Monitoring report form (Version 03.1)

Monitoring report

Title of the project activity	PoA: Sichuan Rural Poor-Household Biogas Development Programme 53 CPAs: SCHHBG-2010-001 to SCHHBG-2012-053
Reference number of the project activity	POA 2898
Version number of the monitoring report	01
Completion date of the monitoring report	08/03/2014
Registration date of the project activity	11/04/2012
Monitoring period number and duration of this monitoring period	SCHHBG-MR-002 06/06/2013 – 28/02/2014
Project participant(s)	Chengdu Oasis Science & Technology Co., Ltd. UPM Umwelt-Projekt-Management GmbH
Host Party(ies)	People's Republic of China (host) United Kingdom of Great Britain and Northern Ireland
Sectoral scope(s) and applied methodology(ies)	Scope 1: Energy industries (renewable - / non-renewable sources) Methodology: AMS-I.C v. 19 Scope 15: Agriculture Methodology: AMS-III.R v. 2

Estimated amount of GHG emission reductions or net anthropogenic GHG removals by sinks for this monitoring period in the registered PDD	Total: 381,593 tCO_2e SCHHBG-2010-001: 1,673 tCO_2e SCHHBG-2012-002: 7,449 tCO_2e SCHHBG-2012-003: 7,449 tCO_2e SCHHBG-2012-004: 7,449 tCO_2e SCHHBG-2012-005: 7,449 tCO_2e SCHHBG-2012-006: 7,449 tCO_2e SCHHBG-2012-007: 7,449 tCO_2e SCHHBG-2012-008: 7,449 tCO_2e SCHHBG-2012-009: 7,449 tCO_2e SCHHBG-2012-010: 7,449 tCO_2e SCHHBG-2012-011: 7,247 tCO_2e SCHHBG-2012-012: 7,247 tCO_2e SCHHBG-2012-013: 7,247 tCO_2e SCHHBG-2012-014: 7,247 tCO_2e SCHHBG-2012-015: 7,247 tCO_2e SCHHBG-2012-016: 7,247 tCO_2e SCHHBG-2012-017: 7,247 tCO_2e SCHHBG-2012-018: 7,247 tCO_2e SCHHBG-2012-019: 7,247 tCO_2e SCHHBG-2012-020: 7,247 tCO_2e SCHHBG-2012-021: 7,247 tCO_2e SCHHBG-2012-022: 7,247 tCO_2e SCHHBG-2012-023: 7,247 tCO_2e SCHHBG-2012-024: 7,247 tCO_2e SCHHBG-2012-025: 7,247 tCO_2e SCHHBG-2012-026: 7,247 tCO_2e SCHHBG-2012-027: 7,247 tCO_2e SCHHBG-2012-028: 7,449 tCO_2e SCHHBG-2012-029: 7,449 tCO_2e SCHHBG-2012-030: 7,449 tCO_2e SCHHBG-2012-031: 7,449 tCO_2e SCHHBG-2012-032: 7,247 tCO_2e SCHHBG-2012-033: 7,247 tCO_2e SCHHBG-2012-034: 7,247 tCO_2e SCHHBG-2012-035: 7,247 tCO_2e SCHHBG-2012-036: 7,247 tCO_2e SCHHBG-2012-037: 7,247 tCO_2e SCHHBG-2012-038: 7,247 tCO_2e SCHHBG-2012-039: 7,247 tCO_2e SCHHBG-2012-040: 7,247 tCO_2e SCHHBG-2012-041: 7,247 tCO_2e SCHHBG-2012-042: 7,247 tCO_2e SCHHBG-2012-043: 7,247 tCO_2e SCHHBG-2012-044: 7,247 tCO_2e SCHHBG-2012-045: 7,247 tCO_2e SCHHBG-2012-046: 7,247 tCO_2e SCHHBG-2012-047: 7,449 tCO_2e SCHHBG-2012-048: 7,449 tCO_2e SCHHBG-2012-049: 7,449 tCO_2e SCHHBG-2012-050: 7,449 tCO_2e SCHHBG-2012-051: 7,449 tCO_2e SCHHBG-2012-052: 6,528 tCO_2e SCHHBG-2012-053: 7,406 tCO_2e

Actual GHG emission reductions or net anthropogenic GHG removals by sinks achieved in this monitoring period	Total: 389,176 tCO_2e SCHHBG-2010-001: 1,682 tCO_2e SCHHBG-2012-002: 7,629 tCO_2e SCHHBG-2012-003: 7,629 tCO_2e SCHHBG-2012-004: 7,629 tCO_2e SCHHBG-2012-005: 7,629 tCO_2e SCHHBG-2012-006: 7,629 tCO_2e SCHHBG-2012-007: 7,629 tCO_2e SCHHBG-2012-008: 7,629 tCO_2e SCHHBG-2012-009: 7,629 tCO_2e SCHHBG-2012-010: 7,629 tCO_2e SCHHBG-2012-011: 7,404 tCO_2e SCHHBG-2012-012: 7,404 tCO_2e SCHHBG-2012-013: 7,404 tCO_2e SCHHBG-2012-014: 7,404 tCO_2e SCHHBG-2012-015: 7,404 tCO_2e SCHHBG-2012-016: 7,404 tCO_2e SCHHBG-2012-017: 7,404 tCO_2e SCHHBG-2012-018: 7,404 tCO_2e SCHHBG-2012-019: 7,404 tCO_2e SCHHBG-2012-020: 7,404 tCO_2e SCHHBG-2012-021: 7,404 tCO_2e SCHHBG-2012-022: 7,404 tCO_2e SCHHBG-2012-023: 7,404 tCO_2e SCHHBG-2012-024: 7,404 tCO_2e SCHHBG-2012-025: 7,404 tCO_2e SCHHBG-2012-026: 7,404 tCO_2e SCHHBG-2012-027: 7,404 tCO_2e SCHHBG-2012-028: 7,629 tCO_2e SCHHBG-2012-029: 7,629 tCO_2e SCHHBG-2012-030: 7,629 tCO_2e SCHHBG-2012-031: 7,629 tCO_2e SCHHBG-2012-032: 7,404 tCO_2e SCHHBG-2012-033: 7,404 tCO_2e SCHHBG-2012-034: 7,404 tCO_2e SCHHBG-2012-035: 7,404 tCO_2e SCHHBG-2012-036: 7,404 tCO_2e SCHHBG-2012-037: 7,404 tCO_2e SCHHBG-2012-038: 7,404 tCO_2e SCHHBG-2012-039: 7,404 tCO_2e SCHHBG-2012-040: 7,404 tCO_2e SCHHBG-2012-041: 7,404 tCO_2e SCHHBG-2012-042: 7,404 tCO_2e SCHHBG-2012-043: 7,404 tCO_2e SCHHBG-2012-044: 7,404 tCO_2e SCHHBG-2012-045: 7,404 tCO_2e SCHHBG-2012-046: 7,404 tCO_2e SCHHBG-2012-047: 7,404 tCO_2e SCHHBG-2012-048: 7,404 tCO_2e SCHHBG-2012-049: 7,629 tCO_2e SCHHBG-2012-050: 7,404 tCO_2e SCHHBG-2012-051: 7,404 tCO_2e SCHHBG-2012-052: 6,607 tCO_2e SCHHBG-2012-053: 7,537 tCO_2e

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

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1. General operating and implementing framework of PoA

The Sichuan Rural Poor-Household Biogas Development Programme (hereafter referred to as "The PoA") aims to reduce a large amount of greenhouse gases (GHG) by facilitating the installation of a large number of household biogas digesters. To achieve this target, the PoA generates additional incentives to install digesters to households that are supported by existing subsidy schemes. Target group of the PoA are low-income households located in Sichuan Province, China. The primarily targeted areas are thirteen cities (however, the PoA shall not be limited to this thirteen cities exclusively): Yibin, Neijiang, Suining, Ziyang, Zigong, Ruzhou, Leshan, Meishan, Mianyang,Guang'An, Ganzi, Aba and Dazhou, all of which are located in Sichuan.

Currently, households in the area of the PoA store animal manure produced by micro-scale animal husbandries in deep pits for several months before applying it to their farmland. In the meantime, coal is used as source of energy for cooking in daily life. During the project activity, each household is equipped with a household biogas digester that treats the manure anaerobically and recovers the generated methane. After installation of the biogas systems, both sources of emissions are reduced: No methane is emitted from the existing manure management systems, as the manure is treated within the biogas digesters and furthermore, all recovered methane is utilized for cooking to reduce the coal consumption of each household.

To support local households, the Sichuan Rural Energy Office implements the existing governmental subsidy schemes by providing a financial support during the construction of the biogas digesters. Target of the subsidy schemes is to reduce methane emissions from the pits, generate biogas as renewable source of energy and use the digester effluent as high-efficient fertilizer. However, after reaching mid-and high-income families, the Sichuan Rural Energy Office came to the conclusion, that low-income families still face barriers and cannot participate in the digester installation programme. Therefore, these households need further promotion to participate in the existing programmes and install a biogas digester.

Furthermore, technical difficulties that occur during the operation of household biogas digesters resulted in a low rate of successful long-term operation among the digesters that have been installed in the past. A fundamental reason is that technical support and maintenance of the digesters and related equipment are not covered by the subsidy schemes. Individual technical support for households is expensive and difficult to obtain in remote areas. Therefore, the acceptance of the technology and the willingness to pay for the installation of bio digesters without guaranteed, regular and proper maintenance is very low.

The PoA is managed, implemented, operated and monitored by the Coordinating Entity (C/ME) Chengdu Oasis Science & Technology Co., Ltd. The C/ME takes care of all CDM related tasks. This includes the writing of all related documents, quantitative calculation of emission reductions, the management of CDM related procedures like validation, registration and verification, and the allocation of CER revenues for the distribution to the farmers and the technical service network.

The technical implementation of the digesters, the operation of the service network, as well as all necessary surveys and monitoring are undertaken by the Sichuan Rural Energy Office and their subsidiaries, the city, county and village level Rural Energy Offices. After the CER revenue has been provided by the C/ME, the Sichuan Rural Energy Office also ensures the distribution of the revenues to the individual households and the service network.

Each CPA under the PoA has two CPA implementers:

- Chengdu Oasis Science & Technology Co., Ltd. (also acting as the C/ME)
- The Sichuan Rural Energy Office

2. Policy measure or stated goal of the PoA

Stated goal of the PoA is to enable the poor population of the rural areas in Sichuan to participate in the

existing biogas subsidy programme provided by the Sichuan Rural Energy Office. The approach adopted to achieve this is twofold:

a) **Financial support:** Although the existing subsidies promote the installation of household biogas digesters, the investment is not financially feasible. By offering an additional regular income generated by carbon credits, the PoA will support the households in closing the financial gap.

b) **Technical support:** The PoA will provide free technical service during start up and operation of the digesters. By this means low-income households, who much more than richer households cannot afford to allocate scarce financial resources in a sensitive technology, are guaranteed that they will actually receive long-term benefits of their investment in the biogas systems. Thereby, not only the barrier for the initial installation of the digesters is overcome, but also the stability of the digester operation is improved after the equipment has been installed.

Expected outcome of the proposed programme is an increased distribution of digesters on the one side and a more reliable operation of the installed systems on the other side. Both effects contribute to the success of the existing subsidy programme and increase the achieved emission reductions.

As stated and explained above, the target group of the PoA are low-income families. By focusing on these groups, the PoA clearly facilitates additional and sustainable development and improves the living conditions of underprivileged farmers.

3. Confirmation that the PoA is a voluntary action by the coordinating/managing entity

Currently, there is no mandatory policy or regulation requiring the installation of household biogas technology by rural farmers. The Coordinating Entity aims to set up the PoA as a voluntary action and plans all measures needed to increase the acceptance of the existing subsidy programme additionally and beyond the said system. All households included participate voluntarily and would face severe barriers without the PoA.

Furthermore, the installation of biogas digesters under existing subsidy schemes that are currently implemented by the Sichuan Rural Energy Office and that further promoted by the proposed programme is a voluntary action as well. In the existing structures, the households receive a financial support for the construction of digesters. However, the farmers make the investment decision on a voluntary basis. No existing subsidy, law or regulation does give a provincial mandatory target number of constructed biogas digesters that has to be reached by the provincial government or imply any mandatory obligation for the farmers to install the systems.

4. Positive effects of the PoA beyond reducing GHG emissions

As the most obvious and measurable effect, the proposed programme results in a reduction of carbon emissions. In addition to the emission reduction aspect, the PoA contributes to local sustainable development in various ways, as by:

- Alleviating the national energy pressure: through the PoA, biogas is utilized by thousands of households as a renewable energy, thus the shortage of energy is alleviated.
- Economic sustainability: Biogas is a renewable energy source and the bio digesters distributed through the PoA provide users with energetic autonomy. Households become independent from coal for cooking, leading to continuous and substantial expenditure savings.
- Improving local environment: the PoA replaces traditional coal stoves and reduce coal consumption by installing biogas stoves for household cooking. Therefore, a significant source of indoor air pollution is reduced. The concentrations of CO, SO_2, PM_{10} and NH_3 in the air will decrease.
- Improving living condition and public health: by reducing the indoor coal consumption and installing a proper animal manure management system, common diseases caused by coal burning and improper handling of manure, such as respiratory diseases, eye ailment etc. are reduced to a great extent.
- Promoting sustainable development of local agriculture: a recycle economy model can be formed through the PoA, i.e. crop farming (forage production) - livestock breeding (digester

feedstock production) - biogas digester (organic fertilizer production) - crop farming (higher quality of agricultural products). Thus, a sustainable development of the rural agricultural production can be achieved.

- Reducing the risks of accidents: In the past, several deadly accidents have happened during the operation of household biogas digesters in Sichuan. The PoA provides technical service to the farmers and thereby reduce the risk of such accidents.

Through the effects described above, the PoA improves the rural living conditions and the financial situation of rural families and reduce GHG emissions by changing the existing manure management systems and by reducing coal consumption in remote areas.

5. Positive effects of the PoA beyond reducing GHG emissions

A typical biogas digester system consists of different components such as inlet, inlet pipe, fermentation chamber, gas chamber storage, hydraulic chamber, movable cover and gas tube. The typical structure of a biogas digester applied under the proposed PoA is displayed in Figure 1.

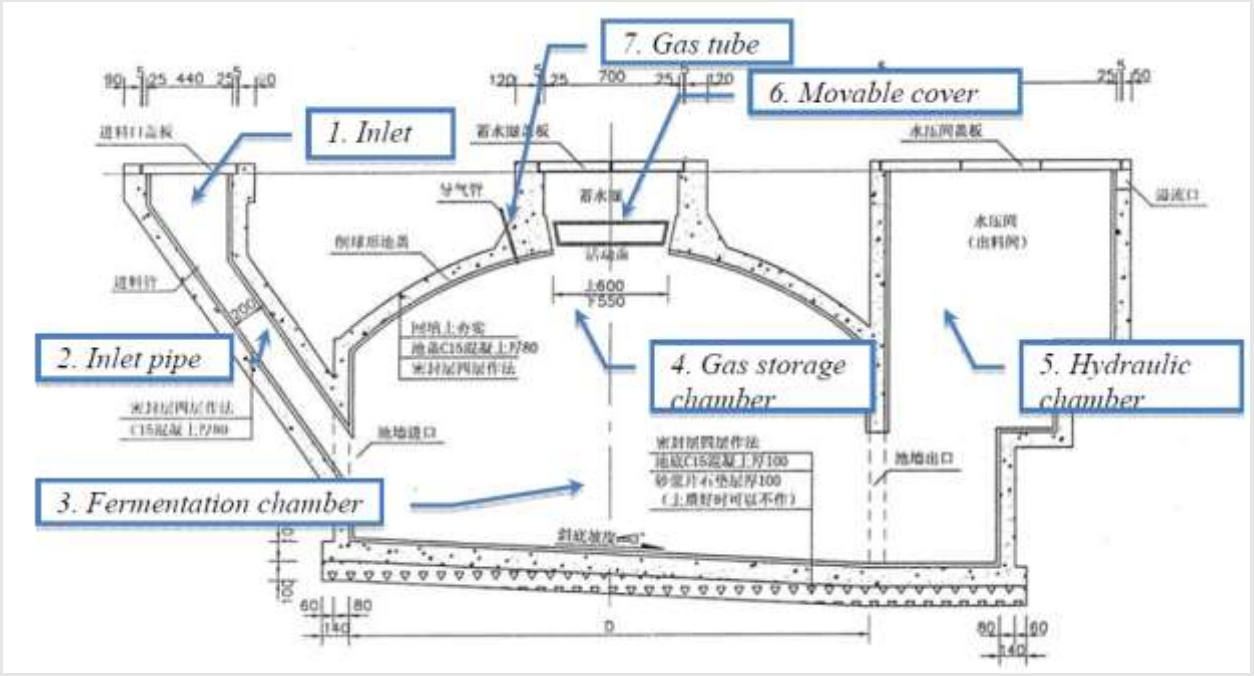

Figure 1: Typical design of a household biogas digester installed under the proposed PoA.

The technical flow is described in detail as follows:

a) Biogas generation and collection system

The design of biogas digesters is based on national standards established by the Chinese government.

According to the national standard NY/T 465-2001, the standard designs comprise digesters of 6 m^3, 8 m^3 and 10 m^3. All digesters constructed in Sichuan and included into the PoA follow either this standard or an applicable national or provincial revision or updated that replaced the current standard. The digesters are constructed and finally approved by engineers accredited by the local Rural Energy System.

A list of the standards relevant for household biogas digesters in Sichuan province is shown in Table 1.

No.	Standard Code	Title
1.	GB/T 3606-2001	Domestic Biogas Stove
2.	GB/T 4750-2002	Collections of Standard Design Drawings of Household Anaerobic Digesters
3.	GB/T 4751-2002	Specification for Check and Acceptance of the Quality of Household Anaerobic Digesters
4.	GB/T 4752-2002	Operation Rules for Construction of Household Anaerobic Digesters
5.	NY/T 465-2001	Household-ScaledBiogas &Integrated Farming System-Specification on Design, Construction and Use for Southern Model
6.	NY/T1496.1-2007	Biogas Transmission System for rural household_Part 1-Thermoplastic Pipes
		Biogas Transmission System for rural household_Part 2-Thermoplastic Pipe Fittings
		Biogas Transmission System for rural household_Part 3i=-Thermoplastic Waves
7.	NY/T 1639-2008	Technical Criterion on Rural Biogas Digesters and Three Renovations
8.	NY/T 858-2004	Biogas Pressure Meter
9.	NY/T 859-2004	Desulfuricer household biogas
10.	NY/T 860-2004	Digester sealing Coatings
11.	DB51/T 770-2008(Sichuan)	The Criterion of Supportive Installation on Rural Household Biogas Digester

Table 1: Standards relevant for the construction of household biogas digesters in Sichuan Province.

The design and construction of the digesters is certified by technicians accredited by the Ministry of Agriculture. The digesters are usually installed below the pigpen and the inlet is directly connected to livestock room so that the dung can be drained into the digester directly without being stored under anaerobic conditions before. Additionally, a toilet is installed in each household next to the livestock room so that human excreta can be treated in the digester as well.

After being fed into the inlet of the whole system, the manure reaches the fermentation chamber where it is digested with a planned retention time of several months. Within the fermentation chamber, the main biogas generation takes place. The gas is stored in the upper part of fermentation chamber just above the slurry surface (the gas storage chamber). If more gas is generated than consumed, the pressure within the gas storage chamber increase and press the liquids into the hydraulic chamber. When the gas is extracted for utilization via the gas tube, the pressure decreases again and allows the liquids to flow back into the fermentation chamber. This system guarantees a strict separation of the gas storage and the hydraulic chamber where the sludge can be extracted and used as organic fertilizer.

By placing the digester tank below the barns, a relatively stable temperature can be achieved within the digester. As the generation of biogas requires a warm environment, this is important to ensure the availability of gas without additional heating of the digestate.

b) Biogas utilization system

After the biogas is extracted from the gas storage chamber, it is led into desulphurization and dehydration units to purify the gas and extract harmful substances. Eventually, the gas is fed into a biogas stove that can be used for cooking purposes, and thereby replace coal as fuel. To allow a proper gas flow control and completely shut the gas pipe when the stove is switched of, a pressure gauge is installed.

Special maintenance procedures including cleaning the sulfide capture device and periodic controls and maintenance of the burners (cooking stoves, rice cookers, heaters, etc.) have been developed to ensure effective operation of the biogas system and proper utilization of digested slurry throughout the lifetime of the digester. To ensure the proper implementation of these methods, the technical service team that is set up

during the Programme Activity will support the participating households.

All main equipment in the proposed PoA is domestically produced; the proposed PoA involves no technology and installations from abroad.

c) Qualification of the biogas technicians and technical acceptance of the digesters

According a rural biogas construction regulation (Rural Biogas Construction Project Management Regulation), issued by the Ministry of Agriculture in 2003, rural household biogas digesters have to be constructed by certified technicians. In order to get certified, the engineers have to complete a training following a regulation by the Ministry of Labor and Social Security (Profession Standard Number: 5-99-02-01).

After the construction, all biogas digesters have to pass a technical acceptance procedure to ensure that they have been constructed properly. This procedure of this acceptance is defined by the provincial standard DB51/T 271.3—2009. The acceptance is performed and recorded by the local Rural Energy Offices.

d) Digester IDs

The biogas digesters in Sichuan are identified by a system of ID numbers. To attach the ID numbers to the digesters, two different systems are used in Sichuan. The IDs are either engraved into the wet concrete of the digesters during construction or are painted on the digesters itself or the wall of the rural household next to the digester. These ID numbers are universal to each digester and are used to clearly identify the single units for the PoA and this CPA .

The ID numbers are to be given to the digesters by the Rural Energy Offices after the final check and will be listed on the technical acceptance records.

6. Relevant dates for the project activity

CPA-Number	Start of Construction	End of Construction
SCHHBG-2010-001	10/12/2010	20/02/2011
SCHHBG-2012-002	28/10/2010	10/07/2012
SCHHBG-2012-003	28/10/2010	28/07/2012
SCHHBG-2012-004	28/10/2010	14/08/2012
SCHHBG-2012-005	28/10/2010	15/08/2012
SCHHBG-2012-006	28/10/2010	13/06/2012
SCHHBG-2012-007	28/10/2010	30/12/2011
SCHHBG-2012-008	28/10/2010	29/12/2011
SCHHBG-2012-009	28/10/2010	03/06/2012
SCHHBG-2012-010	29/10/2010	04/06/2012
SCHHBG-2012-011	28/10/2010	20/06/2012
SCHHBG-2012-012	28/10/2010	19/07/2012
SCHHBG-2012-013	28/10/2010	06/07/2012
SCHHBG-2012-014	28/10/2010	14/12/2012
SCHHBG-2012-015	28/10/2010	22/12/2012
SCHHBG-2012-016	28/10/2010	12/07/2012
SCHHBG-2012-017	01/11/2010	11/09/2011
SCHHBG-2012-018	29/10/2010	27/11/2011
SCHHBG-2012-019	30/10/2010	08/06/2012
SCHHBG-2012-020	29/10/2010	30/12/2011
SCHHBG-2012-021	29/10/2010	30/12/2011
SCHHBG-2012-022	29/10/2010	20/12/2011
SCHHBG-2012-023	28/10/2010	27/12/2012
SCHHBG-2012-024	28/10/2010	12/11/2012
SCHHBG-2012-025	30/10/2010	29/12/2011
SCHHBG-2012-026	29/11/2010	07/12/2011
SCHHBG-2012-027	23/11/2010	29/12/2011
SCHHBG-2012-028	01/11/2010	15/03/2012

SCHHBG-2012-029	28/10/2010	05/09/2012
SCHHBG-2012-030	28/10/2010	29/04/2012
SCHHBG-2012-031	29/10/2010	09/12/2012
SCHHBG-2012-032	29/10/2010	27/12/2011
SCHHBG-2012-033	28/10/2010	08/09/2012
SCHHBG-2012-034	29/10/2010	27/08/2012
SCHHBG-2012-035	28/10/2010	23/12/2012
SCHHBG-2012-036	29/10/2010	30/07/2012
SCHHBG-2012-037	28/10/2010	20/12/2012
SCHHBG-2012-038	29/10/2010	18/12/2012
SCHHBG-2012-039	29/10/2010	30/12/2012
SCHHBG-2012-040	01/11/2010	24/09/2011
SCHHBG-2012-041	29/10/2010	08/12/2011
SCHHBG-2012-042	02/11/2010	30/07/2012
SCHHBG-2012-043	10/11/2010	03/07/2012
SCHHBG-2012-044	28/10/2010	30/08/2012
SCHHBG-2012-045	29/10/2010	30/08/2012
SCHHBG-2012-046	29/10/2010	10/12/2012
SCHHBG-2012-047	28/10/2010	18/02/2012
SCHHBG-2012-048	28/10/2010	29/08/2012
SCHHBG-2012-049	28/10/2010	31/08/2012
SCHHBG-2012-050	29/10/2010	30/06/2012
SCHHBG-2012-051	29/10/2010	14/08/2012
SCHHBG-2012-052	29/10/2010	27/07/2012
SCHHBG-2012-053	28/10/2010	31/01/2012

For all CPAs, the operation has been ongoing and without interruption.

7. Emission Reduction

The total emission reduction achieved during this monitoring period is 389,176 tCO_2e.

A.2. Location of project activity

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The geographical boundary for the PoA is the administrative boundary of Sichuan province, China as shown in the following figure

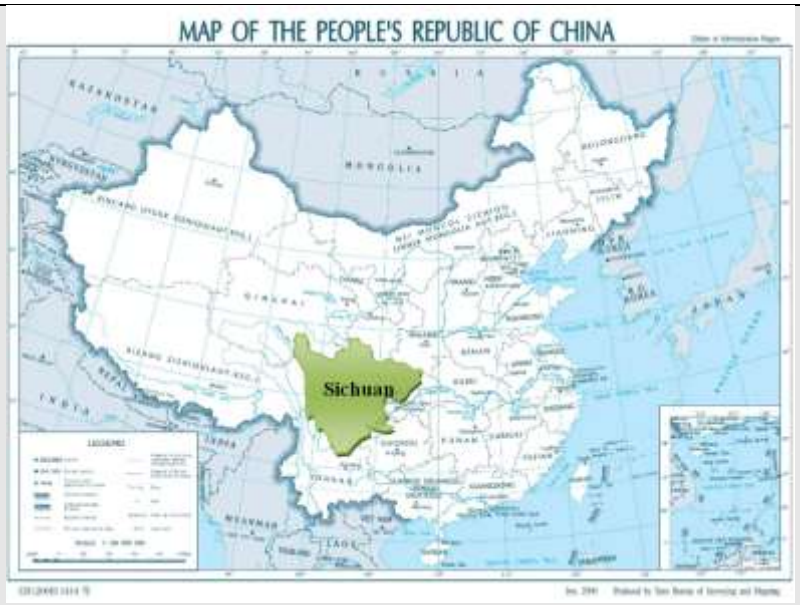

Figure 2: Location of the Sichuan Province in China.

All SSC-CPAs that will be included under the SSC-PoA will be within the defined geographical location of the SSC-PoA area and follow applicable national, provincial and/or sectoral policies and regulations in this region.

The list below shows each CPA and the city(ies) in which its households are located.

CPA	City(ies)	Longitude	Latitude
SCHHBG-2010-001	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-002	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-003	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-004	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-005	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-006	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-007	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-008	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-009	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-010	Yibin	105°20'-103°36'	29°16'-27°50'
SCHHBG-2012-011	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-012	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-013	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-014	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-015	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-016	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-017	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-018	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-019	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-020	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-021	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-022	Mianyang	105°43'-103°45'	33°03'-30°42'

SCHHBG-2012-023	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-024	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-025	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-026	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-027	Mianyang	105°43'-103°45'	33°03'-30°42'
SCHHBG-2012-028	Guang'an	107°18'-105°57'	30°51'-30°01'
SCHHBG-2012-029	Guang'an	107°18'-105°57'	30°51'-30°01'
SCHHBG-2012-030	Guang'an	107°18'-105°57'	30°51'-30°01'
SCHHBG-2012-031	Guang'an	107°18'-105°57'	30°51'-30°01'
SCHHBG-2012-032	Suining	106°59'-105°03'	31°10'-30°10'
SCHHBG-2012-033	Suining	106°59'-105°03'	31°10'-30°10'
SCHHBG-2012-034	Suining	106°59'-105°03'	31°10'-30°10'
SCHHBG-2012-035	Dazhou	108°33'-106°40'	32°20'-30°19'
SCHHBG-2012-036	Ziyang	105°45'-104°11'	30°39'-29°41'
SCHHBG-2012-037	Ziyang	105°45'-104°11'	30°39'-29°41'
SCHHBG-2012-038	Ziyang	105°45'-104°11'	30°39'-29°41'
SCHHBG-2012-039	Ziyang	105°45'-104°11'	30°39'-29°41'
SCHHBG-2012-040	Ziyang	105°45'-104°11'	30°39'-29°41'
SCHHBG-2012-041	Ziyang	105°45'-104°11'	30°39'-29°41'
SCHHBG-2012-042	Meishan	104°30'-102°51'	30°22'-29°24'
SCHHBG-2012-043	Meishan	104°30'-102°51'	30°22'-29°24'
SCHHBG-2012-044	Meishan	104°30'-102°51'	30°22'-29°24'
SCHHBG-2012-045	Meishan	104°30'-102°51'	30°22'-29°24'
SCHHBG-2012-046	Neijiang	105°26'-104°16'	30°02'-29°11'
SCHHBG-2012-047	Leshan	104°15'-102°54'	29°56'-28°25'
SCHHBG-2012-048	Leshan	104°15'-102°54'	29°56'-28°25'
SCHHBG-2012-049	Zigong	105°16'-104°02'	29°38'-28°55'
SCHHBG-2012-050	Luzhou	106°28'-105°08'	29°20'-27°39'
SCHHBG-2012-051	Luzhou	106°28'-105°08'	29°20'-27°39'
SCHHBG-2012-052	Dazhou, Maerkang	108°33'-100°30'	34°19'-30°19'
SCHHBG-2012-053	Guang'an, Dazhou, Leshan	108°33'-102°54'	32°20'-28°25'

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
People's Republic of China(host)	Chengdu Oasis Science & Technology Co., Ltd.	No
United Kingdom of Great Britain and Northern Ireland	UPM Umwelt-Projekt-Management GmbH	No

A.4. Reference of applied methodology

>>

AMS-I.C - *Thermal energy production with or without electricity* (version 19) (EB61, Annex 16);

AMS-III.R– *Methane recovery in agricultural activities at household/small farm level* (version 02) (EB59, Annex 4).

Both methodologies are approved for use in a PoA (AMS-III.R since its first approval in EB35, October 2007 and AMS-I.C. since EB33, July 2007).

The combination of the methodologies AMS-III.R and AMS-I.C has been approved for the use within PoAs by the CDM Executive Board (EB) in its 53th meeting.

Furthermore, AMS-III.R refers to AMS-III.D - *Methane recovery in animal manure management systems* (version 17) to calculate baseline and project emissions.

To calculate emissions from fossil fuel combustion, the *Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion* is used.

A.5. Crediting period of project activity

>>

All CPAs are applying a 10-year fixed crediting period.

The crediting periods of the CPAs are as follows:

SCHHBG-2010-001: 10/05/2012 - 09/05/2022
SCHHBG-2012-002: 11/04/2013 - 10/04/2023
SCHHBG-2012-003: 11/04/2013 - 10/04/2023
SCHHBG-2012-004: 11/04/2013 - 10/04/2023
SCHHBG-2012-005: 11/04/2013 - 10/04/2023
SCHHBG-2012-006: 11/04/2013 - 10/04/2023
SCHHBG-2012-007: 11/04/2013 - 10/04/2023
SCHHBG-2012-008: 11/04/2013 - 10/04/2023
SCHHBG-2012-009: 11/04/2013 - 10/04/2023
SCHHBG-2012-010: 11/04/2013 - 10/04/2023
SCHHBG-2012-011: 11/04/2013 - 10/04/2023
SCHHBG-2012-012: 11/04/2013 - 10/04/2023
SCHHBG-2012-013: 11/04/2013 - 10/04/2023
SCHHBG-2012-014: 11/04/2013 - 10/04/2023
SCHHBG-2012-015: 11/04/2013 - 10/04/2023
SCHHBG-2012-016: 11/04/2013 - 10/04/2023
SCHHBG-2012-017: 11/04/2013 - 10/04/2023
SCHHBG-2012-018: 11/04/2013 - 10/04/2023
SCHHBG-2012-019: 11/04/2013 - 10/04/2023
SCHHBG-2012-020: 11/04/2013 - 10/04/2023
SCHHBG-2012-021: 11/04/2013 - 10/04/2023
SCHHBG-2012-022: 11/04/2013 - 10/04/2023
SCHHBG-2012-023: 11/04/2013 - 10/04/2023
SCHHBG-2012-024: 11/04/2013 - 10/04/2023
SCHHBG-2012-025: 11/04/2013 - 10/04/2023
SCHHBG-2012-026: 11/04/2013 - 10/04/2023
SCHHBG-2012-027: 11/04/2013 - 10/04/2023
SCHHBG-2012-028: 11/04/2013 - 10/04/2023
SCHHBG-2012-029: 11/04/2013 - 10/04/2023
SCHHBG-2012-030: 11/04/2013 - 10/04/2023
SCHHBG-2012-031: 11/04/2013 - 10/04/2023
SCHHBG-2012-032: 11/04/2013 - 10/04/2023
SCHHBG-2012-033: 11/04/2013 - 10/04/2023

SCHHBG-2012-034: 11/04/2013 - 10/04/2023
SCHHBG-2012-035: 11/04/2013 - 10/04/2023
SCHHBG-2012-036: 11/04/2013 - 10/04/2023
SCHHBG-2012-037: 11/04/2013 - 10/04/2023
SCHHBG-2012-038: 11/04/2013 - 10/04/2023
SCHHBG-2012-039: 11/04/2013 - 10/04/2023
SCHHBG-2012-040: 11/04/2013 - 10/04/2023
SCHHBG-2012-041: 11/04/2013 - 10/04/2023
SCHHBG-2012-042: 11/04/2013 - 10/04/2023
SCHHBG-2012-043: 11/04/2013 - 10/04/2023
SCHHBG-2012-044: 11/04/2013 - 10/04/2023
SCHHBG-2012-045: 11/04/2013 - 10/04/2023
SCHHBG-2012-046: 11/04/2013 - 10/04/2023
SCHHBG-2012-047: 11/04/2013 - 10/04/2023
SCHHBG-2012-048: 11/04/2013 - 10/04/2023
SCHHBG-2012-049: 11/04/2013 - 10/04/2023
SCHHBG-2012-050: 11/04/2013 - 10/04/2023
SCHHBG-2012-051: 11/04/2013 - 10/04/2023
SCHHBG-2012-052: 11/04/2013 - 10/04/2023
SCHHBG-2012-053: 11/04/2013 - 10/04/2023

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

>>

Within the currently included 53 CPAs of this PoA, a total number of 240,252 households have been equipped with biogas digesters. This is the targeted number. Therefore 100% of the planned number of digesters has been installed.

The table below indicates the dates of the start of construction of the first digester and the end of construction of the last digester for each CPA.

CPA-Number	Start of Construction	End of Construction
SCHHBG-2010-001	10/12/2010	20/02/2011
SCHHBG-2012-002	28/10/2010	10/07/2012
SCHHBG-2012-003	28/10/2010	28/07/2012
SCHHBG-2012-004	28/10/2010	14/08/2012
SCHHBG-2012-005	28/10/2010	15/08/2012
SCHHBG-2012-006	28/10/2010	13/06/2012
SCHHBG-2012-007	28/10/2010	30/12/2011
SCHHBG-2012-008	28/10/2010	29/12/2011
SCHHBG-2012-009	28/10/2010	03/06/2012
SCHHBG-2012-010	29/10/2010	04/06/2012
SCHHBG-2012-011	28/10/2010	20/06/2012
SCHHBG-2012-012	28/10/2010	19/07/2012
SCHHBG-2012-013	28/10/2010	06/07/2012
SCHHBG-2012-014	28/10/2010	14/12/2012
SCHHBG-2012-015	28/10/2010	22/12/2012
SCHHBG-2012-016	28/10/2010	12/07/2012
SCHHBG-2012-017	01/11/2010	11/09/2011

SCHHBG-2012-018	29/10/2010	27/11/2011
SCHHBG-2012-019	30/10/2010	08/06/2012
SCHHBG-2012-020	29/10/2010	30/12/2011
SCHHBG-2012-021	29/10/2010	30/12/2011
SCHHBG-2012-022	29/10/2010	20/12/2011
SCHHBG-2012-023	28/10/2010	27/12/2012
SCHHBG-2012-024	28/10/2010	12/11/2012
SCHHBG-2012-025	30/10/2010	29/12/2011
SCHHBG-2012-026	29/11/2010	07/12/2011
SCHHBG-2012-027	23/11/2010	29/12/2011
SCHHBG-2012-028	01/11/2010	15/03/2012
SCHHBG-2012-029	28/10/2010	05/09/2012
SCHHBG-2012-030	28/10/2010	29/04/2012
SCHHBG-2012-031	29/10/2010	09/12/2012
SCHHBG-2012-032	29/10/2010	27/12/2011
SCHHBG-2012-033	28/10/2010	08/09/2012
SCHHBG-2012-034	29/10/2010	27/08/2012
SCHHBG-2012-035	28/10/2010	23/12/2012
SCHHBG-2012-036	29/10/2010	30/07/2012
SCHHBG-2012-037	28/10/2010	20/12/2012
SCHHBG-2012-038	29/10/2010	18/12/2012
SCHHBG-2012-039	29/10/2010	30/12/2012
SCHHBG-2012-040	01/11/2010	24/09/2011
SCHHBG-2012-041	29/10/2010	08/12/2011
SCHHBG-2012-042	02/11/2010	30/07/2012
SCHHBG-2012-043	10/11/2010	03/07/2012
SCHHBG-2012-044	28/10/2010	30/08/2012
SCHHBG-2012-045	29/10/2010	30/08/2012
SCHHBG-2012-046	29/10/2010	10/12/2012
SCHHBG-2012-047	28/10/2010	18/02/2012
SCHHBG-2012-048	28/10/2010	29/08/2012
SCHHBG-2012-049	28/10/2010	31/08/2012
SCHHBG-2012-050	29/10/2010	30/06/2012
SCHHBG-2012-051	29/10/2010	14/08/2012
SCHHBG-2012-052	29/10/2010	27/07/2012
SCHHBG-2012-053	28/10/2010	31/01/2012

1,000 units have been installed under CPA SCHHBG-2010-001. Under CPAs SCHHBG-2012-002 to SCHHBG-2012-053, 4,601 units have been installed each.

All digesters are implemented following the technical standards listed in Section A.1. As the technology has been discussed there in much detail, it is not repeated at this place.

During the monitoring period, no events or situation that may impact the applicability of the applied methodology occurred. Furthermore, the on going operation of the CPAs has not been interrupted during the monitoring period.

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan or applied methodology

>>

N/A. No temporary deviations from registered monitoring plan or applied methodology have been made.

B.2.2. Corrections

>>

N/A. No corrections from registered monitoring plan or applied methodology have been made.

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

>>

N/A. No permanent changes have been made.

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

>>

N/A. No changes of the project design of registered project activity have been made.

B.2.5. Changes to start date of crediting period

>>

N/A. No changes to the start date of crediting period have been made.

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

>>

N/A.

SECTION C. Description of monitoring system

>>

Apart of standard values and official publications, e.g. for annual average temperature and fuel NCVs, etc. The monitoring for this PoA contains a statistical survey of households that provides a representative sample for all CPAs.

For the monitoring of the PoA, a single sampling survey covers all included CPA. The management of this sampling survey happens on a central level:

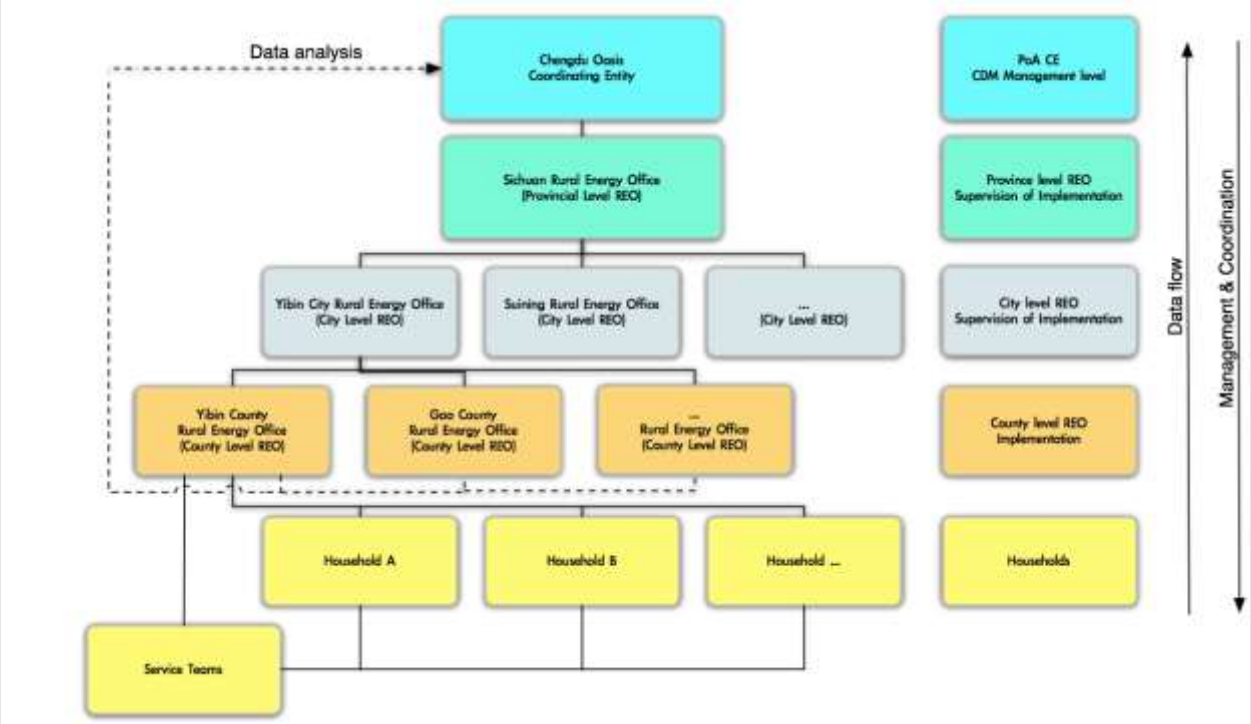

Figure 3: Collection and transferring of the household data to the C/ME for further analysis.

Using a central online platform, the C/ME determines the households to be included in the sampling using a simple random approach and submits the household references to the local data collectors. The local staff members of the Sichuan Rural Energy Office then visit the households and collect the required data. Using the same platform, the data is then typed into the database and transferred back to the C/ME that analyses the information and provides the collected data to the CDM Team to calculate the emission reduction.

The whole process of data collection is supervised by the responsible project manager at the C/ME.

In a second step, the outcome of the sampling survey is used to calculate the emission reduction for each CPA and prepare the monitoring report. This is done by a fully automated database system.

Both platforms, the web-interface for the local data collectors as well as the emission reduction calculation software are saved in a backup system regularly. A schematic diagram of the IT system can be seen in Figure 4:

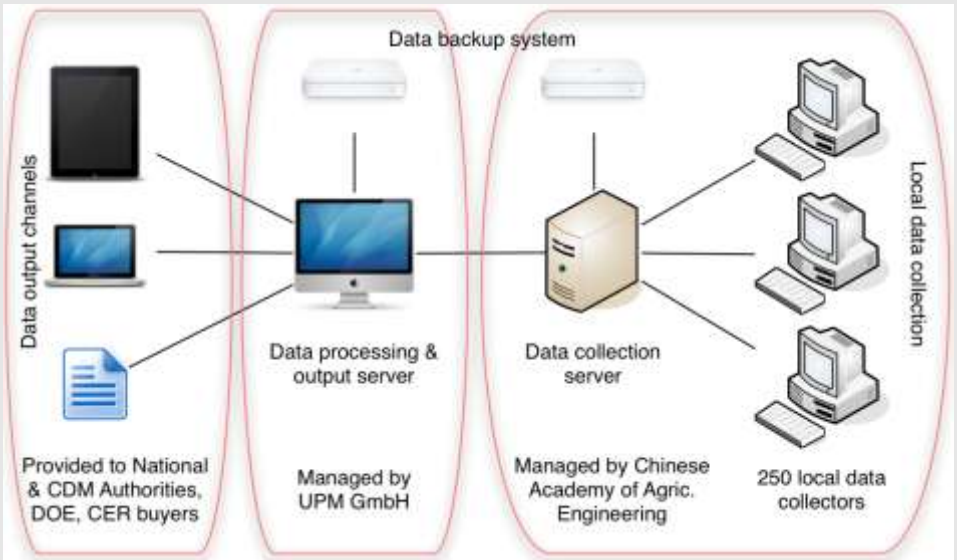

Figure 4: The IT system to collect and analyze the monitoring survey data.

SECTION D. Data and parameters

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

(Copy this table for each piece of data and parameter.)

Data / Parameter:	$FC_{BL,y}$
Unit:	Tonnes of coal
Description:	Average annual coal consumption before the installation of the digesters.
Source of data:	Comprehensive baseline survey.
Value(s) applied:	CPA SCHHBG-2010-001: 1,006.00 All other CPAs: 4,456.48
Purpose of data:	Calculation of baseline emissions.
Additional comment:	

Data / Parameter:	$FC_{PE,y}$
Unit:	Tonnes of coal
Description:	A erage annual coal consumption after the installation of the digesters.
Source of data:	Contrast group survey.
Value(s) applied:	SCHHBG-2010-001: 47.00 All other CPAs: 125.70
Purpose of data:	Calculation of project emissions.
Additional comment:	

Data / Parameter:	$VS_{LT,y}$
Unit:	kg dry matter animal^{-1} year^{-1}
Description:	Daily volatile solid excreted per animal.
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Volume 4,and Chapter 10, Table 10A-7 (swine).
Value(s) applied:	109.5
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

Data / Parameter:	$B_{0,LT}$
Unit:	m^3 CH_4 kg^{-1}
Description:	Maximum methane producing capacity for manure produced by livestock, of VS excreted.
Source of data:	2006 IPCC Guidelines for National Greenhouse Gas Inventories, Volume 4, and Chapter 10, Table 10A-7 (swine).
Value(s) applied:	0.29
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

Data / Parameter:	GWP_{CH_4}
Unit:	1
Description:	Global Warming Potential for CH4.
Source of data:	Methodology AMS III.D, v.17, Equation 1

Value(s) applied:	21
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

Data / Parameter:	D_{CH_4}
Unit:	kg/m^3
Description:	Conversion factor of m3CH4to kilogram CH4.
Source of data:	2006 IPCC guidelines, Volume 4, Chapter 10, Page 10.42.
Value(s) applied:	0.67
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

Data / Parameter:	UF_b
Unit:	
Description:	Model correction factor to account for model uncertainties (0.94)
Source of data:	Methodology AMS III.D
Value(s) applied:	0.94
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

D.2. Data and parameters monitored

(Copy this table for each piece of data and parameter.)

Data / Parameter:	N_k
Unit:	1
Description:	Number of systems operating in each CPA.
Measured/ Calculated / Default:	Measured in monitoring sampling survey.
Source of data:	Monitoring sampling survey
Value(s) of monitored parameter:	SCHHBG-2010-001: 1000 All other CPAs: 4,601
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	-
QA/QC procedures:	This monitoring parameter is determined through a comprehensive monitoring survey that follows the latest guidelines of the EB. Currently, the Standard For Sampling And Surveys For CDM Project Activities And Programme Of Activities, version 04, the level of confidence should be at least 95%, while the acceptable error is 10%.
Purpose of data:	Calculation of baseline & project emissions
Additional comment:	

Data / Parameter:	t

Unit:	hours
Description:	Mean annual operation hours of the digesters.
Measured/ Calculated / Default:	The figure is obtained through a sampling monitoring survey with a sampling size determined following the latest guidelines and the applied methodologies. To determine the annual running hours, the number and lengths of times when the digesters where not providing sufficient gas supply (during maintenance, cleaning, etc.) are recorded and with this input, the final value can be calculated.
Source of data:	Monitoring sampling survey
Value(s) of monitored parameter:	8,628
Monitoring equipment:	
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	
QA/QC procedures:	This monitoring parameter is determined through a comprehensive monitoring survey that follows the latest guidelines of the EB. Currently, the Standard For Sampling And Surveys For CDM Project Activities And Programme Of Activities, version 04, the level of confidence should be at least 95%, while the acceptable error is 10%.
Purpose of data:	None. The parameter is required to be monitored by the methodology without being used in any calculation.
Additional comment:	

Data / Parameter:	T
Unit:	˚C
Description:	Mean annual temperature in city k. This parameter determines the emission factors of the existing m nure management systems.
Measured/ Calculated / Default:	This value is obtained each year from the latest officially published data available. City-specific date is taken to guarantee a precise and suitable value to be applied for each manure management system.
Source of data:	Sichuan Statistical Yearbook of 2013, listing annual average temperatures for the year 2012.

Value(s) of monitored parameter:	Bazhong: 16.7 Chengdu: 15.9 Dazhou: 17.4 Deyang: 16 Guang'an: 17.5 Guangyuan: 16.3 Kangding: 7.1 Leshan: 17.2 Luzhou: 17.2 Maerkang: 9.0 Meishan: 17.1 Mianyang: 16.5 Nanchong: 17.7 Neijiang: 17.1 Panzhihua: 22.1 Suining: 16.8 Xichang: 17.9 Yaan: 15.9 Yibin: 17.8 Zigong: 17.8 Ziyang: 17.0
Monitoring equipment:	
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	
QA/QC procedures:	This data is taken from the latest available official publication.
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

Data / Parameter:	$MCF_{j,k}$
Unit:	%
Description:	Methane conversion factors for each manure management system j in climate region k.
Measured/ Calculated / Default:	This value is determined annually for CITIES based on the mean annual temperature and the standard values provided in IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Volume 4, Chapter 10, Table 10.17 (swine). While the temperature ranges listed there, should cover most climate conditions, the guideline advises the PP to utilize the end-of-range (i.e., 10 or 28 degree) for areas that have extreme high or low annual average temperatures outside the 10 to 28 degree Celsius range. Therefore, the end-of-range will be applied for such cases. The value applied will be chosen depending on the mean annual temperature (Parameter ID M04 of the registered PoA-DD) in the specific climate region for each manure management system.
Source of data:	IPCC 2006 Guidelines for National Greenhouse Gas Inventories, Volume 4, Chapter 10, Table 10.17. The MCF values for the most likely mean annual temperatures (refer to mean annual temperature in 2012, displayed in Annex 3, Section 1) are shown in Annex 3, Section 2

Value(s) of monitored parameter:	Bazhong: 32 Chengdu: 29 Dazhou: 32 Deyang: 29 Guang'an: 35 Guangyuan: 29 Kangding: 17 Leshan: 32 Luzhou: 32 Maerkang: 17 Meishan: 32 Mianyang: 32 Nanchong: 35 Neijiang: 32 Panzhihua: 50 Suining: 32 Xichang: 35 Yaan: 29 Yibin: 35 Zigong: 35 Ziyang: 32
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	-
QA/QC procedures:	This data is taken from the latest available official publication.
Purpose of data:	Calculation of baseline emissions.
Additional comment:	

Data / Parameter:	$N_{LT,y}$
Unit:	1
Description:	Annual average number of animals of type LT in year y (numbers).
Measured/ Calculated / Default:	The number of animals will be determined based on the number of pigs per households and the number of households in a given CPA.
Source of data:	Monitoring sampling survey
Value(s) of monitored parameter:	4.44
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	-
QA/QC procedures:	This monitoring parameter is determined through a comprehensive monitoring survey that follows the latest guidelines of the EB. Currently, the Standard For Sampling And Surveys For CDM Project Activities And Programme Of Activities, version 04, the level of confidence should be at least 95%, while the acceptable error is 10%.
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

Data / Parameter:	Proper sludge application ratio

Unit:	N/A
Description:	Land application of digestate from biogas digesters to avoid anaerobic digestion.
Measured/ Calculated / Default:	Sampling monitoring survey with a sampling size determined following the latest guidelines and the applied methodologies. By interviewing the sample households, a factor of correct sludge application (not resulting in methane emissions) will be determined. In case a single application has not been carried out according to the requirements, the respective household will not claim any emission reductions for the respective households. After the monitoring sample survey, a factor between 0 and 1 will be determined to reduce the claimed emission reductions by the share of households that did not apply the sludge according to the requirements.
Source of data:	Monitoring sampling survey
Value(s) of monitored parameter:	100%
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	-
QA/QC procedures:	This monitoring parameter is determined through a comprehensive monitoring survey that follows the latest guidelines of the EB. Currently, the Standard For Sampling And Surveys For CDM Project Activities And Programme Of Activities, version 04, the level of confidence should be at least 95%, while the acceptable error is 10%.
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

Data / Parameter:	$EF_{CO_2,i,y}$
Unit:	tCO_2/TJ
Description:	Emission Factor of raw coal
Measured/ Calculated / Default:	National publications of emission factors are followed every monitoring period. If the Chinese DNA should publish updated or changed data, this value will be updated.
Source of data:	Official data from Chinese DNA: http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2973.pdf
Value(s) of monitored parameter:	87.30
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Annually
Calculation method (if applicable):	-
QA/QC procedures:	
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

Data / Parameter:	$NCV_{i,y}$
Unit:	GJ/t
Description:	Net Calorific Value of raw coal
Measured/ Calculated / Default:	National publications for the Net Calorific Value will be followed every monitoring period. If the Chinese DNA should publish updated or changed data, this value will be updated.
Source of data:	Official data from Chinese DNA: http://qhs.ndrc.gov.cn/qjfzjz/W020090703644238739485.xls.
Value(s) of monitored parameter:	20.908
Monitoring equipment:	-
Measuring/ Reading/ Recording frequency:	Official data publications is followed including a cross-check prior to the end of each monitoring period. If new data are published, it shall be checked if this data is within the range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines. If the values fall below this range collect additional information from the testing laboratory to justify the outcome or conduct additional measurements.
Calculation method (if applicable):	-
QA/QC procedures:	
Purpose of data:	Calculation of baseline & project emissions.
Additional comment:	

D.3. Implementation of sampling plan

>>

A. Sample Method

1. Simple Radom Sampling (SRS) method is to be adopted at PoA level. Sampling frame is the full list households included under the PoA.

2. The unbiased estimation of total value and mean value are:

$$\bar{y} = \frac{1}{n}\sum_{i=1}^{n} y_i \qquad (D.1)$$

$$p = \frac{a}{nm} \qquad (D.2)$$

The unbiased variation estimators of $V(\bar{y})\ and\ V(p)$ with a sufficiently small f are:

$$v(\bar{y}) = \frac{1-f}{n}s^2 = \frac{1-f}{n(n-1)}\sum_{i=1}^{n}(y_i-\bar{y})^2 \approx \frac{1}{n(n-1)}\sum_{i=1}^{n}(y_i-\bar{y})^2 \qquad (D.3)$$

$$v(p) = \frac{1-f}{n-1}p(1-q) \approx \frac{1}{n-1}p(1-q) \qquad (D.4)$$

3. Relative error of the sample is to be calculated by formula:

$$r = t_{0.0.5}\frac{\sqrt{v(\bar{\bar{y}})}}{\bar{\bar{y}}} \qquad (D.7)$$

4. Where:

n	*Sample size*
f	*Sampling fraction*
N	*Total size of population*
y_i	*Observation of a sample household*
$\bar{y}_i$	*Mean value of sample*
p	*Proportion of the sample*
$\bar{\bar{y}}_{pst}$	*Post-stratification mean value of the sample*
L	*Number of stratum*
n_h	*Sample size in stratum h*
s_h^2	*Stratum sample variance*
W_h	*Stratum weight*
r	*Relative error. Default is 10%.*
$t_{0.05}$	*1.96*

B. Sample Size

***Step 1**: Confidence/precision*

5. The proposed PoA adopts the methodologies AMS I.C and AMS III.R. It is defined in *Standard For Sampling And Surveys For CDM Project Activities And Programme Of Activities, version 3* that a confidence/precision of 95/10 should be used if one survey covers several CPAs. Since this is the highest confidence/precision mentioned in the applied methodologies and standards, these values shall be used for the sample size calculation.

***Step 2**: Initial Sample size*

6. For mean value, the following formula is to calculate the initial sample size[1]:

$$n_0 = \frac{t^2 S^2}{r^2 \bar{Y}^2} \qquad (E.1)$$

To determine population parameter S^2 and $\bar{Y}^2$, the following options can be taken: (a) taking a small scale pre-survey small scale SRS pre-survey, or (b) reference of similar survey, or (c) double sampling scheme.

7. For proportion, conservatively, initial sample size can be calculated by formula[2]:

$$n_0 = \frac{t^2 Q}{r^2 P} \qquad (E.2)$$

Conservatively, $n_0 \approx 97$, while $t_{0.0.5} = 1.96$, r =10%,Q=0.2 and P=0.8.

[1] With the substitution $V = \frac{S^2}{\bar{Y}^2}$, as per the *Guidelines for sampling and surveys for CDM project activities and programme of activities, version 2*, it is obvious, that this equation is the same as per paragraph 87 of that guideline. With the following equations E.3 to E.5, it is clear, that this approach is even more conservative than the one presented in EB69, Annex 5. With a total population of more than 240,000 households, it is save to assume that the approximation of paragraph 87 is applicable.

[2] With Q=1-P, it is obvious, that this equation is the same as per paragraph 56 of *Guidelines for sampling and surveys for CDM project activities and programme of activities, version 2*. With the following equations E.3 to E.5, it is clear, that this approach is even more conservative than the one presented in EB69, Annex 5. With a total population of more than 240,000 households, it is save to assume that the approximation of paragraph 54 is applicable.

***Step 4**: Other considerations of sample size*

8. Sample size should be corrected according to the size of target population by formula:

$$n_1 = \frac{n_0}{1 + \frac{n_0}{N}} \qquad (E.3)$$

9. Then, be corrected Respond Rate r_R (initially 90%) by formula:

$$n_2 = \frac{n_1}{r_R} \qquad (E.4)$$

10. In case, the survey covers more than one expected parameters, conservatively, sample size should not be less than the maximum calculated sample size of those indicators.

$$n \geq max(\, n_2^1,\, n_2^2, \ldots,\, n_2^n) \qquad (E.5)$$

Using equations E.2, the sampling sizes for the proportional parameters (sludge application rate and rate of digesters still in operation) are calculated to be 97 as described above. For the sampling of the number of pigs and the annual digester operation hours, the following parameters are estimated (for the application of equation E.1):

Number of pigs: Mean: 5 pigs; Standard Deviation: 3 pigs

Annual operation hours: 8,400 h; Standard Deviation: 1,200 h

Using these values and equation E.1 the sampling sizes for these two parameters are:

Pigs: 138

Operation hours: 8

As a conservative approach, a sample size of 200 is chosen. This is bigger than all calculated minimum sampling sizes.

11. Supplementary survey is needed, in case, the data analysis of the baseline survey shows the pre-defined sample size is not sufficient to fulfill the requirement of confidence/precision.

12. For the initial sampling, a total sampling size of 200 households have been included in the survey. As shown in the sampling results (Excel sheet provided to the DOE), the statistical quality is sufficient and no further survey has been conducted.

C. Procedures for Data Collection and Management

13. **Selection and Training of Survey Staff**. A Chinese survey plan, tools and training materials should be prepared before training activities. All survey staffs including county supervisors and interviewers are locally selected from county governmental agencies with at least 2 years of working experience in rural energy sector. Selected survey staffs needs to be trained and ensured clearly understanding of purpose, method, and procedures of baseline survey. Simulated test interview is required at the end of the training course, to ensure each trainee are qualified to undertaken household survey.

14. **Prepare Sampling Frame**. The HHs of the target CPA should be prepared according to the project plan. Potential problems should be considered and cross checked to ensure the quality of the sampling frame, such as none-coverage, blanks and duplicate listings.

15. **Interview and Data Collection**. The interview activity should be conducted by trained interviewer with the assistant of local (township or village) supportive staff. Up to 90% of respond rate is required according to the sampling design, accordingly, awareness of the project and data confidentiality is very important as precondition to get the farmers' cooperation. Respondent self-report is the main survey method, visual inspection is also needed as cross-check evident. Other cross-check methods are also welcomed to determine the accuracy of respondent self-report. Questionnaire should be filled by interviewer and confirmed by farmer, supportive staff and the interviewer himself. Memo and record is needed if altered.

16. **Data Management and Quality Control**.

a) **Step 1: Supervisor Check**

Supervisor of the county need to review all questionnaires collected from each interviewer. Data on the questionnaires need to be subjected to five kinds of checks: range checks (outlier data), checks against reference data, skip checks, consistency checks and typographic checks.

b) **Step 2: Data Entry**

Data Entry Program should be used with suspect range and logical consistency triggers. One simple solution is to set up a spreadsheet data entry template with validity check triggers.

c) Step 3: Data Check Algorithms

Project data management software will check for inconsistencies, missing value, identification numbers, double data entry. One simple solution is to use sort and filter function of spreadsheet.

d) **Step 4: Analytical Checks**:

By basic descriptive statistic, the outliers can be easily figured out. Further statistical analysis can work out more characteristics of the data by professional analysis tools.

D. Data Security

17. Considering the long-term data storage requirement, the monitoring sampling data, both and soft copy need to be stored carefully within the whole crediting period.

18. Two hardcopies of monitoring questionnaires need to be stored in CME offices in Beijing and Chengdu separately.

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

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

>>

Following the calculations laid out in the PoA-DD, the following equation is applied to calculate the baseline emissions from an existing animal manure management system.

$$BE_{CH_4,y} = GWP_{CH_4} \cdot D_{CH_4} \cdot UF_b \cdot \sum_{j,LT} MCF_j \cdot B_{0,LT} \cdot N_{LT,y} \cdot VS_{LT,y} \cdot MS\%_{Bl,j} \quad (1)$$

Where:

$BE_{CH_4,y}$	Baseline methane emissions in year y (tCO_2e)
GWP_{CH_4}	Global Warming Potential for CH_4 (25 from 01/01/2013 onwards)
D_{CH_4}	CH_4 density (0.00067 t/m^3 at room temperature (20 ^oC) and 1 atm pressure)
UF_b	Model correction factor to account for model uncertainties (0.94)
j	Index for animal manure management system. As – according to the applicability criteria - all households use pits to store the animal manure, this index is used for the different climate conditions on a city basis. As most of the CPAs only cover households in one city (refer section A.2), this index will only cover one city.
LT	Index for all types of livestock
MCF_j	Annual methane conversion factor (MCF) for the baseline animal manure management system j. To pay respect to different annual mean temperatures in the covered region, the pits in different cities are considered different manure management systems with different MCF values.
$B_{0,LT}$	Maximum methane producing capacity for the volatile solid generated for animal type LT (m^3 CH_4(kgdm)$^{-1}$)
$N_{LT,y}$	Annual average number of animals of type LT in year y (numbers). The number of animals will be determined based on city averages of the number of pigs per households

	and the number of households in each city (=climatic region).
$VS_{LT,y}$	Volatile solids for livestock LT entering the animal manure management system in year y (on a dry matter we ght basis, kg dm/animal/year)
$MS\%_{Bl,j}$	Fraction of manure handled in baseline animal manure management system j. As the index j is covered the different climate conditions of the cities, this fraction reflects the share of animals in a climatic region to the total number of animals.

Additionally, the baseline emissions from coal replacement are calculated using formula 2:

$$BE_{CO_2,y} = \sum FC_{BE,i,j,y} \cdot COEF_{i,y} \quad (2)$$

Where:

$BE_{CO_2,y}$	Baseline carbon dioxide emissions from fossil fuel combustion in year y (tCO_2e)
$FC_{i,j,y}$	Quantity of fuel type i combusted in process j during the year y (mass volume or volume unit/yr). For this project, only baseline emissions from domestic use coal are considered in the calculation of emission reductions. This is a conservative approach that results in i and j being reduced to 1 (i: coal is the only type of fuel; j: only domestic coal consumption is considered).
$COEF_{i,y}$	Is the CO_2 emission coefficient of fuel type *i* in year *y* (tCO_2/mass or volume unit). This will be calculated using national data.

As the available data is not sufficient for option A, offered by the tool to calculate $COEF_{i,y}$, option B is chosen:

$$COEF_{i,y} = NCV_{i,y} \cdot EF_{CO_2,i,y} \quad (3)$$

Where:

$COEF_{i,y}$	Emission coefficient of fuel type i(tCO_2/mass or volume unit)
$NCV_{i,y}$	Is the weighted average net calorific value of the fuel type I in year y(GJ/mass or volume unit). According to national data published by NDRC, at the time of PDD writing, the NCV of raw coal is 20.908 GJ/t.
$EF_{CO_2,i,y}$	Is the weighted average CO_2emission factor of fuel type *I* in year *y* (tCO_2/GJ). According to the national data, the emissions factor for raw coal is 87.300 tCO_2/TJ. This value reflects the lower value of the 95% confidence level of the values provided in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and is therefore conservative.

With these input values, the emission coefficient used is $COEF_{i,y} = 1.825 \ \frac{tCO_2}{tCoal}$.

As the proposed project only accounts for the emission reductions due to the reduction of coal consumption, the baseline emissions covered by methodology AMS I.C can be reduced to:

$$BE_{CO_2,y} = FC_{BE,y} \cdot NCV_{coal,y} \cdot EF_{CO_2,coal,y} \quad (4)$$

Where:

$BE_{CO_2,y}$	Baseline carbon dioxide emissions from fossil fuel combustion in year y (tCO_2e)
$FC_{BL,y}$	Quantity of coal combusted for domestic use in year y (mass volume or volume unit/yr).
$NCV_{coal,y}$	Is the weighted average net calorific value of the fuel type I in year y(GJ/mass or volume unit). According to national data published by NDRC, at the time of PDD writing, the NCV of raw coal is 20.908 GJ/t.

$EF_{CO_2,coal,y}$	Is the weighted average CO_2emission factor of raw coal in year *y* (tCO_2/GJ). According to the national data, the emissions factor for raw coal is 87,300 tCO_2/TJ. This value reflects the lower value of the 95% confidence level of the values provided in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and is therefore conservative.

For the specific calculation of baseline emissions of each CPA within this monitoring period, the result of equation 1 is multiplied with three factors:

Time: To account for the length of the monitoring period, the length of the monitoring period in days divided by 365 is applied as a factor. For CPA SCHHBG-2010-001, CPAs SCHHBG-2012-002 to SCHHBG-2012-053, the fator is 268/365 = 0.734.

Households with proper sludge application: To exclude households without proper sludge application, the baseline emissions are multiplied with the monitoring parameter “Proper Sludge Application”.

Number of households: Multiplying the baseline emissions per household with the number of households in the CPA leads to the baseline emissions in the entire CPA.

As result, the baseline emissions of each CPA are:

SCHHBG-2010-001: 1,918 tCO_2e
SCHHBG-2012-002: 8,595 tCO_2e
SCHHBG-2012-003: 8,595 tCO_2e
SCHHBG-2012-004: 8,595 tCO_2e
SCHHBG-2012-005: 8,595 tCO_2e
SCHHBG-2012-006: 8,595 tCO_2e
SCHHBG-2012-007: 8,595 tCO_2e
SCHHBG-2012-008: 8,595 tCO_2e
SCHHBG-2012-009: 8,595 tCO_2e
SCHHBG-2012-010: 8,595 tCO_2e
SCHHBG-2012-011: 8,370 tCO_2e
SCHHBG-2012-012: 8,370 tCO_2e
SCHHBG-2012-013: 8,370 tCO_2e
SCHHBG-2012-014: 8,370 tCO_2e
SCHHBG-2012-015: 8,370 tCO_2e
SCHHBG-2012-016: 8,370 tCO_2e
SCHHBG-2012-017: 8,370 tCO_2e
SCHHBG-2012-018: 8,370 tCO_2e
SCHHBG-2012-019: 8,370 tCO_2e
SCHHBG-2012-020: 8,370 tCO_2e
SCHHBG-2012-021: 8,370 tCO_2e
SCHHBG-2012-022: 8,370 tCO_2e
SCHHBG-2012-023: 8,370 tCO_2e
SCHHBG-2012-024: 8,370 tCO_2e
SCHHBG-2012-025: 8,370 tCO_2e
SCHHBG-2012-026: 8,370 tCO_2e
SCHHBG-2012-027: 8,370 tCO_2e
SCHHBG-2012-028: 8,595 tCO_2e
SCHHBG-2012-029: 8,595 tCO_2e
SCHHBG-2012-030: 8,595 tCO_2e
SCHHBG-2012-031: 8,595 tCO_2e
SCHHBG-2012-032: 8,370 tCO_2e
SCHHBG-2012-033: 8,370 tCO_2e
SCHHBG-2012-034: 8,370 tCO_2e
SCHHBG-2012-035: 8,370 tCO_2e
SCHHBG-2012-036: 8,370 tCO_2e
SCHHBG-2012-037: 8,370 tCO_2e

SCHHBG-2012-038: 8,370 tCO_2e
SCHHBG-2012-039: 8,370 tCO_2e
SCHHBG-2012-040: 8,370 tCO_2e
SCHHBG-2012-041: 8,370 tCO_2e
SCHHBG-2012-042: 8,370 tCO_2e
SCHHBG-2012-043: 8,370 tCO_2e
SCHHBG-2012-044: 8,370 tCO_2e
SCHHBG-2012-045: 8,370 tCO_2e
SCHHBG-2012-046: 8,370 tCO_2e
SCHHBG-2012-047: 8,370 tCO_2e
SCHHBG-2012-048: 8,370 tCO_2e
SCHHBG-2012-049: 8,595 tCO_2e
SCHHBG-2012-050: 8,370 tCO_2e
SCHHBG-2012-051: 8,370 tCO_2e
SCHHBG-2012-052: 7,573 tCO_2e
SCHHBG-2012-053: 8,503 tCO_2e

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

>>
Following the calculations laid out in the PoA-DD, the following equation is applied to calculate the project emissions from physical leakage:

$$PE_{CH_4,y} = 0.10 \cdot GWP_{CH_4} \cdot D_{CH_4} \cdot \sum_{□,LT} B_{0,LT} \cdot N_{LT,y} \cdot VS_{LT,y} \cdot MS\%_{i,y} \quad (5)$$

Where:

$PE_{CH_4,y}$	Project methane emissions in year y (tCO_2e)
GWP_{CH_4}	Global Warming Potential for CH_4 (25 from 01/01/2013 onwards)
D_{CH_4}	CH_4 density (0.00067 t/m^3 at room temperature (20 °C) and 1 atm pressure)
i	Index for animal manure management system. As – according to the applicability criteria - all households use pits to store the animal manure, this index is used for the different climate conditions on a city basis.
LT	Index for all types of livestock
$B_{0,LT}$	Maximum methane producing capacity for the volatile solid generated for animal type *LT* (m^3 CH_4 (kg dm)$^{-1}$)
$N_{LT,y}$	Annual average number of animals of type LT in year y (numbers). The number of animals will be determined based on city avera es of the number of pigs per households and the number of households in a given city.
$VS_{LT,y}$	Volatile solids for livestock LT entering the animal manure management system in year y (on a dry matter weight basis, kg dm/animal/year)
$MS\%_{i,j}$	Fraction of manure handled in system i in year y. As the index i covers the different climate conditions of the cities, this fraction reflects the share of household in a given city.

Additionally, the project emissions from coal consumption are calculated using formula 6:

$$PE_{CO_2,y} = \sum_{i} FC_{PE,y} \cdot COEF_{i,y} \quad (6)$$

Where:

$PE_{CO_2,y}$	Project carbon dioxide emissions from fossil fuel combustion in year y (tCO_2e)
$FC_{PE,y}$	Quantity of fuel type i combusted in process j during the year y (mass volume or volume unit/yr).

$COEF_{i,y}$	Is the CO_2 emission coefficient of fuel type *I* in year *y* (tCO_2/mass or volume unit). This will be calculated using national data.

The possible project emissions from electricity or other sources that are listed in the methodology are not applicable, as no electricity consumption occurs and not other greenhouse gases are emitted by the project activity.

According to the explanations for the baseline emissions, this equation can be further developed to:

$$PE_{CO_2,y} = FC_{PE,y} \cdot NCV_{coal,y} \cdot EF_{CO_2,coal,y} \quad 7$$

Where:

$PE_{CO_2,y}$	Project carbon dioxide emissions from fossil fuel combustion in year y (tCO_2e)
$FC_{PE,y}$	Quantity of coal combusted for domestic use in year y (mass volume or volume unit/yr).
$NCV_{coal,y}$	Is the weighted average net calorific value of the fuel type I in year y(GJ/mass or volume unit). According to national data published by NDRC, at the time of PDD writing, the NCV of raw coal is 20.908 GJ/t.
$EF_{CO_2,coal,y}$	Is the weighted average CO_2emission factor of raw coal in year *y* (tCO_2/GJ). According to the national data, the emissions factor for raw coal is 87,300 tCO_2/TJ. This value reflects the lower value of the 95% confidence level of the values provided in the 2006 IPCC Guidelines for National Greenhouse Gas Inventories and is therefore conservative.

For the specific calculation of project emissions of each CPA within this monitoring period, the result of equation 5 is multiplied with two factors:

Time: To account for the length of the monitoring period, the length of the monitoring period in days divided by 365 is applied as a factor. For CPA SCHHBG-2010-001, CPAs SCHHBG-2012-002 to SCHHBG-2012-053, the factor is 268/365 = 0.734.

Households with proper sludge application: To exclude households without proper sludge application, the project emissions are multiplied with the monitoring parameter “Proper Sludge Application”.

As result, the project emissions of each CPA are:

SCHHBG-2010-001: 236 tCO_2e
SCHHBG-2012-002: 966 tCO_2e
SCHHBG-2012-003: 966 tCO_2e
SCHHBG-2012-004: 966 tCO_2e
SCHHBG-2012-005: 966 tCO_2e
SCHHBG-2012-006: 966 tCO_2e
SCHHBG-2012-007: 966 tCO_2e
SCHHBG-2012-008: 966 tCO_2e
SCHHBG-2012-009: 966 tCO_2e
SCHHBG-2012-010: 966 tCO_2e
SCHHBG-2012-011: 966 tCO_2e
SCHHBG-2012-012: 966 tCO_2e
SCHHBG-2012-013: 966 tCO_2e
SCHHBG-2012-014: 966 tCO_2e
SCHHBG-2012-015: 966 tCO_2e
SCHHBG-2012-016: 966 tCO_2e
SCHHBG-2012-017: 966 tCO_2e
SCHHBG-2012-018: 966 tCO_2e
SCHHBG-2012-019: 966 tCO_2e

SCHHBG-2012-020: 966 tCO_2e
SCHHBG-2012-021: 966 tCO_2e
SCHHBG-2012-022: 966 tCO_2e
SCHHBG-2012-023: 966 tCO_2e
SCHHBG-2012-024: 966 tCO_2e
SCHHBG-2012-025: 966 tCO_2e
SCHHBG-2012-026: 966 tCO_2e
SCHHBG-2012-027: 966 tCO_2e
SCHHBG-2012-028: 966 tCO_2e
SCHHBG-2012-029: 966 tCO_2e
SCHHBG-2012-030: 966 tCO_2e
SCHHBG-2012-031: 966 tCO_2e
SCHHBG-2012-032: 966 tCO_2e
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SCHHBG-2012-039: 966 tCO_2e
SCHHBG-2012-040: 966 tCO_2e
SCHHBG-2012-041: 966 tCO_2e
SCHHBG-2012-042: 966 tCO_2e
SCHHBG-2012-043: 966 tCO_2e
SCHHBG-2012-044: 966 tCO_2e
SCHHBG-2012-045: 966 tCO_2e
SCHHBG-2012-046: 966 tCO_2e
SCHHBG-2012-047: 966 tCO_2e
SCHHBG-2012-048: 966 tCO_2e
SCHHBG-2012-049: 966 tCO_2e
SCHHBG-2012-050: 966 tCO_2e
SCHHBG-2012-051: 966 tCO_2e
SCHHBG-2012-052: 966 tCO_2e
SCHHBG-2012-053: 966 tCO_2e

E.3. Calculation of leakage

>>

According to the explanations in the registered PoA-DD, the leakage emissions of this PoA and its CPAs are considered 0.

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_2e)	Project emissions or actual net GHG removals by sinks (t CO_2e)	Leakage (t CO_2e)	Emission reductions or net anthropogenic GHG removals by sinks (t CO_2e)
Total	439,644	50,468	0	389,176
SCHHBG-2010-001	2,637	294	0	2,343
SCHHBG-2012-002	8,595	966	0	7,629
SCHHBG-2012-003	8,595	966	0	7,629
SCHHBG-2012-004	8,595	966	0	7,629
SCHHBG-2012-005	8,595	966	0	7,629
SCHHBG-2012-006	8,595	966	0	7,629
SCHHBG-2012-007	8,595	966	0	7,629

SCHHBG-2012-008	8,595	966	0	7,629
SCHHBG-2012-009	8,595	966	0	7,629
SCHHBG-2012-010	8,595	966	0	7,629
SCHHBG-2012-011	8,370	966	0	7,404
SCHHBG-2012-012	8,370	966	0	7,404
SCHHBG-2012-013	8,370	966	0	7,404
SCHHBG-2012-014	8,370	966	0	7,404
SCHHBG-2012-015	8,370	966	0	7,404
SCHHBG-2012-016	8,370	966	0	7,404
SCHHBG-2012-017	8,370	966	0	7,404
SCHHBG-2012-018	8,370	966	0	7,404
SCHHBG-2012-019	8,370	966	0	7,404
SCHHBG-2012-020	8,370	966	0	7,404
SCHHBG-2012-021	8,370	966	0	7,404
SCHHBG-2012-022	8,370	966	0	7,404
SCHHBG-2012-023	8,370	966	0	7,404
SCHHBG-2012-024	8,370	966	0	7,404
SCHHBG-2012-025	8,370	966	0	7,404
SCHHBG-2012-026	8,370	966	0	7,404
SCHHBG-2012-027	8,370	966	0	7,404
SCHHBG-2012-028	8,595	966	0	7,629
SCHHBG-2012-029	8,595	966	0	7,629
SCHHBG-2012-030	8,595	966	0	7,629
SCHHBG-2012-031	8,595	966	0	7,629
SCHHBG-2012-032	8,370	966	0	7,404
SCHHBG-2012-033	8,370	966	0	7,404
SCHHBG-2012-034	8,370	966	0	7,404
SCHHBG-2012-035	8,370	966	0	7,404
SCHHBG-2012-036	8,370	966	0	7,404
SCHHBG-2012-037	8,370	966	0	7,404
SCHHBG-2012-038	8,370	966	0	7,404
SCHHBG-2012-039	8,370	966	0	7,404
SCHHBG-2012-040	8,370	966	0	7,404
SCHHBG-2012-041	8,370	966	0	7,404
SCHHBG-2012-042	8,370	966	0	7,404
SCHHBG-2012-043	8,370	966	0	7,404
SCHHBG-2012-044	8,370	966	0	7,404
SCHHBG-2012-045	8,370	966	0	7,404
SCHHBG-2012-046	8,370	966	0	7,404
SCHHBG-2012-047	8,370	966	0	7,404
SCHHBG-2012-048	8,370	966	0	7,404
SCHHBG-2012-049	8,595	966	0	7,629
SCHHBG-2012-050	8,370	966	0	7,404
SCHHBG-2012-051	8,370	966	0	7,404
SCHHBG-2012-052	7,573	966	0	6,607
SCHHBG-2012-053	8,503	966	0	7,537

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

The monitoring period covered by this monitoring plan is 06/06/2013 – 28/02/2014.

To calculate the values estimated ex-ante in the registered CPA-DD, the annual value from the CPA-DD is multiplied with the length of the monitoring period in days, divided by 365. For CPA SCHHBG-2010-001, CPAs SCHHBG-2012-002 to SCHHBG-2012-053, the factor is 268/365 = 0.734.

Item	Values estimated in ex-ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (t CO_2e)	381,593	389,176

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

>>
Due to the change of GWP of CH_4, the actual value achieved during this monitoring period is 389,176tCO_2e (GWP is 21 up to 31/12/2012 and 25 from 01/01/2013 onwards), which is 1.99% more than values (381,593tCO_2e) estimated according to the registered PDD (GWP_{CH4} of 21 for this monitoring period is used).

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_2e)	0	389,176

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Document information

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

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