECC.
-The SWH systems under the CPA has a tank capacity at least 180L.
- This CPA applies the same technology and baseline and monitoring methodology, AMS-I.C., as other CPA of the registered PoA. The version used for this Programme Activity is Version 13.
- This CPA applies the same baseline scenario as other CPAs of the registered PoA, that is, the use of electricity from the grid for providing heated water.

[3] Which may be a (i) registered small-scale CPA of a PoA, (ii) an application to register another small-scale CPA of a PoA or (iii) another registered CDM project activity

[4] Only those PoAs need to be considered in determining de-bundling that are: (i) in the same geographical area; and (ii) use the same methodology; as the PoA to which proposed CPA is being added

B.3. Assessment and demonstration of additionality of the small-scale CPA, as per eligibility criteria listed in the Registered PoA:

This CPA fulfils key criteria for assessing additionality listed in Section E.5.2 of the CDM-SSC-PoA-DD:

- No national and local laws and regulations requiring use of SWH systems.
- The proposed SSC-CPA requires the financial resources leveraged by registration as a CPA under the registered PoA.
- The proposed SSC-CPA requires the technical assistance of the ECC in the installation and maintenance of the SWH systems.
- The proposed SSC-CPA demonstrates that the use of SWH systems is not common practice within the CPA boundary.

In addition, the following barriers explain why the proposed CPA will be not implemented in the course of regular business:

Investment barrier

The ECC is aiming to install 16,940 SWH systems under this CPA. However, due to the limited budget of the ECC, it is difficult to install such a number of CPAs without the revenue from the sale of CERs. The revenues from the sale of CERs will be used to fund this subsidy and subsidize additional units of SWH systems as well as fund the promotional campaign for using SWH systems. Without CDM, it will be difficult for the ECC to continue installation of such a large number of SWH systems in HCMC

Technical barrier

All SWH systems under this CPA will be installed by SWH system distributors certified by the ECC and the SWH system distributors will be required to report to the ECC about any problems which occur for the systems included in the CPA. Without supervision by the ECC under this CPA, it will be difficult to ensure reliable maintenance and after care service is offered by the SWH system distributors for a long term.

Registration of the CPA within the CDM PoA is thus necessary to ensure that the end users receive support of certified installers of SWH systems and the continued operation of the SWH systems.

Barriers due to prevailing practice

Current practice in HCMC is to purchase and install an electric hot water heater. Electric heaters are much cheaper and easier to install than SWH systems. It is difficult to change this current practice without raising awareness about the environmental and economic benefits of SWH systems and offering a cost incentive to people in HCMC. It is necessary to implement a program to communicate the benefits of SWH systems and offer a cost incentive to encourage people in HCMC to install SWH systems.

B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.

The gas reduced through this CPA is CO_2. The CPA reduces electricity consumption by providing energy via SWH systems. The reduced electricity demand thereby reduces the amount of CO_2 produced by fossil fuel combustion to the electricity grid.

	Source	Gas	Included?	Justification/Explanation
Baseline	Electricity consumption/ Heat generation	CO_2	Included	Heating water consumes electricity, which had been sourced from the national electricity grid.
		CH_4	Excluded	Excluded for simplification. This is conservative.
		N_2O	Excluded	Excluded for simplification. This is conservative.
Project	Heat generation	CO_2	Excluded	Heat will be displaced by solar energy, which is a renewable source. According to AMS-I.C., project emissions from a renewable source can be excluded.
		CH_4	Excluded	Excluded for simplification.
		N_2O	Excluded	Excluded for simplification.

B.5. Emission reductions:

B.5.1. Data and parameters that are available at validation:

Data / Parameter:	**$EF_{EL,y}$**
Data unit:	(tCO_2/MWh)
Description:	Emission factor for electricity generation for source *k* in year *y*
Source of data used:	Calculated based on the most recent data.
Value applied:	0.52
Justification of the choice of data or description of measurement methods and procedures actually applied :	The grid emission factor is calculated using the "Tool to calculate the emission factor for an electricity system," according to AMS.I.D. (version 13). A combined margin is selected, and the simple OM method is applied. For OM, ex-ante option of Step 2 and Option (A) of Step 3 of the Tool are selected for the calculation. For BM, Option 1 of Step 4 is selected. See Annex 3 for details.
Any comment:	---

Data / Parameter:	***T_1***
Data unit:	(°C)
Description:	Inlet water temperature
Source of data used:	The water supply company of HCMC
Value applied:	28
Justification of the choice of data or description of measurement methods and procedures actually applied :	The ECC will collect the data on the average temperature of tap water supplied by the water company of HCMC.
Any comment:	---

Data / Parameter:	T_2
Data unit:	(°C)
Description:	Outlet water temperature
Source of data used:	Calculated based on available solar radiation and SWH system efficiency.
Value applied:	60
Justification of the choice of data or description of measurement methods and procedures actually applied :	This value is calculated based on historical solar radiation data in HCMC and the average efficiency of the SWH systems.
Any comment:	---

Data / Parameter:	***M***
Data unit:	Kg
Description:	Volume of hot water consumed per day
Source of data used:	The ECC
Value applied:	180
Justification of the choice of data or description of measurement methods and procedures actually applied :	The ECC will collect and record the tank size of each installed SWH system. The CPA includes only systems over 180 liters in capacity; 180 liters is a conservative estimate.
Any comment:	---

Data / Parameter:	***d***
Data unit:	(d /yr)
Description:	Operating days per year
Source of data used:	The ECC
Value applied:	365
Justification of the choice of data or description of measurement methods and procedures actually applied :	Once a SWH system is installed, it will operate everyday. The ECC will monitor whether the system is operating or not.
Any comment:	---

B.5.2. Ex-ante calculation of emission reductions:

Emission reductions

The emission reductions counted for this proposed CPA will be the electricity saved by using solar water heating systems (SWH), instead of electricity imported from the grid for heating water used by consumers.

$$ER_y = BE_y = EG_y \times EF_{EL,y} \quad (1)$$

Where:

Parameter	Value	Unit	Description
ER_y		(tCO_2e /yr)	Emission reductions in year *y*
BE_y		(tCO_2e /yr)	Baseline emissions from heat displaced by the SSC-CPA during the year *y*
EG_y		(MWh /yr /unit)	Electricity displaced by the SSC-CPA during the year *y*
$EF_{EL,y}$	0.520	(tCO_2e /MWh)	Emission factor for electricity grid in year *y*

Energy baseline

The considered energy baseline will be the electricity consumed from the grid, which would be saved by installing the SSC-CPA SWH system, is as follows:

$$EG_y = N \times EC_{y,BL} = N \times [m \times d \times 4.186 \times (T_2 - T_1)] / 3{,}600{,}000 \quad (2)$$

Where:

Parameter	Value	Unit	Description
N		[units]	Number of devices
$EC_{y,BL}$		(MWh /yr /unit)	Electricity displaced by the unit of the device under SSC-CPA in the year *y*
m	180	(kg/d)	Volume of hot water consumed per day
d	365	(d /yr)	Effective operating days per year
	4.186	(kJ /kg /°C)	Specific heat capacity of water
T_2	60	(°C)	Temperature of water after heating
T_1	28	(°C)	Temperature of water before heating
	3,600,000	(kJ /MWh)	Conversion factor

$EC_{y,BL}$ = 2.44 (MWh /yr /unit)

The volume of water consumed is based on the tank capacity of the SWH sytem; 180(kg/d) is the minimum capacity of SWH sytems included in this CPA. The inlet temperature of water is given by the local water supply company. The outlet temperature of water was calculated using the average daily solar radiation, and energy conversion efficiency of the solar collectors of SWH systems.

Grid emission factor

Emission factor of the connected grid is calculated using AMS I.D. (Version 13). The baseline emission factor is calculated as the combined margin, consisting of combination of operating margin and build margin factors calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" as follows:

Step 1. Identify the relevant electric power system

The electricity displaced by the CPA will be delivered from the Vietnamese national grid, the only grid that exists in the country.

Step 2. Select an operating margin (OM) method

As no dispatch data is available and must-run/low cost resources constitute less than 50% of total grid generation over the past 5 years, the simple OM method is used (See table A3.1 in Annex 3). For the simple OM, ex-ante option is selected.

Step 3. Calculate the operating margin emission factor according to the selected method

The simple OM emission factor is calculated based on fuel consumption and net electricity generation of each power plant/unit (Option A). The following formula is used to calculate Simple OM.

$$EF_{grid,OMsimple,y} = \frac{\sum_{i,m} FC_{i,m,y} \cdot NCV_{i,y} \cdot EF_{CO2,i,y}}{\sum_{m} EG_{m,y}} \quad (3)$$

Where:

Parameter	Unit	Description
$EF_{grid,OMsimple,y}$	(tCO_2e /MWh)	Simple operating margin CO_2 emission factor in year y
$FC_{i,m,y}$	(kt)	Amount of fuel type *i* consumed by power plant/unit *m* in year *y*
$NCV_{i,y}$	(TJ/kt)	Net calorific value (energy content) of fossil fuel type *i* in year *y*
$EF_{CO2,i,y}$	(tCO_2e /TJ)	CO_2 emission factor of fossil fuel type *i* in year *y* (tCO_2/GJ)
$EG_{m,y}$	(MWh)	Net electricity generated and delivered to the grid by power plant/unit *m* in year *y* (MWh)
m		All power plants/units serving the grid in year *y* except low-cost/must-run power plants/units
i		All fossil fuel types combusted in power plant/unit *m* in year *y*
y		The three most recent years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (ex-ante option)

The operating margin emission factor calculations are performed ex-ante using available official data on fuel consumption and electricity generation for each plant connected to the Vietnamese national grid in 2005-2007. All data is summarized in table A3.2 in Annex3.

The "Operating Margin" emission factor will be:

$\boldsymbol{EF_{OM}}$ **= 0.594 tCO_2/MWh**

Step 4. Identify the cohort of power units to be included in the build margin

For the CPA, the sample group of power units *m* used to calculate the build margin consists of the set of power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently. In terms of vintage of data, Option 1 (ex-ante) was selected for this CPA.

Step 5. Calculate the Build margin emission factor

The build margin is calculated as the generation-weighted average emission factor (tCO_2/MWh) of sample of power plants as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (4)$$

Where:

Parameter	Unit	Description
$EF_{grid,BM,y}$	(tCO_2e /MWh)	Build margin CO_2 emission factor in year *y*
$EG_{m,y}$	(MWh)	Net quantity of electricity generated and delivered to the grid by power unit m in year *y*
$EF_{EL,m,y}$	(tCO_2/MWh)	CO_2 emission factor of power unit m in year *y*
m		Power units included in the build margin
y		Most recent historical year for which power generation data is available

For the proposed CPA, Option 1 shall be chosen: Calculate the Build Margin emission factor $EF_{grid,BM,y}$ *ex-ante* based on the most recent information available on plants already built for sample group *m* at the time of PDD submission. The sample group of power unit *m* used to calculate the build margin consists of the set of power capacity additions in the electricity system that comprise 20% of the system generation (in GWh) and that have been built most recently. Data for the build margin calculation is shown in the table A3.3 in Annex 3.

The build margin emission factor will be:

$\boldsymbol{EF_{BM}}$ **= 0.446 tCO_2/MWh**

Step 6. Calculate the combined margin baseline emission factor

The combined margin emission factor is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM} \quad (5)$$

Where:

Parameter	Unit	Description
w_{OM}	(%)	Weighting of the operating margin emission factor
w_{BM}	(%)	Weighting of the build margin emission factor

w_{OM} and w_{BM}, by default, are both valued at 50%

The baseline emission factor will be:

$EF_{EL,y}$ = 0.520 tCO_2/MWh

Emission reductions per system are calculated as follows:

ER_y = 2.44 (MWh/yr/unit) × 0.520 (tCO_2e/MWh)
= 1.27 (tCO_2e /yr /unit)

Based on the projected installation schedule of the ECC-HCMC, the annual emissions reductions will be as follows:

Year	*SWH Installed*	*Total SWH*	*ER_y*
1	1,925	1,925	2,445
2	3,850	5,775	7,334
3	5,390	11,165	14,180
4	5,775	16,940	21,514
5	0	16,940	21,514
6	0	16,940	21,514
7	0	16,940	21,514
	[units]	[units]	(tCO_2e /yr)

Project emissions

As the heat is sourced from a renewable resource, there are no project emissions from this CPA.

Leakage

There is no leakage from this CPA.

B.5.3. Summary of the ex-ante estimation of emission reductions:

Year	Estimation of project activity emissions (tCO_2e)	Estimation of baseline emissions (tCO_2e)	Estimation of leakage (tCO2e)	Estimation of overall emission reductions (tCO_2e)
1	0	2,445	0	2,445
2	0	7,334	0	7,334
3	0	14,180	0	14,180
4	0	21,514	0	21,514
5	0	21,514	0	21,514
6	0	21,514	0	21,514
7	0	21,514	0	21,514
Total (tCO_2e)	**0**	**110,014**	**0**	**110,014**

B.6. Application of the monitoring methodology and description of the monitoring plan:

B.6.1. Description of the monitoring plan:

The monitoring methodology for the category AMS-I.C. “Thermal energy for the user with or without electricity” (Version 13) is applied for this proposed CPA. The methodology consists of the following:

If the emissions reduction per system is less than five (5) tonnes per year:

- Recording annually the number of systems operating (evidence of continuing operation, such as on-going rental/lease payments could be a substitute); and
- Estimating the annual hours of operation of an average system, if necessary using survey methods. Annual hours of operation can be estimated from total output and output per hour if an accurate value of output per hour is available.

As the emission reduction for each SWH system under this CPA is 1.27 tCO_2e/year, which is less than 5tCO_2e/year, the following values will be monitored:

Data / Parameter:	***N***
Data unit:	[units]
Description:	Number of devices
Source of data to be used:	The ECC
Value of data applied for the purpose of calculating expected emission reductions in section B.5	*Year* / *SWH Installed* / *Total SWH* *1* / 1,925 / 1,925 *2* / 3,850 / 5,775 *3* / 5,390 / 11,165 *4* / 5,775 / 16,940 *5* / 0 / 16,940 *6* / 0 / 16,940 *7* / 0 / 16,940 [units] / [units]
Description of measurement methods and procedures to be applied:	Directly determined in the course of installing SWH systems included in this CPA. The ECC will collect and record the number of systems installed.
QA/QC procedures to be applied:	Will be cross-checked against other relevant internal records of the ECC.
Any comment:	---

Data / Parameter:	**Sunny hours**
Data unit:	(hr /yr)
Description:	Effective sunny hours per year
Source of data to be used:	HCMC Meteorological data
Value of data applied for the purpose of calculating expected emission reductions in section B.5	---
Description of measurement methods and procedures to be applied:	The effective sunny hours per year will be calculated from local meteorological data.
QA/QC procedures to	Will be cross-checked against SWH system usage data to determine if available

be applied:	solar radiation is enough to heat water to the desired temperature.
Any comment:	This value is not used for ER calculation.

The ECC will keep a record of all monitoring data. The figure in Annex 4 shows the monitoring structure for this CPA and the monitoring procedure is explained below:

1) The ECC will keep a record of the number, location, type, and owner of all SWH systems installed. The owners of the SWH systems are required to report to distributors to fix systems if they have any problems. SWH system distributors need to report any information on system problems and the number of days that systems do not operate. Then, the ECC will add information on the systems which have problems into their database to keep an up-to-date record of all operating systems.

2) The ECC will also collect data on the sunny hours per day from the Meteorological Center in Ho Chi Minh City and then calculate the sunny hours per year.

A database will be set up the by the ECC for the CPA. The database will include the following information for each SWH system:

- Location of SWH system registered under the CPA;
- Name of the SWH system owner;
- Installation date of the SWH system;
- Distributor and technical specifications of the SWH system;
- SWH system serial number;
-Dates when system stops operation and restarts operation;
-The reason for any system problems.

SECTION C. Environmental analysis

C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:

☑ Please tick if this information is provided at the PoA level. In this case, sections C.2. and C.4. need not be completed in this form.

C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:

N/A

C.3. Please state whether an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA), in accordance with the host Party laws/regulations:

N/A

SECTION D. Stakeholders' comments

D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:

☑ Please tick if this information is provided at the PoA level. In this case, sections D.2. to D.4. need not be completed in this form.

D.2. Brief description how comments by local stakeholders have been invited and compiled:

N/A

D.3. Summary of the comments received:

N/A

D.4. Report on how due account was taken of any comments received:

N/A

Annex 1

CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-SCALE CPA

Organization:	The Energy Conservation Center (ECC), Ho Chi Minh City
Street/P.O.Box:	244 Dien Bien Phu St., District 3
Building:	
City:	Ho Chi Minh city
State/Region:	
Postfix/ZIP:	
Country:	Viet Nam
Telephone:	+84 8 9332 2372
FAX:	+84 8 9332 2373
E-Mail:	ecc-hcmc@hcm.vnn.vn
URL:	www.ecc-hcm.gov.vn
Represented by:	
Title:	Vice Director
Salutation:	Ms.
Last Name:	Mai
Middle Name:	To
First Name:	Nga
Department:	
Mobile:	
Direct FAX:	+84 8 9332 2373
Direct tel:	+84 8 9332 2372
Personal E-Mail:	

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

The CPA will not receive any public funds that would be result of official development assistance from Parties included in Annex I to the Convention.

Annex 3

BASELINE INFORMATION

Information regarding the calculation of the electricity grid emission factor:

Table A3.1. Rate of low cost/must-run sources based on generation

Year	2003	2004	2005	2006	2007	Average
Hydro power generation (GWh)	19,033	17,979	16,437	19,573	22,178	19,040
Total generation (GWh)	40,636	46,800	53,407	60,489	68,725	54,011
Rate of low cost/must-run sources (%)	46.84	38.42	30.78	32.36	32.27	35.25

Table A3.2. Electricity outputs and fuel consumptions of thermal power sources in 2005– 2007[5]

Fuel Type		2005	2006	2007
Coal	GWh	9,446	10,808	11,415
NCV = 22.19 TJ/kt*	kt	4,857	5,643	5,896
CO_2EF = 94.6 tCO_2/TJ –IPCC-2006	kt CO_2	10,083	11,581	12,032
Gas Turbine (Gas)	GWh	24,031	26,786	28,807
CO_2EF = 54.3 tCO_2/TJ –IPCC-2006	TJ	179,472	204,133	212,945
	kt CO_2	9,745	11,084	11,563
Diesel Oil	GWh	482	261	601
NCV = 42.7 TJ/kt	kt	136	73	169
CO_2EF = 72.6 tCO_2/TJ – IPCC-2006	kt CO_2e	422	228	523
Fuel Oil	GWh	2,638	2,095	3,094
NCV = 41.45 TJ/kt	kt	722	574	846
CO_2EF = 75.5 tCO_2/TJ –IPCC-2006	kt CO_2e	2,259	1,797	2,649
Imported electricity	GWh	373	966	2,630
Total CO2 emission from Viet Nam grid	kt CO_2e	22,509	24,691	26,766
Total thermal electricity output generated	GWh	36,970	40,916	46,547

*22.19 TJ/kt is used for all coal power plants except for the following:.
Na Duong: 14.65
Cao Ngan: 18.84
Formosa: 25.96

[5] Sources: Recapitulative Report on the operation of Viet Nam National Electricity System in Year 2006, EVN/National Electricity system Dispatching Center - Department for Electricity System Operation, Hanoi, January 2007

Table A3.3. The power plant capacity additions in the electricity system that comprise 20% of the system generation (in GWh) and that have been built most recently[6]

No	Plant name	Commissioning year	Capacity (MW)	Output (GWh)	Energy type	Emission (kt CO_2)
1	Quang Tri	2007	64	64	Hydro	-
2	Ca Mau	2007	720	691	Gas	244
3	Cai Lan (Quang Ninh)	2007	40	81	Fuel oil	71
4	Se San 3a	2007	108	345	Hydro	-
5	Srok Phu Miêng	2006	51	252	Hydro	-
6	Cao Ngan*+(IPP) PC1	2006	100	445	Coal	442
7	Uong Bi 2	2006	300	520	Coal	458
8	Se San 3	2006	260	1,113	Hydro	-
9	Dam Phu My (IPP) PC2	2005	150	150	Gas	58
10	Na Duong*+(IPP) PC1	2004	110	744	Coal	763
11	Fosmosa	2004	150	1,113	Coal	864
12	Phu My 4	2004	450	3,142	Gas	1,411
13	Phu My 2-2	2004	720	5,004	Gas	1,937
14	Can Don	2003	259	361	Hydro	-
	Total			14,025		**6,248**

[6] Sources: Recapitulative Report on the operation of Viet Nam National Electricity System in Year 2006,

EVN/National Electricity system Dispatching Center - Department for Electricity System Operation, Hanoi, January 2007

Annex 4

MONITORING INFORMATION

Other monitoring information is found in Section B.6.1. The monitoring structure is shown as follows: