



## Monitoring report form (Version 03.1)

### Monitoring report

<b>Title of the project activity</b>	Federal Intertrade Haiyuan Solar Cooker Project
<b>Reference number of the project activity</b>	3520
<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>	15/09/2010
<b>Monitoring period number and duration of this monitoring period</b>	2 <sup>nd</sup> 01/09/2012-31/08/2013
<b>Project participant(s)</b>	<ul style="list-style-type: none"> <li>● Ningxia Federal Intertrade Co., Ltd.</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 14, EB46), Thermal energy production 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>	33,482 tCO <sub>2</sub> e
<b>Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period</b>	35,078tCO <sub>2</sub> e

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

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The project installed 17,000 solar cookers for the poor rural residents in north-western China. The rated power of each solar cooker is 773.5W and the total capacity of the project is 13.1495 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 project implementation started since registration by placing order of cookers, arrangement for distribution of cookers, and training of the monitoring team members, etc. The continued operation period for the project is 01/09/2012 - 31/08/2013 which is in the current (2<sup>nd</sup>) monitoring period. There was one monitoring period prior to the current monitoring period. The total emission reductions achieved in this monitoring period is 35,078 tCO<sub>2</sub>e.

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

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The Project is located in 16 townships (Shidian, Lijun, Jiucui, Shutai, Zhengqi, Jiatang, Caowa, Hongyang, Guanzhuang, Xian, Haicheng, Guanqiao, Liwang, Gancheng, Sanhe, Qiying) in Haiyuan County, Ningxia Hui Autonomous Region, China. The approximate locations of the centers of the townships in which the project is located are:

Township name	Location of township center	
Shidian	36°31'47.00"N	105°41'7.00"E
Lijun	36°13'47.03"N	105°52'40.26"E
Jiucui	36°17'21.73"N	105°54'21.69"E
Shutai	36°30'2.07"N	105°26'14.80"E
Zhengqi	36°26'51.75"N	105°57'25.60"E
Jiatang	36°31'14.70"N	105°49'20.96"E
Caowa	36°25'27.34"N	105°45'1.49"E
Hongyang	36°15'45.52"N	105°37'10.75"E
Guanzhuang	36°16'59.04"N	105°33'1.56"E
Xian	36°35'43.43"N	105°28'33.37"E
Haicheng	36°33'32.78"N	105°38'36.85"E
Guanqiao	36°46'46.49"N	105°47'25.30"E
Liwang	36°40'4.71"N	106°06'25.22"E
Gancheng	36°35'8.26"N	106°20'34.13"E
Sanhe	36°22'13.84"N	106°05'33.08"E
Qiying	36°30'10.39"N	106°09'17.69"E

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)
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People's Republic of China (host)	Ningxia Federal Intertrade Co., Ltd.	No
Netherlands	Swiss Re Global Markets Limited	No
Switzerland	Post 2012 Carbon Credit Fund CV	No

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

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Small-scale CDM baseline methodology "AMS-I.C.(Version 14, EB46), Thermal energy production 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: 15/09/2010-14/09/2020

Length: 10 years

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

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As stated in section A.1, the project implementation started since registration by placing order of cookers, arrangement for distribution of cookers, and training of the monitoring team members, etc. The current monitoring period is the 2<sup>nd</sup> 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**

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None

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

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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**

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Not applicable

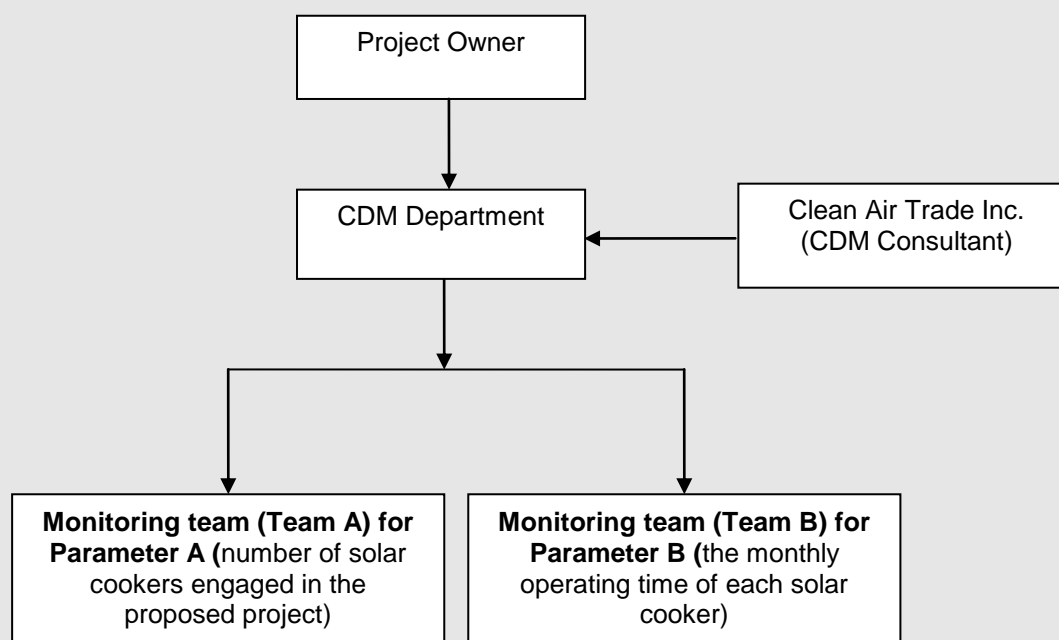
**SECTION C. Description of monitoring system**

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According to methodology AMS-I.C. (Version 14, EB46) 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 was conducted through the coordination between the project owner and Haiyuan County Rural Energy Station (HRES), the governmental organization in charge of the rural energy affairs.

In general, the project owner was responsible for overall management of the entire monitoring process. Under the project owner, there is a CDM Department which consists of 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 Department is 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, HRES is responsible for the raw data collection and recording, and all the raw data were confirmed by HRES. 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>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, the logo of the project was put on each of the solar cookers distributed to the users.</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 logo of the project and the user name was put on each of the cookers during the distribution process.</p> <p>The monitoring of this parameter was conducted by monitoring team A. Team A consisted of 9 groups, and each group consisted of 2 persons (one from Rural Energy Station of the Bureau of Agriculture and Graze of Haiyuan County (Hereinafter "Haiyuan County Rural Energy Station" or "HRES") and the other from Ningxia Federal Intertrade Co., Ltd.).</p> <p>The monitoring of this parameter involved visiting each of the users by team A. From August 1, 2013 to August 26, 2013, the monitoring team A checked if the cooker is in operation, and if the logo of the project and the user name is on the cooker through visual 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 HRES, 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. 79 sample users will be randomly selected from the 16 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</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 79 samples were randomly selected from 17,000 solar cooker users using "Random" function in MS Excel software in August 2012.</li> <li>● There were 2 CDM groups (each consists of 1 person) monitoring this parameter and they recorded the operating hours of the sample users in monitoring forms. Please note that the number of users each monitoring person handled is more than 5~20 users as</li> </ul>

the CDM group.

- 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.
- 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.
- 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 “HRES” and Ningxia Federal Intertrade Co., Ltd. separately.
  - 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 the users reported 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>
<b>Unit:</b>	tCO <sub>2</sub> /TJ
<b>Description:</b>	Baseline emission factor of Coal
<b>Source of data:</b>	IPCC2006, page 2.22, Table2.5
<b>Value(s) applied):</b>	94.6
<b>Purpose of data:</b>	Calculation of baseline emissions
<b>Additional comment:</b>	There was no national or regional data available. Thus, IPCC default value was used.

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

<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>388.5</td></tr> <tr><td>2</td><td>451.2</td></tr> <tr><td>3</td><td>532.1</td></tr> <tr><td>4</td><td>593.0</td></tr> <tr><td>5</td><td>673.4</td></tr> <tr><td>6</td><td>720.6</td></tr> <tr><td>7</td><td>678.5</td></tr> <tr><td>8</td><td>604.0</td></tr> <tr><td>9</td><td>594.1</td></tr> <tr><td>10</td><td>566.4</td></tr> <tr><td>11</td><td>373.4</td></tr> <tr><td>12</td><td>367.0</td></tr> </table>	Month	Value	1	388.5	2	451.2	3	532.1	4	593.0	5	673.4	6	720.6	7	678.5	8	604.0	9	594.1	10	566.4	11	373.4	12	367.0
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1	388.5																										
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8	604.0																										
9	594.1																										
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11	373.4																										
12	367.0																										
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>Shidian</td><td>1412</td></tr> <tr><td>Lijun</td><td>290</td></tr> <tr><td>Jiucui</td><td>315</td></tr> <tr><td>Shutai</td><td>1141</td></tr> <tr><td>Zhengqi</td><td>700</td></tr> <tr><td>Jiatang</td><td>627</td></tr> <tr><td>Caowa</td><td>1178</td></tr> <tr><td>Hongyang</td><td>401</td></tr> <tr><td>Guanzhuang</td><td>686</td></tr> <tr><td>Xian</td><td>1897</td></tr> <tr><td>Haicheng</td><td>1285</td></tr> <tr><td>Guanqiao</td><td>1208</td></tr> <tr><td>Liwang</td><td>2008</td></tr> <tr><td>Gancheng</td><td>576</td></tr> <tr><td>Sanhe</td><td>1095</td></tr> <tr><td>Qiyang</td><td>2177</td></tr> <tr><td><b>Total</b></td><td><b>16,996</b></td></tr> </tbody> </table> <p>During the visit to the cooker users by the monitoring team, there were 4 households with nobody at home. Therefore, the monitoring team could not enter the houses to check the solar cookers. Following conservative principle, the monitoring team did</p>	Township	Number	Shidian	1412	Lijun	290	Jiucui	315	Shutai	1141	Zhengqi	700	Jiatang	627	Caowa	1178	Hongyang	401	Guanzhuang	686	Xian	1897	Haicheng	1285	Guanqiao	1208	Liwang	2008	Gancheng	576	Sanhe	1095	Qiyang	2177	<b>Total</b>	<b>16,996</b>
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<b>Total</b>	<b>16,996</b>																																				



	not include these 4 solar cookers into the total number of solar cookers.  Therefore, the monitoring result of this monitored parameter is: $17,000 - 4 = 16,996$ .
Monitoring equipment:	Monitoring equipment is not necessary, and thus not used.
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	Not applicable
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 border="1"> <tbody> <tr><td>Sep-2012</td><td>125.98</td></tr> <tr><td>Oct-2012</td><td>139.89</td></tr> <tr><td>Nov-2012</td><td>138.06</td></tr> <tr><td>Dec-2012</td><td>121.59</td></tr> <tr><td>Jan-2013</td><td>145.08</td></tr> <tr><td>Feb-2013</td><td>129.49</td></tr> <tr><td>Mar-2013</td><td>145.33</td></tr> <tr><td>Apr-2013</td><td>150.65</td></tr> <tr><td>May-2013</td><td>125.14</td></tr> <tr><td>June-2013</td><td>103.03</td></tr> <tr><td>July-2013</td><td>79.73</td></tr> <tr><td>Aug-2013</td><td>129.73</td></tr> </tbody> </table>	Sep-2012	125.98	Oct-2012	139.89	Nov-2012	138.06	Dec-2012	121.59	Jan-2013	145.08	Feb-2013	129.49	Mar-2013	145.33	Apr-2013	150.65	May-2013	125.14	June-2013	103.03	July-2013	79.73	Aug-2013	129.73
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Apr-2013	150.65																								
May-2013	125.14																								
June-2013	103.03																								
July-2013	79.73																								
Aug-2013	129.73																								
Monitoring equipment:	Clock or watch No calibration requirement is specified in the registered PDD and																								

	the applied Methodology AMS-I.C version 14.
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):	<p>(1) For each of the 79 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;</p> <p>(2) Sum up the monthly usage time of all the 79 users to get the total monthly usage time of the 79 users.</p> <p>(3) Divide the number obtained in (2) by 79 to get the average monthly operating time of each solar cooker.</p>
QA/QC procedures:	<p>Before implementing the project, Ningxia Federal Intertrade Co., Ltd. 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 HRES 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 (with sample of 79) was used for the monitoring of the average monthly usage time of cookers (Parameter B). 79 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,  $n = 79$ , and the population = 17000, thus,  $f = 79/17000 = 0.00465$ .

Using Excel, we can calculate

$$s = 19.2628$$

$$\text{Mean value of monthly usage hours per user} = 127.8084$$

Putting all these pieces of information together gives:

$$\text{Standard error of the mean (for 1st sample set)} = \sqrt{\left(1 - \frac{79}{17000}\right) \times \frac{s^2}{79}} = 2.1655$$

(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 79 and 90% confidence, using the TINV function in Microsoft Excel, the t-value is 1.6646.

(iii) Precision

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

The precision of the monthly usage (in hours) per user, assuming 90% confidence, is therefore:  $\pm (1.6646 \times 2.1655) = \pm 3.6047$ .

The ratios of this relative to the average monthly usage per user is  $3.6047/127.8084 = 2.82\%$  and so the relative precision of the data over the monitoring period is 2.82%. 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 10% precision value required, 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 16,996 (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	594.1	656.5	125.98	5.06029	3191
2012-10	01/10/2012 – 31/10/2012	566.4	625.9	139.89	5.35696	3378
2012-11	01/11/2012 – 30/11/2012	373.4	412.6	138.06	3.48539	2198
2012-12	01/12/2012 – 31/12/2012	367.0	405.5	121.59	3.01690	1903
2013-01	01/01/2013 – 31/01/2013	388.5	429.3	145.08	3.81086	2403
2013-02	01/02/2013 – 28/02/2013	451.2	498.6	129.49	3.95007	2491
2013-03	01/03/2013 – 31/03/2013	532.1	588.0	145.33	5.22842	3297
2013-04	01/04/2013 – 30/04/2013	593.0	655.3	150.65	6.04011	3809
2013-05	01/05/2013 – 31/05/2013	673.4	744.1	125.14	5.69759	3593
2013-06	01/06/2013 – 30/06/2013	720.6	796.3	103.03	5.01976	3166

	30/06/2013					
2013-07	01/07/2013 – 31/07/2013	678.5	749.7	79.73	3.65729	2307
2013-08	01/08/2013 – 31/08/2013	604.0	667.4	129.73	5.29757	3341

Using Equation (4) in PDD, total Baseline Emissions in the monitoring period =  $\sum BE_i = 35,078 \text{ tCO}_2\text{e}$

Therefore, the total Baseline Emissions generated in the monitoring period is **35,078 tCO<sub>2</sub>e**.

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

>>

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

## E.3. Calculation of leakage

>>

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>	35,078	0	0	35,078

## 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>	33,482	35,078

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

>>

The actual monitored emission reduction (ER) is 35,078 tCO<sub>2</sub>e, which is slightly higher than the estimated 33,482 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)	10,670	24,408

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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.
Decision Class: Regulatory Document Type: Form Business Function: issuance Keywords: monitoring report, performance monitoring		