PROJECT DESIGN DOCUMENT FORM
FOR SMALL-SCALE CDM PROJECT ACTIVITIES (F-CDM-SSC-PDD)
Version 04.1

PROJECT DESIGN DOCUMENT (PDD)

Title of the project activity	Federal Intertrade Hong-Ru River Solar Cooker Project
Version number of the PDD	17
Completion date of the PDD	09/09/2013
Project participant(s)	Ningxia Federal Intertrade Co. SwissRe Global Markets Limited Post 2012 Carbon Credit Fund CV
Host Party(ies)	China
Sectoral scope(s) and selected methodology(ies)	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
Estimated amount of annual average GHG emission reductions	35,723 tCO_2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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"Federal Intertrade Pengyang Solar Cooker Project" (the proposed project) is located on the dry land of southern Ningxia in northwestern China. Implemented by Ningxia Federal Intertrade Co., the proposed project will install 17,000 solar cookers for the poor rural residents in Hong River and Ru River area with a rural population of 138,403 or 30,130 households[1]. The project will cover 56.4% of the households in the project region. 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 CO_2 emission that would be generated by fossil fuel consumption. It is estimated that 35,723 tCO_2e emission reductions will be produced annually.

The development of the proposed project is in line with the priority choice of Chinese energy sector, and it will facilitate the sustainable development of the project site as well as the host country in the following aspects:

- Providing rural residents with a clean, practical and convenient way to meet the energy demand of their daily cooking;
- Improving the indoor hygiene of rural residents;
- Improving the living condition and quality of rural residents;
- Mitigating GHG emission.

The area in southern Ningxia is one of the poorest regions in China. The area belongs to state-level poor area of China and the per capita annual income in this area is around Chinese Yuan (CNY) 1518[2] or 139 Euro[3]. The dry land of this region is experiencing severe desertification and the ecological environment there is extremely vulnerable[4].

The rural Hong River and Ru River area (together called "Hong-Ru River" area) is an ideal region for utilizing solar energy. Located at high altitude, this region has many sunny days. It is one of the most suitable regions in China for utilizing solar energy.

The proposed project will provide 17,000 solar cookers to the rural residents in this region. The project will be managed and financed by Ningxia Federal Intertrade Co.

The proposed project will significantly contribute to sustainable development of this region. It will serve as a model for future project and stimulate the interests of investors in solar energy projects. It will promote the use of clean energy, educate and train the rural population on solar energy technology, and build awareness in environmental protection among the rural population. Those who will be directly benefited from the proposed project are 17,000 low-income households or at least 68,000 villagers (average household has 4-5 people[5]). The poor rural residents will get clean and reliable energy supply for

[1] Based on the latest data from Bureau of Agriculture, Graze, and Science & Technology of Pengyang County, the governmental branch in charge of rural affairs.

[2] Almanac of Ningxia, 2005

[3] 1 Euro =10.9 CNY as of November 2007

[4] The Encyclopaedia of Ningxia, Ningxia People's Publishing House, 1998

[5] According to "The Family Planning Regulations of Ningxia Hui Autonomous Region", in the rural area of Pengyang County, one couple can have 2 children. If the couple is minority, they can have 3 children. Moreover, some couples live together with their parent(s) to take care of them, This is why on average one household has 4-5 people.

their daily cooking. The technology and experience gained from this project can be transferred to future projects. The experienced personnel trained by this project can assist other projects in the future.

A.2. Location of project activity

A.2.1. Host Party(ies)

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China

A.2.2. Region/State/Province etc.

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Ningxia Hui Autonomous Region

A.2.3. City/Town/Community etc.

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Five townships (Baiyang, Gucheng, Xinji, Chengyang, and Honghe) in southern rural area of Pengyang County

A.2.4. Physical/ Geographical location

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The areas involved in the proposed project include five townships (Baiyang, Gucheng, Xinji, Chengyang, and Honghe) in rural Hong River and Ru River area (together called "Hong-Ru River" area) in southern Pengyang County in Ningxia Hui Autonomous Region. The location is approximately within east longitude 106°17'-106°54' and north latitude 35°40'-35°53'. The total area of the project site is about 1163 km^2. The detailed location is illustrated in the 3 maps in Figure 1.

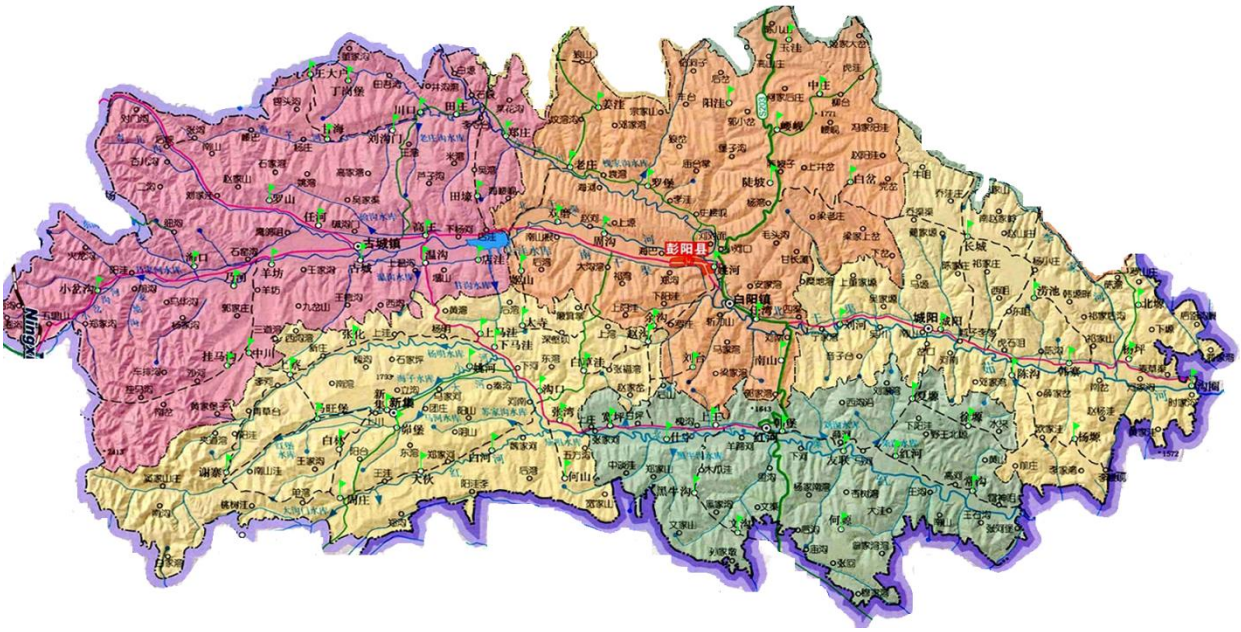
The first map indicates the relative location of Ningxia Hui Autonomous Region in China. The second map indicates the relative location of the project site inside Ningxia Hui Autonomous Region. The third map illustrates the detailed locations of the villages in which the project will be implemented.


N
Ningxia Hui Autonomous Region

Note: The white labels indicate the five townships in which the project will be implemented

Figure1: Geographic Location of Federal InterTrade Hong-Ru River Solar Cooker Project

The detailed locations of the villages involved in the project are marked by the red flags in the map below:



The locations and areas of the 5 townships involved in the project

Township name	Area (km^2)	Location of township center
BAIYANG	266.96	Latitude 35°49'59"N
		Longitude 106°39'17"E
GUCHENG	322.48	Latitude 35°51'43"N
		Longitude 106°27'35"E
XINJI	222.91	Latitude 35°46'0"N
		Longitude 106°28'2"E
CHENGYANG	186.69	Latitude 35°48'59"N
		Longitude 106°47'1"E
HONGHE	164.25	Latitude 35°46'0"N
		Longitude 106°41'59"E

A.3. Technologies and/or measures

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The proposed project is to install 17,000 parabolic type solar thermal cookers for rural users in Ningxia Hui Autonomous Region in China, replacing coal used previously for cooking and water boiling. This will lead to a reduction of coal consumption and consequently a reduction of CO_2 emission. The rating power of each solar cooker is 773.5 Watt[6]. Therefore, the total size of the project is 13.1 MW

[6] 773.5 watts is calculated based on Chinese National Standard (GB), GB No.: NY/T219-2003 as below:

R = 700 w/m^2, A = 1.7m^2, η = 65% (For the justification of the values of R, A, and η, refer to section B6.2)

Rating power = R·A·η = 773.5 w.

($773.5 \times 17{,}000 \times 10^{-6}$), below the 45 MW limit of small-scale CDM project.

The parameters of the solar cookers engaged in the proposed project are listed below:

Item	Value	Justifications
Focus (mm)	600 ~ 750	National Standard of P.R. China (GB), GB No.: NY/T219-2003
Aperture (Light Collecting) Area (m^2)	1.7	National Standard of P.R. China (GB), GB No.: NY/T219-2003
Rating Power (W)	773.5	National Standard of P.R. China (GB), GB No.: NY/T219-2003, calculation based on the footnote below
Thermal Efficiency (%)	At least 65%	National Standard of P.R. China (GB), GB No.: NY/T219-2003
Temperature in the focus area (℃) and the size of focus area (cm^2)	The area with temperature beyond 400 ℃ is between $50cm^2$ and $200cm^2$	National Standard of P.R. China (GB), GB No.: NY/T219-2003
Maximum operational height (m)	1.25	National Standard of P.R. China (GB), GB No.: NY/T219-2003
Maximum operational distance (m)	0.8	National Standard of P.R. China (GB), GB No.: NY/T219-2003
Weight (kg)	60	Required by the project owner

The above choice of solar cookers parameters is based on National Standard of P.R. China (GB) for solar cookers (GB No.: NY/T219-2003).

All the equipments engaged in the proposed project are domestic, and no technology transfer is involved.

A.4. Parties and project participants

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. (Project Owner)	No
Netherlands	SwissRe Global Markets Limited (CER Purchaser)	No
Switzerland	Post 2012 Carbon Credit Fund CV	No

Detailed contact information on the Participants and other Parties are provided in Appendix 1.

A.5. Public funding of project activity

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There is no official funding involved in the proposed project.

A.6. Debundling for project activity

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The project will not install any solar cooker within the 1-km belt zone to the north of the southern border of the project region shown in Figure 1. And there is not a registered small-scale CDM project activity or an application to register another small-scale CDM project activity whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point. Therefore, the proposed project activity is not a debundled component of a large scale project activity.

SECTION B. Application of selected approved baseline and monitoring methodology

B.1. Reference of methodology

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The methodology applied for this project is the approved 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

B.2. Project activity eligibility

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The methodology AMS-I.C is applicable to this small scale CDM project activity because：

- The proposed project supplies individual households or users with solar cookers that allow the user

to use solar energy to displace coal used for cooking and water-boiling.

- The installation capacity of the proposed project is 13.1 MW, which is within the limit of 45 MW stipulated for the chosen (small-scale) methodology.

B.3. Project boundary

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The physical and geographic boundary of the proposed project includes five townships (Xinji, Gucheng, Honghe, Chengyang, and Baiyang) in rural area of southern Pengyang County in Ningxia Hui Autonomous Region, China.

Description of emission sources and GHG categories of the proposed project

	Source of Emission	Gas	Included/Excluded	Instruction
Baseline	Coal-fired cooking and water-boiling	CO_2	Included	Main emission source
		CH_4	Excluded	Excluded for simplicity; being conservative
		N_2O	Excluded	Excluded for simplicity; being conservative
Project Activities	Project Activity Emission	CH_4	Excluded	There is no CH_4 emission
		CO_2	Excluded	There is no CO_2 emission
		N_2O	Excluded	There is no N_2O emission

B.4. Establishment and description of baseline scenario

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According to small-scale CDM baseline methodology AMS-I.C (Version 12, EB33), Thermal energy for the user with or without electricity, "For renewable energy technologies that displace technologies using fossil fuels, the simplified baseline is the fuel consumption of the technologies that would have been used in the absence of the project activity times an emission coefficient for the fossil fuel displaced."

In the absence of the proposed project, the rural residents would continue to use the coal-fired stoves for their daily cooking and water-boiling as usual. According to a recent official document from local government[7] and China Energy Statistical Yearbook (2006), all the rural residents in the project site use coal for their daily cooking and water-boiling. The document from local government also confirms that in the project site 1) cutting wood and vegetation is illegal so that the rural residents there do not use firewood for cooking and water-boiling, 2) electricity is only used for lighting, not for cooking and water-boiling, 3) the availability of straw is limited and all the straw there are used for feeding animals, and 4) the dominant activity is agriculture and all the animal wastes are used for fertilizers in the fields. Therefore, the baseline scenario of the proposed project is that the 17,000 households continue to cook and boil water with coal-fired stoves. The simplified baseline is the coal consumption of the existing stoves times the emission coefficient of coal.

[7] *Explanation on the population and rural fuel usage of Pengyang County*, April 2008, by Bureau of Agriculture, Graze and Science & Technology of Pengyang County, the governmental branch in charge of rural affairs in Pengyang County

B.5. Demonstration of additionality

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According to Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities (version 06), compared with the baseline scenario, the proposed project faces obvious barrier.

Investment Barrier

If the proposed project were carried out without CDM, the total upfront project investment by the project owner would be about Chinese Yuan (CNY) 5.68 million and after such investment the project would not generate any revenue to the project owner throughout the entire project life. The projected financial statement of the proposed project without CDM is as below (Note: positive and negative monetary values mean cash flowing in and out, respectively):

Parameters (without CDM):

Project Lifetime[8]:	10	Years
Equipment[9]:	-510	$\times 10^4$ CNY
Project Development Cost[10]	-16	$\times 10^4$ CNY
Implementation Cost[11]	-51	$\times 10^4$ CNY
Contribution from the user[12]	51	$\times 10^4$ CNY
Subtotal Investment	-526	$\times 10^4$ CNY
Contingency (8% of investment)	-42	$\times 10^4$ CNY
Total Upfront Investment:	-568	$\times 10^4$ CNY
Annual maintenance cost[13]:	-36	$\times 10^4$ CNY
Annual Inflation Rate[14]:	6%	

[8] The confirmation letters from solar cooker vendors confirmed that the cookers can be used for at least 10 years.

[9] According to the confirmation letters from solar cooker vendors, the upfront equipment cost includes transportation, installation and maintenance for the first 3 years.

[10] Includes feasibility study, coordinating with government and equipment vendors, develop project documents, managing cooker manufacturing and distribution, and user training, etc.

[11] The compensation paid to external service on the implementation of the project.

[12] The contribution from the solar cooker user (to cover the implementation cost), 30 CNY for each cooker.

[13] According to the confirmation letters from solar cooker vendors, for the first 3 years the annual maintenance cost is 20 CNY per cooker. Then we assume that starting from the 4th year, the maintenance cost is adjusted by annual inflation rate of 6%. Therefore, for the 4th year, the annual maintenance cost = 17000*20*(1+6%) = 36×10^4 CNY. From the 5th year to the 10th year, each year the maintenance cost is increased by 6% based on the maintenance cost of the previous year.

Income Tax Rate[15]:	25%	
Net Present Value of Project[16]:	-812	$\times 10^4$ CNY

As shown above, the Net Present Value (NPV) of the proposed project without CDM is -8.12 million CNY. In fact, because without CDM the project does not generate any revenue, no matter how the variables (investment cost, maintenance cost, discount rate, etc.) vary, the NPV will always be negative. It is obvious that without CDM revenue the proposed project is not financially attractive at all. Therefore, the project faces obvious investment barrier.

In contrast, if the project is implemented as a CDM project, the CER revenue will make the project become financially attractive as shown below (Note: the meanings of the terms in this section are the same as those in "without CDM" section unless explained otherwise):

Parameters (with CDM):

Project Lifetime:	10	Years
CDM Crediting period:	10	Years
Equipment:	-510	$\times 10^4$ CNY
CDM Project Development Cost[17]:	-159	$\times 10^4$ CNY
Implementation Cost	-51	$\times 10^4$ CNY
Contribution from the user	51	$\times 10^4$ CNY
Subtotal Investment	-669	$\times 10^4$ CNY
Contingency (8% of investment)	-54	$\times 10^4$ CNY
Total Upfront Investment:	-723	$\times 10^4$ CNY
Annual maintenance cost:	-36	$\times 10^4$ CNY
Annual Inflation Rate[18]:	6%	

[14] The 6% annual inflation rate reflects the recent inflation rate of China. This estimation is based on the recent inflation rate in China (8.7% in February 2008 according to New York Times). Since the maintenance cost of the first 3 years are already included in the upfront equipment cost, the maintenance costs are inflation-adjusted annually during 4th to 10th year of the project;

[15] The standard corporate income tax rate in China is 25%.

[16] The discount rate used to calculate the NPV is 5.85%. This is based on the recent Chinese Yuan (CNY) deposit rate (December 2007) for 60 month is 5.85%. The source is the website of Bank of China: http://www.boc.cn/en/common/rmbdeposit.jsp?category=1099376639100

[17] Includes CDM consulting/commission cost, PDD development, DOE validation, and EB registration fees.

[18] The 6% annual inflation rate reflects the recent inflation rate of China. This estimation is based on the recent inflation rate in China (8.7% in February 2008 according to New York Times). Since the maintenance cost of the

Income Tax Rate:	25%	
Expected CER Price:	8.65	EUR
Project IRR:	16.0%	

The project will be implemented in the dry land experiencing severe desertification[19]. As a result, in the project region there is very limited amount of vegetation available. Coal is abundant in the region[20]. As explained in section B.4, the common and dominant practice in the project region is using coal for cooking and water-boiling. Such common practice has been confirmed[21] by the Bureau of Agriculture, Graze and Science & Technology of Pengyang County (BAGSTPC), the governmental branch in charge of rural affairs. According to the confirmation from BAGSTPC, all the rural residents within the project boundary use coal for their daily cooking and water-boiling purpose. Hence, the proposed project is obviously additional compared to such common practice.

If the project can be successfully registered as a CDM project, then the CDM revenue will provide the only financial incentive to the project developers, transforming an otherwise financially unattractive project into an attractive one. As a matter of fact, the proposed project will not be started until it is successfully registered with EB. Therefore, CDM revenue is absolutely crucial to the successful implementation of this project. The successful registration of the project will serve as a model for future project and stimulate the interests of investors in similar projects.

Moreover, the successful registration of the proposed project will promote the use of clean energy in rural areas, educate and train the rural population on solar energy technology, and build awareness in environmental protection among the rural population.

B.6. Emission reductions

B.6.1. Explanation of methodological choices

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The emission reduction ER_y during a given year *y* is calculated as follow:

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first 3 years are already included in the upfront equipment cost, the maintenance costs are inflation-adjusted annually during 4th to 10th year of the project. The monitoring costs and DOE verification cost are inflation-adjusted annually during the entire project life of 10 years;

[19] The Encyclopaedia of Ningxia, Ningxia People's Publishing House, 1998

[20] According to the website of National Development and Reforming Commission (NDRC) of China, (http://www.sdpc.gov.cn/dffgwdt/t20060607_72051.htm), Ningxia has plenty of coal reserves. The proven coal reserve is 31.56 billion tonnes. The per capita coal reserve ranks the first in China.

[21] *Explanation on the population and rural fuel usage of Pengyang County*, April 2008, by Bureau of Agriculture, Graze and Science & Technology of Pengyang County, the governmental branch in charge of rural affairs in Pengyang County.

$$ER_y = BE_y - PE_y - L_y \quad (1)$$

Where:

ER_y the emission reductions produced by the proposed project.

BE_y the baseline emissions from heat displaced by the project activity during the year y in tCO_2e.

PE_y the emissions produced by the proposed project.

L_y the leakage produced by the proposed project.

Step 1: Estimate the Emission of All Kinds of Greenhouse Gas in the Project activity (PE_y)

The implementation of the proposed project will not produce any GHG emission, i.e. PE_y=0.

Step 2: Estimate the Leakage

The solar cookers to be used in the proposed project will be directly purchased from the manufacturers. The project participants will not transfer the solar cookers out of the proposed project activity during the entire project life. The project implementation and monitoring plan will ensure that 1) only the households that currently do not have solar cooker will receive the new solar cookers, and 2) if the recipient no longer wants to use the cooker, he/she must immediately return the cooker back to the project owner, and the project owner will immediately give this returned cooker to someone else who does not have a cooker. Therefore, according to AMS-I.C., the energy generating equipment (solar cookers) is neither transferred from another activity, nor is it transferred to another activity. As a result, it is not necessary to consider the leakage in the proposed project, i.e. $L_y = 0$.

Step 3: Estimate the Baseline Emission (BE_y)

According to AMS-I.C., the baseline emission of the proposed project (BE_y) could be calculated by the following formula:

$$BE_y = HG_y * EF\ CO_2 / \eta_{th} \quad (2)$$

Where:

BE_y the baseline emissions from heat (generated by burning coal) displaced by the project activity during year y in tCO_2e.

HG_y the net quantity of heat supplied by the project activity during the year y in TJ.

$EF\ CO_2$ the CO_2 emission factor of coal (tCO_2e/ TJ).

η_{th} the efficiency of the coal-fired stove that would have been used in the absence of project activity

The annual net quantity of heat supplied by the project, HG_y, is the sum of 12 monthly net heat supplied, and consequently the annual baseline emission of the project, BE_y, is the sum of 12 monthly baseline emission.

$$HG_y = \sum HG_i \quad (i = 1,2, \ldots, 12) \tag{3}$$

$$BE_y = \sum BE_i \quad (i = 1,2, \ldots, 12) \tag{4}$$

$$BE_i = HG_i * EF\ CO_2 / \eta_{th} \quad (i = 1,2, \ldots, 12) \tag{5}$$

where HG_i is the net heat supplied in month i in TJ

BE_i is the baseline emission in month i in tCO_2e

According to basic physics principle,

Heat = Power*Time

The monthly net heat supplied by the cooker is the product of its actual power in that month and its usage time in that month, i.e.:

$$HG_i = n * [P_i * t_i * (3.6 \times 10^{-9})] \tag{6}$$

Where n is the total number of solar cookers installed by the proposed project. The value adopted is 17,000;

P_i is the actual average power of the solar cooker in month i in W

t_i is the usage time of each solar cooker in month i in hours. The value adopted is 120 (4 hours per day for 30 days, see section B7.1 parameter #2 for details)

3.6×10^{-9} is the conversion factor between "W*h" and "TJ", i.e., 1 W*h = 3.6×10^{-9} TJ (Note: 1h = 3600s, 1 W*h = 3600 W*s = 3600 J = 3.6×10^{-9} TJ)

Combine (5) and (6), we get

$$BE_i = n^* [P_i * t_i * (3.6 \times 10^{-9})] * EF\ CO_2 / \eta_{th} \quad (i = 1,2, \ldots, 12) \qquad (7)$$

The actual power of the solar cooker P_i is proportional to the solar irradiance rate under which the cooker is operated. The rating power 773.5W is calculated under the "standard solar irradiance rate" of 700 W/m^2 according to Chinese national standard. Therefore, the actual power of the cooker is its rating power times the ratio of actual solar irradiance rate and 700 W/m^2:

$$P_i = 773.5^* (R_i/700) \qquad (8)$$

Where R_i is the actual solar irradiance rate in month i in W/ m^2. The values adopted are in section B6.2 parameter #3;

Substitute (8) in (7), then substitute (7) in (4), we have

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

Where:

R_i R_i is the actual solar irradiance rate in month i in W/ m^2. The values adopted are in section B6.2 parameter #3;

t_i t_i is the usage time of the solar cooker in month i in hours. The value adopted is 120 (4 hours per day for 30 days, refer to section B7.1 parameter #2 for details)

n The total number of solar cookers installed by the proposed project. The value adopted is 17,000.

$EF\ CO_2$ 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.

η_{th} the efficiency of the coal-fired stove that would have been used in the absence of project activity. The value adopted is 15% (refer to section B6.2 parameter #6 for details).

B.6.2. Data and parameters fixed ex ante

Data / Parameter	1.EF CO_2
Unit	tCO_2/TJ
Description	Baseline emission factor
Source of data	IPCC2006, page 2.22, Table2.5
Value(s) applied	94.6
Choice of data or Measurement methods and procedures	Adopt IPCC default value
Purpose of data	Calculation of baseline emissions
Additional comment	

Data / Parameter	2.R
Unit	W/m^2
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
Choice of data or Measurement methods and procedures	According to National Standard of P.R. China (GB), GB No.: NY/T219-2003, for calculating the rating power of solar cookers, 700 W/m^2 should be used for as the standard value of solar irradiance rate.
Purpose of data	Calculation of baseline emissions
Additional comment	

Data / Parameter	3.R_i
Unit	W/m^2
Description	Monthly solar irradiance rate in project region
Source of data	Ningxia Meteorological Archives
Value(s) applied	Month Value (Also refer to Appendix 4 for details) 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
Choice of data or Measurement methods and procedures	Ningxia Meteorological Archives is the official source for Ningxia meteorological data.
Purpose of data	Calculation of baseline emissions

Additional comment	

Data / Parameter	4.A
Unit	m^2
Description	Solar cooker's light-collecting area
Source of data	Project owner
Value(s) applied	1.7
Choice of data or Measurement methods and procedures	According to the technical specification of the solar cooker
Purpose of data	Calculation of baseline emissions
Additional comment	

Data / Parameter	5. η
Unit	
Description	Solar cooker's thermal efficiency
Source of data	Solar cooker testing report from Ningxia Department of Agriculture and Graze, Rural Energy Section
Value(s) applied	65%
Choice of data or Measurement methods and procedures	This is the requirement of National Standard of P.R. China (GB), GB No.: NY/T219-2003. The project owner will also require in the technical specification that the solar cookers to be manufactured for this project have an efficiency of 65%.
Purpose of data	Calculation of baseline emissions
Additional comment	

Data / Parameter	6. η_{th}
Unit	
Description	Thermal efficiency for the traditional coal furnace
Source of data	1)"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 http://www.undp.org/energy/publications/2002/2002b.htm 2) 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.
Value(s) applied	15%
Choice of data or Measurement methods and procedures	For reference #1: Paragraph 2 in page 8: The most common method of cooking throughout rural areas of the developing world is the open hearth or three-stone fire, which typically transfers only 5-15 per cent of the fuel's energy into the cooking pot. Following conservative principle, the value of 15% shall be taken because it will lead to the least emission reduction. For reference #2:

	According to paragraph 13 of methodology AMS-I.C.(version 12), the efficiency of the baseline units shall be determined by adopting one of the following criteria: (a) Highest measured efficiency of a unit with similar specifications, (b) Highest of the efficiency values provided by two or more manufacturers for units with similar specifications, (c) Maximum efficiency of 100%. As the provincial authority in charge of collecting and monitoring energy usage data in Ningxia, Energy Saving Monitoring Technical Service Center of Ningxia Hui Autonomous Region ("ESMTS of Ningxia") conducted a measurement of efficiency for rural coal stove in Ningxia from May 2007 to October 2007. During this period, ESMTS of Ningxia measured the thermal efficiencies of 100 coal stoves at rural residents' home across 7 counties (including Pengyang county where our project is located) in Ningxia. The 7 counties are located closely together with very similar climate condition, living condition, and living habits. Therefore, the coal stoves measured by ESMTS of Ningxia are very similar to those involved in the proposed Project. The method of the measurement was Chinese National Standard "*Method for testing household coal and stoves*" (GB 6412-86). The measurement results are: the highest efficiency is 15.0%, the lowest efficiency is 9.6%, and the average is 12.3%. The highest measured efficiency value (15%) was confirmed by ESMTS of Ningxia in its official letter titled"*Explanation on rural stoves in Ningxia*"(dated 2 April 2008) and later elaborated in another official letter titled "*The explanation on the thermal efficiency measurement data of domestically-used rural coal-stove in southern mountainous region of Ningxia*"（Dated 27 February 2009). With the above measurement data, according to option (a) of paragraph 13 of methodology AMS-I.C.(version 12), 15% shall be chosen as the baseline thermal efficiency for the coal stoves.
Purpose of data	Calculation of baseline emissions
Additional comment	

B.6.3. Ex-ante calculation of emission reductions

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According to B.6.1, the emission reduction (ER_y) of the project activity in a given year *y* is the difference between the baseline emission and the sum of project emission (PE_y) and emission from leakage (L_y). The calculation formula is as following:

$$ER_y = BE_y - PE_y - L_y$$

Since both of the project emission and leakage within the boundary are zero, the emission reduction of the proposed project is equal to the baseline emission, i.e.:

$$ER_y = BE_y$$

where BE_y is the CO_2 emission from the continued usage of coal-fired stoves in the absence of the proposed activity and its value is equal to the emission reduction.

According to the formulas (3), (5), (6), and (8) in B6.1, the calculation result is tabulated as below:

Month	**Solar irradiance rate**	**Actual Power of Solar Cooker**	**Monthly Usage Time**	**Net Heat Supplied Monthly**	**CER Generated Monthly**
	R_i	P_i = 773.5*(R_i/700) Equation (8)	t_i	HG_i = n*[P_i*t_i* (3.6 ×10^{-9})] Equation (6)	BE_i = HG_i*$EF\ CO_2$ /η_{th} Equation (5)
	(W/m^2)	(W)	(hour)	(TJ)	(tCO_2e)
1	397.6	439.4	120	3.22682	2035
2	519.6	574.1	120	4.21640	2659
3	521.8	576.6	120	4.23419	2670
4	601.6	664.8	120	4.88201	3079
5	689.5	761.9	120	5.59553	3529
6	746.1	824.4	120	6.05460	3818
7	666.1	736.1	120	5.40580	3409
8	727.7	804.1	120	5.90546	3724
9	656.7	725.7	120	5.32942	3361
10	652.2	720.7	120	5.29305	3338
11	402.6	444.9	120	3.26711	2060
12	398.5	440.3	120	3.23348	2039

Using Equation (4), total annual CER = BE_y = $\sum BE_i$ = **35,723**

Therefore, the annual emission reduction (ER_y) of the proposed project is estimated to be 35,723 tCO_2e, i.e.,

$ER_y = BE_y$

= 2035+2659+2670+3079+3529+3818+3409+3724+3361+3338+2060+2039 = **35,723** tCO_2e

B.6.4. Summary of ex-ante estimates of emission reductions

The net emission reduction induced by the proposed project activity in the 10-year crediting period (1 February 2009 – 31 January 2019) is estimated to be 357,230 tCO_2e.

Year	Baseline emissions (tCO_2 e)	Project emissions (tCO_2 e)	Leakage (tCO_2 e)	Emission reductions (tCO_2 e)
1 Feb. 2009 – 31 Jan. 2010	35,723	0	0	35,723
1 Feb. 2010 – 31 Jan. 2011	35,723	0	0	35,723
1 Feb. 2011 – 31 Jan. 2012	35,723	0	0	35,723
1 Feb. 2012 – 31 Jan. 2013	35,723	0	0	35,723
1 Feb. 2013 – 31 Jan. 2014	35,723	0	0	35,723
1 Feb. 2014 – 31 Jan. 2015	35,723	0	0	35,723
1 Feb. 2015 – 31 Jan. 2016	35,723	0	0	35,723
1 Feb. 2016 – 31 Jan. 2017	35,723	0	0	35,723
1 Feb. 2017 – 31 Jan. 2018	35,723	0	0	35,723
1 Feb. 2018 – 31 Jan. 2019	35,723	0	0	35,723
Total	**357,230**	0	0	**357,230**
Total number of crediting years	10			
Annual average over the crediting period	**35,723**	0	0	**35,723**

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Data / Parameter	1. n
Unit	
Description	Number of solar cookers engaged in the proposed project
Source of data	Sales contract and invoice of the solar cookers. Annual monitoring result
Value(s) applied	17,000
Measurement methods and procedures	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. The details of monitoring of this parameter is in section B7.2
Monitoring frequency	At least Once a year
QA/QC procedures	Refer to B.7.2
Purpose of data	Calculation of baseline emissions
Additional comment	Record will be kept in electronic form and paper form.

Data / Parameter	2. t_i
Unit	Hour
Description	The monthly operating time of each solar cooker

Source of data	To be determined by the result of the sampling survey
Value(s) applied	120[22]
Measurement methods and procedures	The monitoring will be conducted daily on the selected sample users determined at the beginning of each year. The data will be summarized, analyzed, and archived monthly by the CDM Department of Ningxia Federal Intertrade Co.
Monitoring frequency	Daily
QA/QC procedures	Refer to B.7.2
Purpose of data	Calculation of baseline emissions
Additional comment	Record will be kept in electronic form and paper form.

B.7.2. Sampling plan

>>

For number of solar cookers engaged in the proposed project (n) and the monthly operating time of each solar cooker (t_i), sampling survey will be utilized in the monitoring.

According to "Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities" EB69, Annex5, the sampling plan is the following:

Sampling design

	n	t_i
Objectives and reliability requirements	Determining the total number of solar cookers operating during the crediting period, and with a 90/10 confidence/precision.	Determining the average monthly operating time of solar cookers during the crediting period, and with a 90/10 confidence/precision.
Target population and sampling frame	The 17,000 solar cookers to be installed in the proposed project.	
Sampling method	Simple random sampling will be used[23]. The sampling tool is Microsoft Excel, a reliable and widely accepted tool for random sampling.	

Sample size:

[22] According to the *Explanation on Solar Cooker Usage Time and Cooking Habits in Pengyang County* (by Bureau of Agriculture, Graze and Science & Technology of Pengyang County, April 2008), to meet the daily cooking and water-boiling need of a rural family using solar cooker, the daily usage time of the solar cooker is at least 4 hours. Therefore the monthly usage is: 4*30 = 120 hours.

[23] The project will be implemented in the five townships concentrating in northern Pengyang County. The situations of these five townships are very similar to each other. The villagers in Pengyang County are homogeneous. Therefore, simple random sampling is suited to be selected as the sampling method for both n and t_i.

For *n* (Number of solar cookers engaged in the proposed project), according to "Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities" EB69, Annex5 para. 48-57, sample size calculation is the following:

$$m \geq \frac{1.645^2 N \times p(1-p)}{(N-1) \times 0.1^2 \times p^2 + 1.645^2 p(1-p)}$$

Where:

m Sample size

N Total number of solar cookers to be installed in the proposed project (17,000)

p Our expected proportion(0.8)[24]

1.645 Represents the 90% confidence required

0.1 Represents the 10% relative precision (0.1×0.5 = 0.05 = 5% points either side of *p*)

Substituting in our values gives:

$$m \geq \frac{1.645^2 \times 17{,}000 \times 0.8 \times 0.2}{(17{,}000-1) \times 0.1^2 \times 0.8^2 + 1.645^2 \times 0.8 \times 0.2} = 68$$

The expected response rate from the sample users is 95%[25]. Then scale up this number we get the sample size 68/95% = 72.

For t_i (the monthly operating time of each solar cooker), according to "Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities" EB69, Annex5 para. 82-85, sample size calculation is the following:

$$m \geq \frac{1.645^2 NV}{(N-1) \times 0.1^2 + 1.645^2 V}$$

Where:

$$V = \left(\frac{SD}{mean}\right)^2$$

m Sample size

[24] According to previous monitoring result of this project, the proportion of operating solar cookers was far larger than 0.8, therefore, 0.8 is conservative to be applied in the calculation. In order to further ensure the conservativeness of the sample size, the sample size will be determined based on the smaller value of "p=0.8" and "the latest historical results of p of this project", i.e., if the latest historical p value is larger than 0.8, 0.8 will still be chosen to determine sample size. If not, then the latest historical p value will be selected for determining the sample size. Besides, the reliability will be checked during each monitoring period. If monitoring results fail to achieve the reliability required, additional sample will be taken based on "Guidelines For Sampling And Surveys For CDM Project Activities and Programme Of Activities" to improve the precision of the study data.

[25] According to previous monitoring result of this project, the response rate from users was far more than 95%, therefore, 95% is conservative to be applied in the calculation.

N Total number of solar cookers to be installed in the proposed project (17,000)

mean Our expected mean (120 hours)[26]

SD Our expected standard deviation (63.45 hours)[27]

1.645 Represents the 90% confidence required

0.1 Represents the 10% relative precision

Substituting in our values gives:

$$V = \left(\frac{63.45}{120}\right)^2 = 0.28$$

$$m \geq \frac{1.645^2 \times 17{,}000 \times 0.28}{(17{,}000 - 1) \times 0.1^2 + 1.645^2 \times 0.28} = 76$$

The expected response rate from the sample users is 95%[28]. Then scale up this number we get the sample size 76/95% = 80.

Hence, 72 sample users (for *n*) and 80 sample users (for t_i) will be randomly selected from the sampling frame at the beginning of each year during the crediting period.

Data to be collected

According to paragraph 17 of AMS-I.C., if the emissions reduction per system is less than 5 tonnes of CO_2 a year:

(a) Recording annually the number of systems operating (evidence of continuing operation, such as on-going rental/lease payments could be a substitute); and

(b) 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 (e.g. tonnes of grain dried) and output per hour if an accurate value of output per hour is available.

In the proposed activity, the emission reduction from each solar cooker is 35723/17000 = 2.1 < 5 tCO_2e. Therefore, what need to be monitored are the number of solar cookers in operation and the average operating time of each solar cooker.

[26] The mean value is provided by an official document from the local government (refer to footnote 22)

[27] According to EB69, Annex 5, para. 42, the standard deviation can be estimated as the range (maximum – minimum) divided by 4. The wider the range is, the bigger the standard deviation is, and thus the bigger and more conservative the sample size is. It is obvious that the widest possible range of the monthly usage hours is the monthly sunlight time provided in Appendix 4. To make the most conservative estimate of sample size, the longest monthly sunlight time (253.8 hours in May) was taken. Therefore, the largest possible standard deviation = (253.8-0)/4 = 63.45 hours.

[28] According to previous monitoring result of this project, the response rate from users was far than 95%, therefore, 95% is conservative to be applied in the calculation.

1. Field measurements and analysis

	n	t_i
Field measurements	Field measurement objective: Total number of solar cookers operating out of the sample users. Method of measurement: Visual inspections[29] Timing and frequency of measurement: Annually monitored during the last quarter[30] of each monitoring period, but at least once per year, i.e., the interval of the measurements is no more than one year.	Field measurement objective: Usage time of the cookers for each of the sample users. Method of measurement: Respondent self-reports, and operational logs[31] Frequency of measurement: Daily monitored during each monitoring period.
Analysis	The percentage of operating solar cookers out of the sample users will be calculated, and then the total number of operating cookers in the proposed project will be calculated by using the abovementioned percentage multiplying the total number of cookers (17,000).	The daily usage time of the cookers of all the sample users will be summed up for each month in the monitoring period ("the total monthly usage time"), then the average monthly usage time of the cookers will be calculated by dividing the total monthly usage time by the sample size.

[29] According to paragraph 32 of General Guidelines for Sampling and Surveys for Small-Scale CDM Project Activities (Version 1), the practitioners of the sampling are expected to select the most effective information gathering method. The implementer should decide on what would be the most reliable and cost effective method for collecting the data, depending on the variables of interest. Alternative methods include visual inspections, physical measurements, respondent self-reports, and operational logs. This project will be implemented in remote rural areas. For this project, the most reliable and cost effective method to collect the data will be visual inspections, respondent self-reports, and operational logs.

[30] The time period selected (last 3 months of each monitoring period) is conservative to be applied, and the parameter is not subject to seasonal fluctuations.

[31] Please refer to footnote 22.

2. Monitoring Method

For the number of systems operating, a CDM group will be set up to track the number of operating solar cookers out of sample size. The monitoring of total number of operating solar cookers will be conducted annually during the last quarter of each monitoring period. The following table will be used for monitoring and recording this parameter.

Total number of solar cookers operating

Serial No.	Sample User Name	If this solar cooker exists and is operational, check "√"	Date of Checking	Checked by	Note
Summary	Number of operational solar cookers			Summarized by:	
	Number of non-operational solar cookers				

For the annual hours of operation of the solar cookers, sampling survey will be utilized in the monitoring.

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. At least once a month the monitoring form will be collected from each CDM group and the quality of data will be checked. Then statistical analysis will be done and average value will be calculated based on these data. 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. Then the data obtained can be used to check against other monitoring reports. In addition to above, the project owner will check the work of the CDM groups regularly to ensure the quality of monitoring. The format of the monitoring form to record the daily operating time of solar cooker is as below:

The Operating Time of Solar Cookers

Year and Month

Serial No.	Sample user name	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Total

The monitoring process will start as soon as the project becomes operational and will continue throughout the entire crediting period of the proposed project.

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. Then during the monitoring of total number of operating solar cookers, the monitoring team will also check if the serial number of each solar cooker matches its user according to the abovementioned list. This way, it can be ensured that no solar cooker will be transferred without being tracked.

3. Data collection

Every month the CDM Department of Ningxia Federal Intertrade Co., the project owner, will summarize the data on monitoring forms collected from the CDM groups, check the data to make sure that the data are legible, uniform in format, complete, and effective, and then calculate the total monthly operating time for each solar cooker sampled. At the end of each year the annual total operating time will be calculated.

All the monitoring data will be converted to electric form. All the original records will be kept for at least 2 years after they are created. Electronic document should be backed up on CD and hard copies should be printed out for further backup. In addition, sales invoices of the solar cookers should be saved for the validation and verification of DOE.

The data checker will check the raw data against the actual meteorological information obtained from local meteorological bureau. If the recorded raw data on the monitoring form are reasonable and basically consistent with the actual meteorological information, the raw data will be archived.

After the data are recorded and collected, RES will validate and confirm the data, making sure the data used for DOE verification are accurate.

4. Maintenance

The project owner will set up repair spot at each county where the solar cookers are distributed. If the user's solar cooker has a problem, within three days maintenance workers will repair the cooker at the user's home for free. In addition, the project owner will examine and repair each solar cooker every year.

5. QA/QC Procedures

Before implementing the project, Ningxia Federal Intertrade Co. will train the personnel of CDM groups on how to properly conduct the monitoring process

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 CDM group 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 in CDM group, 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 a CDM group 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 RES create new CDM group according to the requirement of Ningxia Federal Intertrade Co.

4. 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.

5. The general principle is that zero value will be used for the missing or damaged data. This is the most conservative approach. Duiring the monitoring process, the monitoring personnel will be required to strictly abide by the above principle.

If the monitoring results are satisfactory in terms of correct reporting, data completeness and correct analysis, the data will be accepted for the monitoring report.

Implementation

The sampling process will start as soon as the target population is determined. Before the beginning of each monitoring period, sample users for n (72) and t_i (80) will be drawn.
Before the beginning of the next monitoring period, a new round of random sampling will be conducted among the 17,000 users to generate two new sets of sample users which will be monitored during the forthcoming monitoring period.
The monitoring data will be collected throughout the entire crediting period of the proposed project. As to who will conduct the data collection and analyses, please refer to Section B.7.3.

B.7.3. Other elements of monitoring plan

>>

The objective of the monitoring plan is to ensure the successful monitoring of the emission reduction of the proposed project during the crediting period.

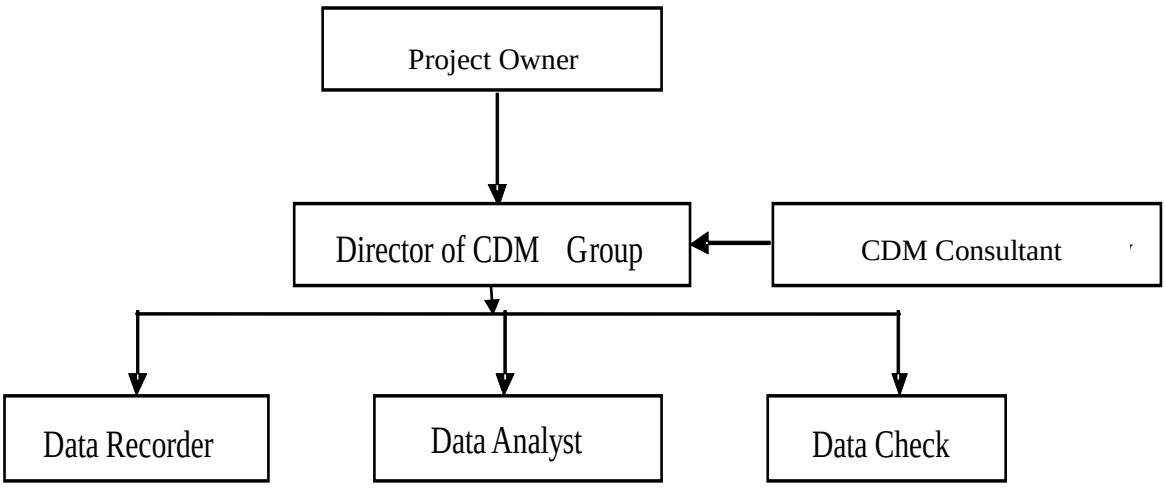
The project implementation is scheduled to take place in 2008. The implementation will start with the tender bidding process of the solar cookers in January 2008. Several solar cooker manufacturers will be selected for the project. In February 2008 the selected solar cooker vender will start delivering solar cookers to the users from their inventory and start making the remaining cookers required for the project.

From February through March 2008, the solar cookers will be delivered to the users as soon as they are produced by the manufacturer. It is estimated by later March or early April 2008, all the solar cookers required by the project will be delivered to the users for them to use. Please note that the above plan was the original plan which was determined during project design phase in 2007. The actual implementation plan will depend on the registration date of the proposed project.

The project implementation and monitoring plan will ensure that 1) only the households that currently do not have solar cooker will receive the new solar cookers, and 2) if the recipient no longer wants to use the cooker, he/she must immediately return the cooker back to the project owner, and the project owner will immediately give this returned cooker to someone else who does not have a cooker.

The overall monitoring of the project will be managed by the project owner, Ningxia Federal Intertrade Co. The Rural Energy Section under the Bureau of Agriculture, Graze, and Science & Technology of Pengyang County (Hereinafter "RES") will implement the monitoring under the supervision of the project owner. RES will establish CDM groups for the users to be monitored within the project boundary to collect and record monitoring data. The CDM groups will be recruited locally, managed by RES and supervised by the project owner. The candidates will be carefully screened to ensure that each CDM group member has the proper ability to perform the monitoring task. Each CDM group will consist of 1~5 people and each person will be in charge of the monitoring of 5~20 users. The group directors will be trained and supported by the CDM department of the project owner and experienced CDM consultants. The project owner will work closely with RES to ensure proper equipment installation, training of the users, monitoring, document preservation, and maintenance.

The organization of the project monitoring is as the following:



SECTION C. Duration and crediting period

C.1. Duration of project activity

C.1.1. Start date of project activity

>>

November 2, 2007 (The term sheet was signed with CER buyer on this date, which marks the starting date of the project)

C.1.2. Expected operational lifetime of project activity

>>

10 years

C.2. Crediting period of project activity

C.2.1. Type of crediting period

>>

Fixed crediting period

C.2.2. Start date of crediting period

>>

1 February 2009

C.2.3. Length of crediting period

>>

10 years

SECTION D. Environmental impacts

D.1. Analysis of environmental impacts

>>

The project has completed the "The registration form for the environmental impact on construction projects" with the local environmental authority. The project has obtained the approval from the environmental authority.

It is a characteristic of such projects that there are no emissions or wastes. The solar cookers have a long lifetime, and all parts are totally recyclable.

Solar cooking has a high potential for reducing GHG emission and smoke by using clean energy and avoiding burning coal. CDM makes solar cooking accessible to poor people who particularly suffer from the environmental deterioration caused by GHG emission.

The environmental impacts of the project may be summarized as follow:

- Prevention of resource depletion caused by consumption of coal;
- Avoidance of indoor air pollution from smoke of traditional stove;
- Diminishing GHG emission;
- Diminishing risks of fires caused by coal-fired stoves.

One of the main positive environmental impacts of the project will be the rising awareness among rural populations about environmental challenges, enabled by the sustainable technology and by the accompanying educational program.

According to the opinion of the local environmental authority, the project has positive environmental impacts and it has no negative environmental impact.

SECTION E. Local stakeholder consultation

E.1. Solicitation of comments from local stakeholders

>>

In July 2007, Mr. Wei Jiang, General Manger of Ningxia Federal Intertrade Co., the owner of the proposed project, visited the Rural Energy Section under the Bureau of Agriculture, Graze, and Science and Technology of Pengyang County (Thereinafter "RES"), the local government branch in charge of the rural energy sector. Mr. Jiang proposed the project to RES and the initial feedback was very positive. In the subsequent meetings with RES, the feasibility and implementing plan of the proposed project was discussed in detail.

Later Ningxia Federal Intertrade Co. conducted two surveys (one in September 2007 and the other in March 2008) on the rural residents in places where the project was planned to carry out. The surveys were done by randomly visiting the villagers as well as assembling the villagers and interviewing them. Totally 85 survey forms (corresponding to 80% confidence level according to the statistical method used in B7.2) were distributed and collected. The comments of local stakeholders in the form of the result of questionnaires are summarized in the following paragraphs and will be available to DOE.

The questionnaire included the following contents:

1. Brief introduction of the proposed project;

2. The survey invites the rural residents to participate;

3. Basic information and education level of the person surveyed

4. Survey questions:

1) Do you know about the Project? (Know a lot; Know some; Never heard of it)

2) Which effect will be brought on your life by the proposed project (multiple choices allowed): (Save energy; inconvenient to use; Reduce expenses; Enhance the living condition; inconvenient to repair; Other)

3) What do you think of the overall impacts of the proposed project? (Positives far outweigh negatives; Basically no impact; Negatives far outweigh positives)

4) Do you support the implementation of the proposed project? (support; against; neutral)

5) Are you willing to pay only 30 Yuan management fee, and then get the solar cooker for free? (Yes; No)

6) Any other comments or suggestions on the proposed project?

5. Signature and date

E.2. Summary of comments received

>>

The survey results are:

1) Do you know about the Project?

(Know a lot: 18%; Know some: 82%; Never heard of it: 0%)

2) Which effect will be brought on your life by the proposed project (multiple choices allowed)?

(Save energy: 44; inconvenient to use: 0; Reduce expenses: 76; Enhance the living condition: 18; inconvenient to repair: 0; Other: 0)

3) What do you think of the overall impacts of the proposed project?

(Positives far outweigh negatives: 100%; Basically no impact: 0%; Negatives far outweigh positives: 0%)

4) Do you support the implementation of the proposed project?

(Support: 100%; against: 0%; neutral: 0%)

5) Are you willing to pay only 30 Yuan management fee, and then get the solar cooker for free?

(Yes: 100%; No: 0%)

6) Any other comments or suggestions on the proposed project?

All the comments received are positive on the project.

In summary of the key result, 100% of those surveyed supported the project and thought that its positive impacts far outweighed the negative impacts. 100% of those surveyed were willing to get the solar cooker.

E.3. Report on consideration of comments received

>>

The stakeholders (including local government and local residents) strongly supported the proposed project. Therefore, it is not necessary to make any adjustment on the current implementation plan.

SECTION F. Approval and authorization

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Appendix 1: Contact information of project participants

Organization	Ningxia Federal Intertrade Co.
Street/P.O. Box	High Technology Zone
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City	Yinchuan
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Contact person	Markus Van der Burg
Title	
Salutation	Mr.
Last name	Van der Burg
Middle name	
First name	Markus
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	

Appendix 2: Affirmation regarding public funding

No official funds are involved in the proposed project.

Appendix 3: Applicability of selected methodology

There is no further background information on the applicability of the selected methodology.

Appendix 4: Further background information on ex ante calculation of emission reductions

2000-2007 Solar Irradiance Data in Pengyang County[32]

Month	Monthly solar insolation (MJ/m^2)	Sunlight time (hour)	Solar irradiance rate (W/m^2)
1	282	197.0	397.6
2	335	179.1	519.6
3	420	223.6	521.8
4	507	234.1	601.6
5	630	253.8	689.5
6	679	252.8	746.1
7	606	252.7	666.1
8	525	200.4	727.7
9	370	156.5	656.7
10	398	169.5	652.2
11	299	206.3	402.6
12	280	195.2	398.5
Annual Total	5331	2520.9	587.4

[32] Data from Ningxia Meteorological Archive.

Appendix 5: Further background information on monitoring plan

The monitoring plan is in B.7.2. There is no additional information in this section.

Appendix 6: Summary of post registration changes

The registered monitoring plan is changed. The nature and extent of the non-conforming monitoring is the following:

According to the applied methodology, survey method can be used in the monitoring of number of systems operating. Therefore, for number of solar cookers engaged in the proposed project (*n*), instead of monitoring all the solar cookers (17,000), sampling survey will be utilized in the monitoring.

"Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities" (EB69, Annex5) has been available since 13 September 2012. Sample size calculation formulas are provided in this document. In order to be in accordance with the new guideline, sample size of *n* (number of solar cookers engaged in the proposed project) and t_i (the monthly operating time of each solar cooker) are calculated based on the formulas in this guideline. The calculation results are:
For *n*: sample size is 72
For t_i: sample size is 80

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History of the document

Version	Date	Nature of revision
04.1	11 April 2012	Editorial revision to change history box by adding EB meeting and annex numbers in the Date column.
04.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the project design document form for small-scale CDM project activities" (EB 66, Annex 9).
03	EB 28, Annex 34 15 December 2006	• The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.
02	EB 20, Annex 14 08 July 2005	• The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. • As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.
01	EB 07, Annex 05 21 January 2003	Initial adoption.
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