www.upm-cdm.eu

Frequently Asked Questions

How does the Sichuan Household Biogas Programme reduce GHG emissions?

The reduction of GHG emissions is based on two principles: The reduction of coal consumption and the capturing of methane generated by the rotting animal manure.

Traditionally, the animal manure is dropped into a pit where it slowly degrades to generate fertiliser. This does not only cause hygienic problems and odour nuisance, but also methane emission. Methane, or CH_4, is a much more potent greenhouse gas than carbon dioxide, or CO_2.

Although the number of pigs raised per household is very low, this creates a significant emission of methane. After the installation of the digester, the manure still generates methane. However, the gas is captured below the digester dome and used for cooking. Thereby, it is destroyed and its warming effect is avoided.

The second principle of GHG emissions reduction is the coal replacement. Due to its vast availability, most households use coal for their daily cooking.

The Sichuan Household Biogas Programme provides convenient gas stoves to replace the old cook stoves. The odour-free stoves are ready to use just by the flick of a valve. No long ignition process, no time-consuming collection or purchase, no smoke, soot or any other pollutant. The households are provided with a convenient, cheaper and cleaner alternative to their coal stoves and therefore use the new devices on a daily basis. Both ways of reducing carbon emissions account for a combined 2 tons of CO_2e saved per household and year. While this might not sound much, at its current scale with nearly 400,000 households the programme will have a total reduction of 14,500,000 tons of CO_2 throughout its 20-year lifetime! This corresponds to around 35% (!) of 2022 GHG emissions of Switzerland, one of the highest developed countries in the World!

How is the emission reduction calculated?

The calculation of emission reductions is based on the methodologies provided by the UN-backed Clean Development Mechanism. Specifically, we are applying the methodologies AMS I.R and AMS I.C. The exact application of the methodologies is outlined in the Programme Design Document and follows a simple principle:

The emission reduction of the project is equal to the so-called baseline emission (meaning the emission that would occur in a hypothetical scenario that assumes that the biogas digesters have not been installed) minus the emissions that occur due to the biogas digesters. For the reduction of coal consumption, this is equal to the household's coal consumption before and after the digester installation. For the calculation of the avoidance of methane, this calculation is more complicated: Based on default values for temperature, type of pigs and current practice of manure storage the current gas generation is estimated following guidelines by the Intergovernmental Panel on Climate Change (IPCC).

For a project emission, a gas leakage of 10% of the maximum gas generation potential, based on the type of animals, is assumed to be conservative.
A more detailed explanation of the calculation methods and all applied values and parameters can be found in the Design Document that is publicly available at the UNFCCC.

How much tCO2e did the Programme reduce so far?

According to the UN's and the Gold Standard Foundation's regulations, we are accounting for the achieved emission reduction from the time of the household's inclusion into the programme for a crediting period of up to 10 years. In this framework, we have currently reduced carbon emissions of more than 7.2 million tCO2e since the start of the first monitoring period on April 11, 2012.
In fact, the actual reduction of GHG emissions is even higher: As the team on the ground needs some time to collect all required data and the scrutinization of third-party auditors takes around half a year as well, a big chunk of the achieved carbon emissions is actually not yet included in the official calculations and issuances.

In addition, the lifetime of a typical digester is at least 20 years and nearly all participating households will continue to use their biogas digesters after the end of the crediting period for as long as possilbe. Therefore, this PoA's total GHG emissions avoidance will probably be at nearly 15 million tCO2e.

Is the Emission Reduction scrutinized by a third party?

The calculation of emission reductions is scrutinized on several levels:

Firstly, the calculation and all its input parameters have been checked during the programme's registration at the UNFCCC. The so-called validation has been carried out by auditors of TÜV NORD CERT GmbH.

Their Validation Reports can be assessed at the UNFCCC Programme Page and the Gold Standard Programme Page.

After the auditors are satisfied with the Programme and conclude that it is in line with all regulations of both, the Clean Development Mechanism and the Gold Standard, they then request both authorities to register the programme. However, before that, both will perform their own checks of the programme's documents as well as the validation report by the auditors.

After the project has been registered, the monitoring period begins. We have to prove that the emission reduction that we predicted in the initial calculations does actually occur. After the monitoring period is over, we have to prepare a monitoring report that carries out the calculation again, but with the actually monitored values. The monitoring report is again a publicly available document that will be scrutinised by a third-party auditor. Since the UNFCCC CDM rules do not allow to cooperate with the same auditors as for the validation, the first monitoring report has been verified by the experts of Germanischer Lloyd Certification GmbH (GLC).

Once the verification is finished, it will again be re-checked by the CDM and the Gold Standard Foundation. Only after this has been done, can carbon credits be issued and the project can be financed by selling these in carbon markets.

Frequently Asked Questions

How is the Programme financed?

The Sichuan Rural Energy Office (SREO) is promoting household biogas digesters for a long time in Sichuan. The cost for the installation of a digester lies between 5,500 and 6,500 RMB (900 – 1,600 USD), depending on the size, the location and the cover material. Despite a national subsidy of 1,500 RMB, the poor households of rural Sichuan still have difficulties raising the initial investment. With an average annual income of just 6,100 RMB per capita , the investment for a digester is considered a huge burden.

Furthermore, the technical performance of household biogas digesters has been somewhat unstable in the past. As households have not been sufficiently trained in the proper operation and maintenance of the digesters and the surrounding equipment like stoves and filters, the digesters had a frustratingly high rate of failure.

This is, where the PoA tries to support the rural households. By generating carbon credits and thereby an additional income, both obstacles can be overcome: Usually UPM deducts 40% of all obtained carbon credit sales revenue to cover all CDM and Gold Standard related expenses of this PoA as well as marketing costs and capital expenditures (CAPEX). The remaining 60% are transferred to China.

Thereof, this PoA's Coordinating and Managing Entity (C/ME) Chengdu Oasis gets 20% for PoA operating expenditures (OPEX) and China CDM Share of Proceeds, whereas 80% are forwarded to the households the supported households and the SREO to provide an additional incentive for the construction of a digester and to cover the costs of biogas digester maintenance and other PoA related work done by the SREO. By becoming part of the programme, the participating households become entitled for a free technical service in case of any technical difficulties.

Furthermore, the technical service stations provide support with the extraction of already-digested material using small pumps to spread the effluent on local fields as fertiliser. This appears to be the figure for years 2020+ in which no households have been included in this PoA. From 2012 - 2015, the years in which the households have been included, this figure was around CNY 3,000 according tho the Sichuan Statistical Yearbooks.

Frequently Asked Questions

Who supports the Programme?

Generally, we do not disclose, which companies and individuals support the Sichuan Biogas Programme through the purchase of carbon credits if they do not agree. Having said that, most companies actually do agree to make their support public. Because of the high level of transparency, sustainability and support for rural families, the programme is ideal to be included in our supporter's CSR strategies. We therefore will announce at this websites "Buy carbon credits" pate, when new supporters have joined the growing ranks of our partners and contributors.

Which areas are involved in the Sichuan Household Biogas Programme?

The biogas programme focuses on thirteen cities and their surrounding administrative regions in Sichuan province, China. The 13 cities are: Yibin, Neijiang, Suining, Ziyang, Zigong, Ruzhou, Leshan, Meishan, Mianyang, Guang'An, Ganzi, Aba and Dazhou.

What households are targeted by the Programme?

The households that the programme targets are specifically the remote and low-income households. Several criteria define, what households qualify for this programme's support:

- The household must be located in the administrative area of one of the thirteen cities that are involved in the programme region.
- The annual family income is below the average for rural households in Sichuan. Currently, the average (cash) income for rural households in Sichuan is around 750 EUR per person and year. From 2012 to 2015, when all nearly 400,000 supported households have joined this PoA, it was even much lower, at approx. 400 EUR.
- The household is raising pigs and stores the manure in an open pit.
- The household uses (among others) coal as cooking fuel.

How can I become a supporter?

To support the rural households of Sichuan with the installation and maintenance of household biogas digesters, we need your support. Buy generating carbon credits, we generate income to finance the technical service and an additional income for the households.
If you want to reduce your carbon footprint and at the same time support the households in Sichuan, please contact us to learn more about how you or your organisation can contribute!

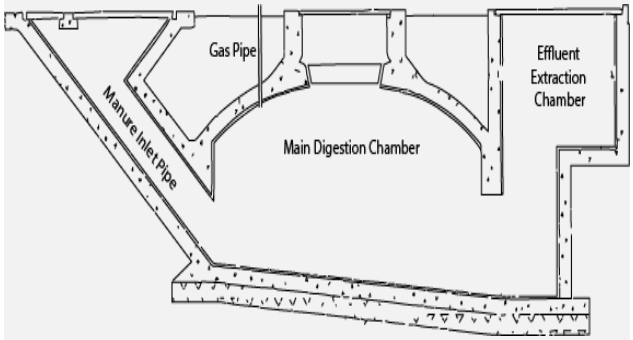
How many digesters will be installed in the future?

Originally, the targeted digester number for the project was 1 million. However, due to changes in China's national renewable energy and regional development policy, the end of the CDM and ongoing uncertainties in carbon markets about operation and implementation of the Paris Agreement's Art. 6 mechanisms, this PoA will not be scaled up further beyond the nearly 400,000 households included so far.

UPM
www.upm-cdm.eu

Frequently Asked Questions

How do household biogas digesters generate biogas for cooking?



The technology of household biogas digesters is amazingly simple and hasn't changed in decades. The manure is fed into the digester through the inlet pipe. Usually, the digester is constructed directly beneath the animal barns, so that the manure can just be swiped into the inlet. In the main digestion chamber, the biogas is generated and collected below the dome of the digester. Through a thin gas pipe and an attached hose, the gas is routed into a cooker in the household's kitchen, where it is combusted as fuel.

Because the biogas is collected under the digester dome, it pushes down the surface of digestate within the chamber. Therefore, the digester generates a slight gas pressure that is sufficient to press the gas through the pipe into the cooker. Once the digester is filled, the households can access the effluent through the effluent extraction chamber. From there, the manure is either manually scooped out with buckets or pumped out with a small pump.

After the biogas generation process, the fertiliser quality of the effluent is greatly improved compared to the natural animal manure. It can therefore be directly applied on the surrounding fields to close a natural cycle.

Are the digesters a reliable technology for the rural households?

If the digester is operated and maintained properly, it can literally last forever with only minor replacement such as hoses, valves and the cookers. However, to ensure a stable operation and a constant supply of biogas, it needs to be emptied and cleaned every two years. To support the households with pumping the digestate out of the digester and for any other technical questions, part of the programme's income is used to finance a network of technical service stations, that provide free technical maintenance service to the households. Thereby, the stable operation is ensured and the households can use the digester throughout the entire projects lifetime.

How much biogas does one digester generate?

The generation of biogas is a complex process and depends on several factors of which the amount of animal manure and other organic waste and temperature are the most important ones. As Sichuan is a very warm region and raising pigs is vastly common, the region is ideal for the decentralised generation of biogas. Depending on the number of people living in a household, the biogas is usually sufficient for three warm meals a day. However, during a short cold period in winter and the Chinese New Year, when other family members visit their homes and the families usually butcher some of their pigs, some households still have to burn coal or firewood for the cooking.

Frequently Asked Questions

What standards are used for the Programme?

The two main standards that are used for the calculation of emission reduction, for the monitoring of the programme's impact on sustainable development and the generation of carbon credits are the Clean Development Mechanism and the Gold Standard.

What project information is available to the public?

Apart of the information on this website, all relevant project documentation is available online. Sources for more information are the UNFCCC Programme Page and the Programme Page of the Gold Standard Foundation.
Specifically, the most important documents are:

- CDM PoA Design Document (PoA-DD)
- CDM CPA-DD Template (gCPA-DD)
- Letter of Approval (LoA) by the Chinese National Development and Reform Commission
- Letter of Approval (LoA) by the UK Environment Agency
- CDM Validation Report by TUEV NORD CERT GmbH
- CDM Small-Scale Methodology AMS-I.C, v.19
- CDM Small-Scale Methodology AMS-III.R, v.02
- Gold Standard Passport
- Gold Standard Validation Report
- Gold Standard Local Stakeholder Consultation Report
- Monitoring and Verification Reports under CDM and Gold Standard

Upon request and subject to availability, UPM will gladly provide any other PoA documentation.

Do relevant stakeholders have a chance to shape the project?

During the project's development and still ongoing, local and global stakeholder have the opportunity to submit their opinions and input on the project and its implementation. Different channels for this are available:

1. Between 28/10/2010 and 26/11/2010, the project document was available for the public to provide comments. The one comment that has been received has been properly addressed by UPM and the auditors of TUEV NORD CERT in their validation report.
2. Prior to the project implementation, a large number of affected households in Sichuan has been asked about their opinion on the programme and its implementation. For that purpose, three large stakeholder meetings have been organised in Sichuan at which hundreds of households have been present. During these meetings, the programme and its planned implementation has been introduced and discussed. All persons present have been very supportive towards the programme and have not raised any major concerns.
3. In addition, several hundreds of questionnaires have been distributed to households that will construct a digester and their neighbours in rural Sichuan to request their feedback and suggestions to the project. The feedback has been received and considered in the further planning process of the programme.
4. Every new monitoring report that is submitted to the UNFCCC prior to a verification and request for issuance of certificates is uploaded for a two-week period of public comments to the UNFCCC web servers. There, everybody can submit comments to the project anonymously.