

**GOLD STANDARD MONITORING REPORT**  
**Version 3.0, 27/12/2013**

**Federal Intertrade Haiyuan Solar Cooker Project**  
**UNFCCC Ref. 3520, GS Ref. 710**

**Monitoring Period: 01/09/2012-31/08/2013 (both days included)**

**Section A. Project description**

The project installed 17,000 solar cookers for the poor rural residents in north-western China. 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 is located in 16 townships (Shidian, Lijun, Jiucui, Shutai, Zhengqi, Jiatang, Caowa, Hongyang, Guanzhuang, Xian, Haicheng, Guanqiao, Liwang, Gancheng, Sanhe, Qiyong) in Haiyuan County, Ningxia Hui Autonomous Region, China. The approximate locations of the centers of the townships in which the project is located are:

<b>Township name</b>	<b>Location of township center</b>	
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
Qiyong	36°30'10.39"N	106°09'17.69"E

The project has been registered as CDM project (UNFCCC ref. no.: 3520) on 15th Sep. 2010 and it has been kicked off since then. The project was registered as Gold Standard project on 26/01/2011. This is the 2<sup>nd</sup> sustainable development monitoring period of the project, which is from 01/09/2012 to 31/08/2013. The total emission reductions achieved in this monitoring period is 35,078 tCO<sub>2</sub>e, which is requesting issuance on UNFCCC website.

**Section B. Monitoring indicators and parameters**

According to the registered passport, the following indicators were monitored:

<b>No.</b>	<b>Indicators</b>	<b>Chosen parameter(s)</b>
1	Air quality	SOx emission reduction

2	Access to affordable and clean energy services	1. The number of solar cookers installed. 2. Solar cooker usage time
3	Human and institutional capacity	1. The number of solar cookers installed. 2. The training record
4	Livelihood of the poor	Saved expenditures and health benefits
5	Quantitative employment and income generation	Employment and income increase

### Tables in the registered passport:

No	1	
Indicator	Air quality	
Mitigation measure		
<i>Repeat for each parameter</i>		
Chosen parameter	SOx emission reduction	
Current situation of parameter	0	
Estimation of baseline situation of parameter	The parameter is related to coal saved. The baseline is that the project is not taking place. Therefore the baseline value is zero.	
Future target for parameter	200t	
Way of monitoring	How	1. Emission factor of coal: 94.6 tCO <sub>2</sub> /TJ (IPCC 2006, page 2.22, Table 2.5) 2. Net calorific value of coal: 28.2 TJ/Gg (IPCC 2006, page 1.18, Table 1.2), According to the CERs and emission factor of coal (tCO <sub>2</sub> /kg) 3. Sulphur contents of coal (S%): 0.5 ~ 3% (Revised 1996 IPCC, page 1.44, Table 1-12)  Emission factor of coal (tCO <sub>2</sub> /t) = 94.6 * 28.2 * 10 <sup>-6</sup> = 2.66772 tCO <sub>2</sub> /t Coal savings (t) = CERs (tCO <sub>2</sub> )/2.66772 (tCO <sub>2</sub> /t) SOx emission reduction (t) = Coal savings (t) * S% * M <sub>SOx</sub> /M <sub>S</sub> (M- molecular mass)
	When	Yearly
	By who	Monitoring team employed by project owner

No	2	
Indicator	Access to affordable and clean energy services	
Mitigation measure		
<i>Repeat for each parameter</i>		
Chosen parameter	<ul style="list-style-type: none"> <li>- The number of solar cookers installed.</li> <li>- Solar cooker usage time</li> </ul> <p>These two parameters represent the scale of households that have access to clean energy.</p>	
Current situation of parameter	0	
Estimation of baseline situation of parameter	The parameter is related to the number of solar cooker stoves installed and the solar cooker usage time. The baseline is that the project is not taking place. Therefore the baseline value is zero for both of the two parameters.	

Future target for parameter		Number of operating solar cookers installed: 17000 Solar cooker usage time: 4 hours
Way of monitoring	How	Record the number of operating solar cookers and usage time.
	When	Yearly
	By who	Monitoring team employed by project owner

No	3	
Indicator	Human and institutional capacity	
Mitigation measure		
<i>Repeat for each parameter</i>		
Chosen parameter	<p>-The number of solar cookers installed. This parameter represents the scale of peasants who made their own contribution to energy-saving and emission-reduction and get benefits from this project clean energy, and this is also a indicator how wide the knowledge is spread.</p> <p>- The training record</p>	
Current situation of parameter	0	
Estimation of baseline situation of parameter	The parameter is related to the number of solar cooker stoves installed by the project activity. The baseline is that the project is not taking place. Therefore the baseline parameter value is 0 for both parameters.	
Future target for parameter	The number of solar cookers installed: 17'000 The training record: 1	
Way of monitoring	How	Record the number of operating solar cookers and the cooker user training
	When	Yearly
	By who	Monitoring team employed by project owner

No	4	
Indicator	Livelihood of the poor	
Mitigation measure		
<i>Repeat for each parameter</i>		
Chosen parameter	Saved expenditures and health benefits	
Current situation of parameter	0	
Estimation of baseline situation of parameter	The baseline is that the project is not taking place. Therefore the baseline parameter value is 0.	
Future target for parameter	The project saves expenditures and brings health benefits for the poor.	
Way of monitoring	How	The monitoring methods are survey by questionnaires. Select 30 users to collect the data on (1) saved expenditures (coal costs, transportation expenses, telephone bills, etc.), and (2) health benefits (cleaner kitchen, less soot and smoke, better kitchen air quality, less diseases caused by bad indoor air quality, etc.)
	When	Yearly
	By who	Monitoring team employed by project owner

No	5	
Indicator	Quantitative employment and income generation	

Mitigation measure		
<i>Repeat for each parameter</i>		
Chosen parameter		Employment and income increase
Current situation of parameter		0
Estimation of baseline situation of parameter		The baseline is that the project is not taking place. Therefore the baseline parameter value is 0.
Future target for parameter		Employment positions and employees' income are increased.
Way of monitoring	How	The monitoring methods are survey by questionnaires. Collect employment and salary information from manufactures and project owner.
	When	Yearly
	By who	Monitoring team employed by project owner

### Section C. Monitoring process and results

No	1																
Indicator	Air quality																
Chosen parameter	SOx emission reduction																
Current situation of parameter	131.5t																
Monitoring process and results	<p>This parameter was monitored once by the monitoring team employed by the project owner during this monitoring period. The monitoring of this parameter was based on coal saved by solar cooker users during this monitoring period. According to the CERs issued, the coal savings were calculated. For detailed information about CERs monitoring and calculation, please refer to the corresponding CDM monitoring report.</p> <p>According to the registered passport, SOx emission reduction was calculated in the following steps:</p> <ol style="list-style-type: none"> <li>1. Emission factor of coal: 94.6 tCO<sub>2</sub>/TJ (IPCC 2006, page 2.22, Table 2.5)</li> <li>2. Net calorific value of coal: 28.2 TJ/Gg (IPCC 2006, page 1.18, Table 1.2), According to the CERs and emission factor of coal (tCO<sub>2</sub>/kg)</li> <li>3. Sulphur contents of coal (S%): 0.5 ~ 3% (Revised 1996 IPCC, page 1.44, Table 1-12), and the minimum value 0.5% was applied in the calculation, which is conservative.</li> <li>4. According to the monitoring report of the 2<sup>nd</sup> CDM monitoring period, CERs in this monitoring period are 35,078 tCO<sub>2</sub>e.</li> </ol> <table border="1" data-bbox="598 1758 1404 2042"> <thead> <tr> <th>Month</th> <th>Time Interval</th> <th>Monthly CERs in registered PDD (tCO<sub>2</sub>e)</th> </tr> </thead> <tbody> <tr> <td>2012-09</td> <td>01/09/2012 - 30/09/2012</td> <td>3191</td> </tr> <tr> <td>2012-10</td> <td>01/10/2012 - 31/10/2012</td> <td>3378</td> </tr> <tr> <td>2012-11</td> <td>01/11/2012 - 30/11/2012</td> <td>2198</td> </tr> <tr> <td>2012-12</td> <td>01/12/2012 - 31/12/2012</td> <td>1903</td> </tr> </tbody> </table>		Month	Time Interval	Monthly CERs in registered PDD (tCO <sub>2</sub> e)	2012-09	01/09/2012 - 30/09/2012	3191	2012-10	01/10/2012 - 31/10/2012	3378	2012-11	01/11/2012 - 30/11/2012	2198	2012-12	01/12/2012 - 31/12/2012	1903
Month	Time Interval	Monthly CERs in registered PDD (tCO <sub>2</sub> e)															
2012-09	01/09/2012 - 30/09/2012	3191															
2012-10	01/10/2012 - 31/10/2012	3378															
2012-11	01/11/2012 - 30/11/2012	2198															
2012-12	01/12/2012 - 31/12/2012	1903															

	2013-01	01/01/2013 - 31/01/2013	2403
	2013-02	01/02/2013 - 28/02/2013	2491
	2013-03	01/03/2013 - 31/03/2013	3297
	2013-04	01/04/2013 - 30/04/2013	3809
	2013-05	01/05/2013 - 31/05/2013	3593
	2013-06	01/06/2013 - 30/06/2013	3166
	2013-07	01/07/2013 - 31/07/2013	2307
	2013-08	01/08/2013 - 31/08/2013	3341
	<b>Total</b>		<b>35,078</b>
	<p>For more information, please refer to the CDM monitoring report.</p> <p>5. Coal savings (t) = CERs (tCO<sub>2</sub>)/2.66772 (tCO<sub>2</sub>/t) = 35,078/2.66772 =13149.06t</p> <p>6. SO<sub>2</sub> emission reduction (t)= Coal savings (t)*S%*M<sub>SO2</sub>/M<sub>S</sub> = 13149.06*0.5%*32/16 = 131.5t</p> <p>(M- molecular mass)</p> <p>Therefore, SO<sub>x</sub> emission reduction achieved in this monitoring period is at least 131.5t.</p>		
Score	+		
Evidence submitted to DOE	Monitoring report, monitoring records, and ER spreadsheet		

No	2
Indicator	Access to affordable and clean energy services
Chosen parameter	<ul style="list-style-type: none"> <li>- The number of solar cookers installed.</li> <li>- Solar cooker usage time</li> </ul> <p>These two parameters represent the scale of households that have access to clean energy.</p>
Current situation of parameter	Please refer to the monitoring results below
Monitoring process	<p>The monitoring of the number of solar cookers installed 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.). The monitoring of this parameter involved visiting each of the users by team A. From August 1, 2013 to August 26, 2013, 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</p>

	<p>collected, recorded and confirmed by the monitoring team and the head of HRES, and then provided the records to the project owner.</p> <p>Sampling survey method was applied to the monitoring of solar cooker usage time. 79 samples were randomly selected from 17,000 solar cooker users using “Random” function in MS Excel software in August 2012.</p> <p>There were 2 CDM groups (each consists of 1 person) monitoring this parameter and they record 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 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.</p> <p>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. separately.</p>																																				
Monitoring results	<p>According to the monitoring report of the 2<sup>nd</sup> CDM monitoring period, the monitoring results are:</p> <p>The following table shows the number of cookers in operation in each township:</p> <table border="1" data-bbox="699 1198 1220 1832"> <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>In summary, the monitoring result of this monitored parameter for the 2<sup>nd</sup> monitoring period is 16,996.</p> <p>The following table shows the average monthly usage time of solar cookers:</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>
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>																																				

		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	
		<b>Average</b>	<b>127.81</b>	
	<p>The average monthly usage time is 127.81 hours. Thus, the average daily usage time is <math>127.81/30 = 4.260</math> hours  For more monitoring data information, please refer to the 2<sup>nd</sup> monitoring period CDM monitoring report.</p>			
Score	+			
Evidence submitted to DOE	Monitoring records and sales contract			

No	3
Indicator	Human and institutional capacity
Chosen parameter	-The number of solar cookers installed. -The training record
Current situation of parameter	The number of solar cookers installed: 16,996 (Data source: the monitoring report of the 2 <sup>nd</sup> CDM monitoring period)  The training record: 3
Monitoring process and results	For the monitoring process and results of the number of solar cookers installed, refer to indicator 2 or the monitoring report of the 2 <sup>nd</sup> CDM monitoring period.  The trainings were conducted 3 times through local television broadcast to help users know more about the project and clean energy. Besides, the 30 sample users selected in this monitoring period were asked to spread the information about the project as much as they can to their neighbours, relatives, and friends.
Score	+
Evidence submitted to DOE	The training record: video CD, photos of on-site watching videos and on-site training, signing paper from 30 sample users, etc.

No	4
Indicator	Livelihood of the poor

Chosen parameter	Saved expenditures and health benefits
Current situation of parameter	Refer to monitoring results below
Monitoring process and results	<p>30 solar cooker users were randomly selected from 17000 users to complete the questionnaires. It was carried out by monitoring team employed by the project owner. From 01/08/2013-26/08/2013, the monitoring team went to the townships where the project is located and randomly visited 30 users to ask them all the questions on the questionnaires.</p> <p>According to the questionnaires, 100% of the sample users answered their expenditures on coal purchase were less since they use solar cookers. 90% of the sample users answered they had less diseases caused by bad indoor air quality since using solar cookers, which 83% of them thought was due to better indoor air quality. 100% of sample users answered the air quality in the kitchen was better since using solar cookers, which all of them thought was due to less smoke brought by solar cookers. For detailed results, please refer to the evidence submitted.</p> <p>Therefore, we conclude that using solar cookers helped users save expenditures and brought health benefits to users during this monitoring period.</p>
Score	+
Evidence submitted to DOE	Solar cooker user questionnaires; Conclusion and analysis; Sample user list.

No	5
Indicator	Quantitative employment and income generation
Chosen parameter	Employment and income increase
Current situation of parameter	Refer to monitoring results below
Monitoring process and results	<p>Four manufacturers were interviewed by the monitoring team employed by the project owner. They were asked "Due to supplying solar cookers for the project owner, do you have more available positions or jobs for employees? Does the employees' income increase?"</p> <p>All the manufacturers answered more available positions and jobs for local people were created in the factories, and the employees' income was increased because of this project during this sustainable monitoring period.</p> <p>The project owner stated that more employment opportunities were created for local people by the solar cooker project.</p> <p>About 300 people are employed due to the project, and lots of them are local people. Their monthly average income is around 2000 RMB.</p>

	For detailed results, please refer to the evidence submitted.
Score	+
Evidence submitted to DOE	Project owner's statement and manufacturer questionnaires

**Section D. Conclusion**

In summary, the monitoring is in compliance with the registered passport. During this sustainable monitoring period, the project improved air quality and the livelihood of the poor; the project provided households with affordable and clean energy services; local people gained knowledge about clean energy and their awareness of environmental protection were improved; the project created employment opportunities and increased income for local people. The total amount of CDM CERs is 35,078 tCO<sub>2</sub>e, and GS CERs is 34,376 tCO<sub>2</sub>e after the CDM Adaptation Fund deduction.