



## Monitoring report form (Version 03.1)

### Monitoring report

<b>Title of the project activity</b>	Federal Intertrade Hong-Ru River Solar Cooker Project
<b>Reference number of the project activity</b>	2311
<b>Version number of the monitoring report</b>	1
<b>Completion date of the monitoring report</b>	01/09/2013
<b>Registration date of the project activity</b>	31/05/2009
<b>Monitoring period number and duration of this monitoring period</b>	5 <sup>th</sup> 01/09/2012-31/08/2013
<b>Project participant(s)</b>	<ul style="list-style-type: none"> <li>● Ningxia Federal Intertrade Co.</li> <li>● Swiss Re Global Markets Limited</li> <li>● Post 2012 Carbon Credit Fund CV</li> </ul>
<b>Host Party(ies)</b>	China
<b>Sectoral scope(s) and applied methodology(ies)</b>	Sectoral scope: 1. Energy industries (renewable - / non-renewable sources) Selected methodology: AMS-I.C (Version 12, EB33), Thermal energy for the user with or without electricity
<b>Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD</b>	35,723 tCO <sub>2</sub> e
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period</b>	38,244 tCO <sub>2</sub> e

**SECTION A. Description of project activity****A.1. Purpose and general description of project activity**

&gt;&gt;

The project installed 17,000 solar cookers for the poor rural residents in north-western China. The rating power of each solar cooker is 773.5W and the total capacity of the project is 13.1 MW. The project enabled the rural residents to efficiently substitute solar energy for the fossil fuel (coal) used in daily cooking and water boiling, avoiding CO<sub>2</sub> emission generated by fossil fuel consumption.

The starting date of operation of the project activity was 2 June 2009, which was in the first monitoring period of the project. The continued operation period for the project is 01/09/2012 - 31/08/2013 which is the current (fifth) monitoring period. There were 4 monitoring periods prior to the current monitoring period. The total emission reductions achieved in this monitoring period is 38,244 tCO<sub>2</sub>e.

**A.2. Location of project activity**

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The Project is located in five townships (Baiyang, Gucheng, Xinji, Chengyang, and Honghe) in southern rural area of Pengyang County, Ningxia Hui Autonomous Region, China. The approximate locations of the centers of the townships in which the project is located are:

Township	Longitude(E)	Latitude(N)	Longitude(E)	Latitude(N)
	Deg Min Sec	Deg Min Sec	Degree	Degree
Baiyang	106°39'17"E	35°49'59"N	106.6547	35.8331
Gucheng	106°27'35"E	35°51'43"N	106.4597	35.8619
Xinji	106°28'2"E	35°46'0"N	106.4672	35.7667
Chengyang	106°47'1"E	35°48'59"N	106.7836	35.8164
Honghe	106°41'59"E	35°46'0"N	106.6997	35.7667

Each of the 17,000 solar cookers was installed in the yard of its user's home in a location where it can be fully exposed to sunshine.

**A.3. Parties and project participant(s)**

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China (host)	Ningxia Federal Intertrade Co.	No
Netherlands	Swiss Re Global Markets Limited	No
Switzerland	Post 2012 Carbon Credit Fund CV	No

**A.4. Reference of applied methodology**

&gt;&gt;

Small-scale CDM baseline methodology "AMS-I.C. (Version 12, EB33), Thermal energy for the user with or without electricity". For more information regarding the methodology, please refer to the link:

<http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>

**A.5. Crediting period of project activity**

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Type: fixed crediting period

Crediting period: 31/05/2009-30/05/2019

Length: 10 years

**SECTION B. Implementation of project activity****B.1. Description of implemented registered project activity**

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The starting date of operation of the project activity was 2 June 2009, which was in the first monitoring period of the project. The current monitoring period is the fifth monitoring period. There is no event or situations that occurred during this monitoring period, which may impact the applicability of the methodology.

**B.2. Post registration changes****B.2.1. Temporary deviations from registered monitoring plan or applied methodology**

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None

**B.2.2. Corrections**

&gt;&gt;

None

**B.2.3. Permanent changes from registered monitoring plan or applied methodology**

&gt;&gt;

None

**B.2.4. Changes to project design of registered project activity**

&gt;&gt;

None

**B.2.5. Changes to start date of crediting period**

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None

**B.2.6. Types of changes specific to afforestation or reforestation project activity**

&gt;&gt;

Not applicable

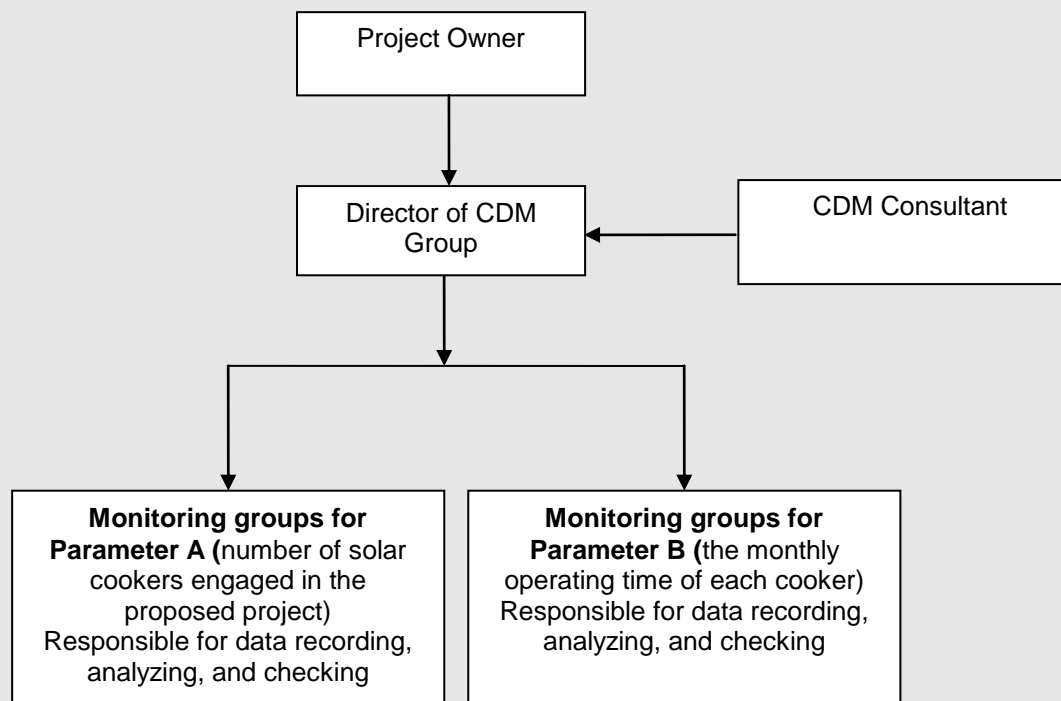
**SECTION C. Description of monitoring system**

&gt;&gt;

According to methodology AMS-I.C. (Version 12, EB33) and the registered PDD, the following two parameters were monitored:

- (a) Number of solar cookers engaged in the proposed project (parameter A), and
- (b) The monthly operating time of each solar cooker (parameter B).

Below is the organization structure of the monitoring system for parameter A and B:



#### Roles and Responsibilities:

The monitoring process is conducted through the coordination between the project owner and Pengyang County Rural Energy Station (PRES), the governmental organization in charge of the rural energy affairs. The director of CDM group is responsible for overall management of the entire monitoring process. Under the director of CDM group, there are CDM monitoring groups for the monitoring of parameter A (number of solar cookers engaged in the proposed project) and parameter B (the monthly operating time of each solar cooker).

CDM groups (consisting of personnel from PRES and project owner) are responsible for data recording, analyzing, checking, and archiving. Clean Air Trade Inc. (CDM consultant) is responsible for overseeing and advising the monitoring process as well as final data checking. As the governmental organization in charge of the rural energy affairs, PRES is responsible for the raw data collection and recording, and all the raw data were confirmed by PRES. The project owner is responsible for data analyzing, checking, and archiving.

Due to the non-industrial nature of the project, emergency procedures are not applicable to the project. For QA/QC procedures, please refer to QA/QC procedures in section D.2.

Monitoring Plan in PDD	Monitoring Process Implemented
<p><b><u>For number of solar cookers engaged in the proposed project (Parameter A):</u></b></p> <p><b>B7.1 of PDD:</b> The initial value of this parameter will be determined by the sales contract of the solar cookers and then this parameter will be monitored, recorded, and archived annually.</p>	<p><b><u>For number of solar cookers engaged in the proposed project (Parameter A):</u></b></p> <p>The sales contract has been presented to the verification team during the first verification. 17, 000 solar cookers were ordered and installed initially.</p> <p>The serial number was put during the solar</p>

	<p><b>B7.2 of PDD:</b> The monitoring of total number of operating solar cookers will be conducted annually during the last quarter of each year. A checklist will be used for monitoring and recording this parameter.</p> <p>To track the solar cookers, a serial number will be put on each of the solar cookers distributed to the users. A list of all the users and the corresponding serial numbers of their solar cookers will be kept.</p>	<p>cooker production process. A list of all the users and corresponding serial numbers was kept during the distribution process.</p> <p>The monitoring of this parameter was conducted once by monitoring team A. Team A consisted of 7 groups, and each group consisted of 2 persons (one from the Rural Energy Section under the Bureau of Agriculture, Graze, and Science &amp; Technology of Pengyang County (Hereinafter "Pengyang County Rural Energy Station" or "PRES") and another one from Ningxia Federal Intertrade Co.).</p> <p>From July 1, 2013 to July 31, 2013, monitoring team A visited each of the users and checked if the cooker is in operation and if the serial number of each cooker matches its user through eye observation and short conversation by monitoring personnel.</p> <p>After the visit to households, the monitoring results were recorded in the monitoring table shown in PDD section B7.2.Clause 3. Then all the operational cookers were summed up to generate the total number of cookers in operation. All the monitoring data were collected, recorded and confirmed by the monitoring team and the head of PRES, and then provided the records to the project owner.</p>	
	<p><b><u>For the monthly operating time of each solar cooker (Parameter B):</u></b></p> <p><b>B7.2 of PDD:</b></p> <ul style="list-style-type: none"> <li>● Sampling survey will be utilized in the monitoring. 309 sample users will be randomly selected from the 7 townships within the project boundary.</li> <li>● A number of CDM groups will be set up to conduct the daily monitoring of the operating hours of the sampled users. Each CDM group will consist of 1~5 people and each person will be responsible for the monitoring and recording of 5~20 sampled users. The monitoring forms will be filled out daily by the CDM group.</li> <li>● At least once a month the monitoring form will be collected and the quality of data will be checked. At least once a month, the CDM group will choose one family and stay for an entire day in this family' home to monitor the detailed usage of the solar cooker.</li> </ul>	<p><b><u>For the monthly operating time of each solar cooker (Parameter B):</u></b></p> <ul style="list-style-type: none"> <li>● Sampling survey method was used and 309 samples were randomly selected using "Random" function in the MS Excel Software in August 2012.</li> <li>● There are 5 CDM groups (each consists of 1 person) directly monitoring and recording the operating hours of the 309 sample users. Please note that the number of users each monitoring person handled is more than 5~20 users as planned in PDD, because the ways of collecting data has been diversified – the monitoring personnel used phone call, SMS message, or visited the user face-to-face to get the data, which significantly improved the efficiency.</li> <li>● At the end of each month during the monitoring period, the monitoring form was collected and the paper documents were converted into electronic form and archived. The quality of data was checked by the "PRES" and Ningxia Federal Intertrade Co. separately.</li> </ul>	

- In each month of the monitoring period, the monitoring team chose one family and recorded the detailed usage of the solar cooker at this family throughout the day. The purpose of such visit is to double check if the usage time reported by sample users is within the reasonable range and also whether the users understand the procedure and approach for reporting the usage time of solar cookers.

## SECTION D. Data and parameters

### D.1. Data and parameters fixed ex ante or at renewal of crediting period

<b>Data / Parameter:</b>	1.EF CO <sub>2</sub>
Unit:	tCO <sub>2</sub> /TJ
Description:	Baseline emission factor of Coal
Source of data:	IPCC2006, page 2.22, Table2.5
Value(s) applied:	94.6
Purpose of data:	Calculation of baseline emissions
Additional comment:	There was no national or regional data available. Thus, IPCC default value was used.

<b>Data / Parameter:</b>	2.R
Unit:	W/m <sup>2</sup>
Description:	Standard solar irradiance rate used to calculate rating power of solar cooker
Source of data:	National Standard of the People's Republic of China, GB No.: NY/T219-2003
Value(s) applied:	700
Purpose of data:	Calculation of baseline emissions
Additional comment:	

<b>Data / Parameter:</b>	3.R <sub>i</sub>
Unit:	W/m <sup>2</sup>
Description:	Monthly solar irradiance rate in project region
Source of data:	Ningxia Meteorological Archives

Value(s) applied:	<table> <tr> <th>Month</th><th>Value</th></tr> <tr><td>1</td><td>397.6</td></tr> <tr><td>2</td><td>519.6</td></tr> <tr><td>3</td><td>521.8</td></tr> <tr><td>4</td><td>601.6</td></tr> <tr><td>5</td><td>689.5</td></tr> <tr><td>6</td><td>746.1</td></tr> <tr><td>7</td><td>666.1</td></tr> <tr><td>8</td><td>727.7</td></tr> <tr><td>9</td><td>656.7</td></tr> <tr><td>10</td><td>652.2</td></tr> <tr><td>11</td><td>402.6</td></tr> <tr><td>12</td><td>398.5</td></tr> </table>	Month	Value	1	397.6	2	519.6	3	521.8	4	601.6	5	689.5	6	746.1	7	666.1	8	727.7	9	656.7	10	652.2	11	402.6	12	398.5
Month	Value																										
1	397.6																										
2	519.6																										
3	521.8																										
4	601.6																										
5	689.5																										
6	746.1																										
7	666.1																										
8	727.7																										
9	656.7																										
10	652.2																										
11	402.6																										
12	398.5																										
Purpose of data:	Calculation of baseline emissions																										
Additional comment:																											

<b>Data / Parameter:</b>	4.A
Unit:	m <sup>2</sup>
Description:	Solar cooker's light-collecting area
Source of data:	Project owner(technical specification of the solar cooker)
Value(s) applied:	1.7
Purpose of data:	Calculation of baseline emissions
Additional comment:	

<b>Data / Parameter:</b>	5. $\eta$
Unit:	N/A
Description:	Solar cooker's thermal efficiency
Source of data:	Solar cooker testing report from Ningxia Department of Agriculture and Graze, Rural Energy Station and manufacturer's confirmation letter.
Value(s) applied:	65%
Purpose of data:	Calculation of baseline emissions
Additional comment:	

<b>Data / Parameter:</b>	6. $\eta_{th}$
Unit:	N/A
Description:	Thermal efficiency for the traditional coal furnace

Source of data:	1) The on-site measurement data of thermal efficiency of rural coal stoves in Ningxia by the Energy Saving Monitoring Technical Service Center of Ningxia Hui Autonomous Region, the provincial authority in charge of collecting and monitoring energy usage data in Ningxia.  2) "Clean Energy for Development and Economic Growth: Biomass and Other Renewable Energy Options to Meet Energy and Development Needs in Poor Nations", United Nations Development Programme (UNDP), 2002 <a href="http://www.undp.org/energy/publications/2002/2002b.htm">http://www.undp.org/energy/publications/2002/2002b.htm</a>
Value(s) applied:	15%
Purpose of data:	Calculation of baseline emissions
Additional comment:	

## D.2. Data and parameters monitored

Data / Parameter:	1. <i>n</i>														
Unit:	Not applicable														
Description:	Number of solar cookers engaged in the proposed project														
Measured/ Calculated / Default:	Measured.														
Source of data:	The monitoring records of monitoring team														
Value(s) of monitored parameter:	<p>The following table shows the number of cookers in operation in each township:</p> <table border="1"> <thead> <tr> <th>Township</th><th>Number</th></tr> </thead> <tbody> <tr> <td>Baiyang</td><td>3530</td></tr> <tr> <td>Chengyang</td><td>3218</td></tr> <tr> <td>Gucheng</td><td>2863</td></tr> <tr> <td>Honghe</td><td>3127</td></tr> <tr> <td>Xinji</td><td>4254</td></tr> <tr> <td><b>Total</b></td><td><b>16,992</b></td></tr> </tbody> </table> <p>During the visit to the cooker users by the monitoring team, there were 6 households with nobody at home. Therefore, the monitoring team could not enter the houses to check the solar cookers. Besides, there were 2 households with damaged solar cookers. Following conservative principle, the monitoring team did not include these 8 solar cookers into the total number of solar cookers.</p> <p>Therefore, the monitoring result of this monitored parameter is:  <math>17,000 - 8 = 16,992</math>.</p>	Township	Number	Baiyang	3530	Chengyang	3218	Gucheng	2863	Honghe	3127	Xinji	4254	<b>Total</b>	<b>16,992</b>
Township	Number														
Baiyang	3530														
Chengyang	3218														
Gucheng	2863														
Honghe	3127														
Xinji	4254														
<b>Total</b>	<b>16,992</b>														
Monitoring equipment:	Monitoring equipment is not necessary, and thus not used.														
Measuring/ Reading/ Recording frequency:	At least once a year														



Calculation method (if applicable):	Sum up the total number of operational cookers
QA/QC procedures:	<ul style="list-style-type: none"> <li>● The solar cookers used for the project were tested before the operation of the project by authorities to ensure their specs and quality meets the requirements of the project.</li> <li>● There are maintenance and repair plan ready for the solar cookers. This plan will ensure the cookers in the project can remain in operational condition.</li> <li>● For missing or damaged data record, zero value is used for the missing or damaged data, which is the most conservative approach.</li> </ul>
Purpose of data:	Calculation of baseline emissions
Additional comment:	Records were kept in electronic form and paper form.

<b>Data / Parameter:</b>	2. $t_i$																								
Unit:	Hour																								
Description:	The monthly operating time of each solar cooker																								
Measured/ Calculated / Default:	Measured and calculated.																								
Source of data:	Usage time measured and recorded by the project monitoring team																								
Value(s) of monitored parameter:	<table> <tr><td>Sep-2012</td><td>107.95</td></tr> <tr><td>Oct-2012</td><td>128.23</td></tr> <tr><td>Nov-2012</td><td>146.06</td></tr> <tr><td>Dec-2012</td><td>151.71</td></tr> <tr><td>Jan-2013</td><td>168.28</td></tr> <tr><td>Feb-2013</td><td>136.03</td></tr> <tr><td>Mar-2013</td><td>137.07</td></tr> <tr><td>Apr-2013</td><td>131.25</td></tr> <tr><td>May-2013</td><td>121.76</td></tr> <tr><td>Jun-2013</td><td>118.26</td></tr> <tr><td>Jul-2013</td><td>90.28</td></tr> <tr><td>Aug-2013</td><td>141.47</td></tr> </table>	Sep-2012	107.95	Oct-2012	128.23	Nov-2012	146.06	Dec-2012	151.71	Jan-2013	168.28	Feb-2013	136.03	Mar-2013	137.07	Apr-2013	131.25	May-2013	121.76	Jun-2013	118.26	Jul-2013	90.28	Aug-2013	141.47
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Jul-2013	90.28																								
Aug-2013	141.47																								
Monitoring equipment:	Clock or watch No calibration requirement is specified in the registered PDD and the applied Methodology AMS-I.C version 12.																								
Measuring/ Reading/ Recording frequency:	<ul style="list-style-type: none"> <li>● The usage time of cookers were measured and recorded daily</li> <li>● At the end of each month, all the daily data of the past month were summarized to produce the monthly usage time.</li> </ul>																								
Calculation method (if applicable):	(1) For each of the 309 sample users, measure and record their daily usage time, then sum up all the daily usage time in a month to get the monthly usage time of each user; (2) Sum up the monthly usage time of all the 309 users to get the total monthly usage time of the 309 users.																								

	(3) Divide the number obtained in (2) by 309 to get the average monthly operating time of each solar cooker.
QA/QC procedures:	<p>Before implementing the project, Ningxia Federal Intertrade Co. trained the personnel of monitoring teams on how to properly conduct the monitoring process.</p> <p>The following process was conducted for missing or damaged data record:</p> <ol style="list-style-type: none"> <li>1. The general principle is that zero value is used for the missing or damaged data. This is most conservative approach. The monitoring personnel were trained before the starting of the project operation to ensure that each team member is fully aware of and able to strictly follow this conservative principle. During the monitoring process, the monitoring personnel were required to strictly abide by the above conservative principle in data recording, i.e., use zero values for all the missing or damaged data.</li> <li>2. If this is due to the working error of the monitoring personnel, further train the person until he or she can perform the job properly. And in the mean time, use zero value for the missing or damaged data;</li> <li>3. If this is due to the inability or attitude of a particular worker in monitoring team, dismiss such worker and re-hire those with proper ability and attitude. And in the mean time, use zero value for the missing or damaged data;</li> <li>4. If the monitoring team as a whole does not meet the job requirement of monitoring process, Ningxia Federal Intertrade Co., the project owner, has the right to require that PRES create new monitoring team according to the requirement of Ningxia Federal Intertrade Co.</li> <li>5. If the data reported by the user significantly higher than the normal range, the monitoring personnel should ask for the reason. If the reason belongs to one of the following: 1) holidays celebration, 2) wedding or funeral, or 3) family/friends party, the reason is considered to be valid. Then the reason is recorded along with the data. Otherwise, zero value is used for that day's data.</li> </ol>
Purpose of data:	Calculation of baseline emissions
Additional comment:	Records were kept in electronic form and paper form.

### D.3. Implementation of sampling plan

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According to the registered PDD, simple random sampling was used for the monitoring of the monthly operating time of each solar cooker (Parameter B). 309 sample users were randomly selected from 17,000 users within the project boundary using Excel in August 2012, and the average monthly usage time per user was calculated (for details, please refer to section D.2, parameter#2,  $t_i$ ).

According to “GUIDELINES FOR SAMPLING AND SURVEYS FOR CDM PROJECT ACTIVITIES AND PROGRAMME OF ACTIVITIES” EB69, Annex 5, paragraph 229-232, confidence/precision should be checked following the steps below:

$$(i) \quad \text{Standard error of the mean} = \sqrt{(1-f) \frac{s^2}{n}}$$

$f$  is the sampling fraction – the proportion of the population that is sampled.

$s^2$  is the sample variance ( $s$  is the sample standard deviation) of the monthly usage hours per user

$n$  is the sample size.

In our case,  $n = 309$  and the population = 17000, thus,  $f = 309/17000 = 0.0182$ .

Using Excel, we can calculate

$s = 19.9214$ , and

The mean value of monthly usage hour per user = 131.5305

Putting all these pieces of information together gives:

$$\sqrt{(1-f) \frac{s^2}{n}} = 1.1229$$

and so the standard error of the mean is 1.1229.

#### (ii) t-value

This value depends on the level of confidence and the size of the sample. The exact figure can be acquired from statistical tables for the t-distribution, or using standard statistical software. The value can also be derived in Microsoft Excel using the TINV function.

For a sample size of 309 and 90% confidence, using the TINV function in Microsoft Excel, the t-value is 1.6498.

#### (iii) Precision

The precision associated with an estimate is: t-value × standard error of the mean.

The precision of the monthly average usage (in hours), assuming 90% confidence, is therefore: ± (1.6498 × 1.1229) = ± 1.8526.

The ratio of this relative to the average monthly usage is 1.8526/131.5305 = 0.0141 and so the relative precision of the data over the monitoring period is 1.41%, which is less than 10%. Therefore the required precision of 10% has been met.

The relative precision of data was also calculated on monthly basis using the above method. All the precision values calculated on monthly basis are smaller than the 1.41% precision value calculated above, which gives additional assurance that the precision is within the required range. For details of these calculations, please refer to the attached Excel calculation sheet.

## SECTION E. Calculation of emission reductions or GHG removals by sinks

### E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

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According to the registered PDD, the emission reduction can be calculated in the following table using the parameters below:

$$BE_y = n \sum [773.5 \cdot (R_i / 700) \cdot t_i \cdot 3.6 \times 10^{-9}] \cdot EF_{CO_2} / \eta_{th} \quad (i = 1, 2, \dots, 12)$$

Where:

$R_i$   $R_i$  is the actual solar irradiance rate in month  $i$  in  $W/m^2$ . The values adopted are parameter #3 in the data table D.1

$t_i$   $t_i$  is the usage time of the solar cooker in month  $i$  in hours. The values adopted are parameter #2 in table D.2

$n$  The total number of solar cookers installed by the proposed project. The values adopted is 16,992 (refer to parameter #1 in table D.2 for details).

$EF_{CO_2}$  The  $CO_2$  emission factor of coal ( $tCO_2e/TJ$ ). IPCC default emission factor of  $94.6tCO_2e/TJ$  will be adopted in the proposed project.

$\eta_{th}$  The efficiency of the coal-fired stove that would have been used in the absence of project activity. The value adopted is 15%

The result is summarized in the tables below:

Month	Time Interval	Solar irradiance rate	Actual Power of Solar Cooker	Monthly Usage Time	Net Heat Supplied Monthly	CER Generated Monthly
		$R_i$	$P_i = 773.5 \cdot (R_i / 700)$ Equation (8) in PDD	$t_i$	$HG_i = n \cdot [P_i \cdot t_i \cdot (3.6 \times 10^{-9})]$ Equation (6) in PDD	$BE_i = HG_i \cdot EF_{CO_2} / \eta_{th}$ Equation (5) in PDD
		( $W/m^2$ )	(W)	(hour)	(TJ)	( $tCO_2e$ )
2012-09	01/09/2012 – 30/09/2012	656.7	725.7	107.95	4.79167	3022
2012-10	01/10/2012 – 31/10/2012	652.2	720.7	128.23	5.65322	3565
2012-11	01/11/2012 – 30/11/2012	402.6	444.9	146.06	3.97469	2507
2012-12	01/12/2012 – 31/12/2012	398.5	440.3	151.71	4.08659	2577
2013-01	01/01/2013 – 31/01/2013	397.6	439.3	168.28	4.52273	2852
2013-02	01/02/2013 – 28/02/2013	519.6	574.2	136.03	4.77751	3013
2013-03	01/03/2013 – 31/03/2013	521.8	576.6	137.07	4.83472	3049
2013-04	01/04/2013 – 30/04/2013	601.6	664.8	131.25	5.33731	3366

2013-05	01/05/2013 – 31/05/2013	689.5	761.9	121.76	5.67495	3579
2013-06	01/06/2013 – 30/06/2013	746.1	824.4	118.26	5.96425	3761
2013-07	01/07/2013 – 31/07/2013	666.1	736.0	90.28	4.06460	2563
2013-08	01/08/2013 – 31/08/2013	727.7	804.1	141.47	6.95889	4389

Using Equation (4) in PDD, total Baseline Emissions in the monitoring period =  $\sum BE_i = 38,244 \text{ tCO}_2\text{e}$

Therefore, the total Baseline Emissions generated in the monitoring period is **38,244 tCO<sub>2</sub>e**.

## E.2. Calculation of project emissions or actual net GHG removals by sinks

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According to the registered PDD and the applied methodology, there is no project emission.

## E.3. Calculation of leakage

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According to the registered PDD and the applied methodology, there is no project leakage.

## E.4. Summary of calculation of emission reductions or net anthropogenic GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (t CO <sub>2</sub> e)	Project emissions or actual net GHG removals by sinks (t CO <sub>2</sub> e)	Leakage (t CO <sub>2</sub> e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO <sub>2</sub> e)
<b>Total</b>	38,244	0	0	38,244

## E.5. Comparison of actual emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
<b>Emission reductions or GHG removals by sinks (t CO<sub>2</sub>e)</b>	35,723	38,244

## E.6. Remarks on difference from estimated value in registered PDD

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The actual monitored emission reduction (ER) is 38,244 tCO<sub>2</sub>e, which is slightly higher than the estimated 35,723 tCO<sub>2</sub>e in PDD. The higher actual ER is due to the fact that the actual usage time of the cookers is higher than the conservative estimated value in PDD. For household cooking, a few percent of difference between the actual and estimated usage time of cooker is quite normal and reasonable. Therefore, a few percent of difference between the actual ER value and estimated ER value as in this case is within a reasonable range.

**E.7. Actual emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards**

Item	Actual values achieved up to 31 December 2012	Actual values achieved from 1 January 2013 onwards
Emission reductions or GHG removals by sinks (t CO <sub>2</sub> e)	11,671	26,573

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**Document information**

Version	Date	Description
03.1	2 January 2013	Editorial revision to correct table in section E.5.
03.0	3 December 2012	Revision required to introduce a provision on reporting actual emission reductions or net anthropogenic GHG removals by sinks for the period up to 31 December 2012 and the period from 1 January 2013 onwards (EB70, Annex 11).
02.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the monitoring report form" (EB 66, Annex 20).
01	28 May 2010	EB 54, Annex 34. Initial adoption.
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