

MONITORING REPORT

**Federal Intertrade Pengyang Solar Cooker Project
(UNFCCC Reference number: 2307)**

27 March 2009 to 31 October 2009

Version: 4, November 13, 2009

**Project Participants:
Ningxia Federal Intertrade Co.
SwissRe Global Markets Limited**

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1. Introduction

The purpose of this Monitoring Report for Federal Intertrade Pengyang Solar Cooker Project is to calculate the emission reductions achieved by the project activity in the period covered by this report, and to serve as the basis for the verification of these reductions and issuance of the CERs

1.1 Monitoring period

27 March 2009 to 31 October 2009

1.2 Document details

Version: 4

Date: 13 November 2009

2. Project Description

2.1 Title

Federal Intertrade Pengyang Solar Cooker Project (UNFCCC Reference number: 2307)

2.2 Technical Details

The project installs 17,000 solar cookers for the poor rural residents in mountainous area in northwestern China. The rating power of each solar cooker is 773.5W and the total capacity of the proposed project is 13.1 MW. The proposed project will enable the rural residents to efficiently substitute solar energy for the fossil fuel (coal) used in daily cooking and water boiling, avoiding CO₂ emission that would be generated by fossil fuel consumption.

CDM Methodology: The project uses the approved small-scale CDM baseline methodology “AMS-I.C (Version 12, EB33), Thermal energy for the user with or without electricity”.

2.3 Geographic Location

The Project is located in seven townships (Luowa, Jiaocha, Wangwa, Xiaocha, Fengzhuang, Caomiao, and Mengyuan) in mountainous northern rural area of Pengyang County, Ningxia Hui Autonomous Region, China. This location is within east longitude 106°30'-106°55' and north latitude 35°57'-36°16'.

2.5 Key Dates of the Project

CDM Registration Date: 25 March 2009

CDM Crediting Period: 27 March 2009 – 26 March 2019

This Monitoring Period: 27 March 2009 – 31 October 2009

3. Monitoring Process

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

- (a) the number of solar cookers in operation, and
- (b) the average operating time of each solar cooker.

For the monitoring of (a), from 10 September to 20 October 2009, the monitoring team has visited each of the users that received the solar cooker, and checked if the solar cookers received are in operation.

The monitoring result of the solar cookers in operation is summarized below:

Table 1

Township name	Number of Solar Cookers in Operation
Wangwa	4114
Fengzhuang	880
Xiaocha	1006
Mengyuan	4618
Luowa	1485
Jiaocha	1265
Caomiao	3632
Total	17,000

For the monitoring of (b), according to PDD, 309 sample users were randomly selected from the 17000 users that received the solar cookers. The daily usage time of solar cooker in each of the 309 sample user's home were recorded by the monitoring team. The summary of the monitoring data is listed in the following table:

Table 2

Period (day/month/year)	Average Usage Time Per User in the Month (Hour)
Mar: 27/03/2009 – 31/03/2009	0
Apr: 01/04/2009 – 30/04/2009	105.88
May: 01/05/2009 – 31/05/2009	127.86
Jun: 01/06/2009 – 30/06/2009	130.93
Jul: 01/07/2009 – 31/07/2009	141.79
Aug: 01/08/2009 – 31/08/2009	136.28
Sep: 01/09/2009 – 30/09/2009	138.65
Oct: 01/10/2009 – 31/10/2009	148.65

4. Quality assurance and quality control measures

Before the start of the monitoring process, the project owner had comprehensive training for the monitoring personnel on how to properly conduct the monitoring process.

In addition, the project owner also created detailed procedures to ensure the quality of monitoring data as below:

If the monitoring form is filled incorrectly, or the data record is wrong or damaged, the following makeup process will be conducted:

1. If this is due to the working error of the monitoring personnel, further train the personnel until he or she can perform the job properly. And in the mean time, estimate the missing data from adjacent records;

2. If this is due to the inability or attitude of a particular worker, dismiss such worker and re-hire those with proper ability and attitude. And in the mean time, estimate the missing data from adjacent records;

3. If the data reported by the user significantly deviates from the normal range, the monitoring personnel should ask for the reason and record such reason on the monitoring form.

4. In each month of the entire monitoring period, one user in the 309 sample users was monitored in detail. The monitoring personnel stayed at this family for the entire day to conduct independent monitoring of the usage time of the solar cooker in parallel with the user's own monitoring. Then the result by the monitoring personnel was compared with the user's own monitoring result of that day. In all months of the monitoring period, the observed usage time by the monitoring personnel was no less than that by the user, which proved that the user's own monitoring was valid and conservative.

5. Emission reduction calculations

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

$$EF_{CO_2} = 94.6 \text{ tCO}_2\text{e/TJ}$$

$$\eta_{th} = 15\%$$

t_i : average monthly usage time of the solar cooker (as listed in the Table 2), monitored value

$n = 17000$ (as listed in Table 1), monitored value

Table 3

	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
Month	(W/m ²)	(W)	(hour)	(TJ)	(tCO ₂ e)
4	601.6	664.8	105.88	4.30768	2717
5	689.5	761.9	127.86	5.96207	3760
6	746.1	824.4	130.93	6.60637	4166
7	666.1	736.0	141.79	6.38701	4028
8	727.7	804.1	136.28	6.70664	4230
9	656.7	725.7	138.65	6.15753	3883
10	652.2	720.7	148.65	6.55649	4135

Using Equation (4) in PDD, total CER in the monitoring period = $\sum BE_i = 26919$

Therefore, the total CERs generated in the monitoring period is **26919**.