



CASE STUDY - India

Carbon Credit for Household Biogas Plants

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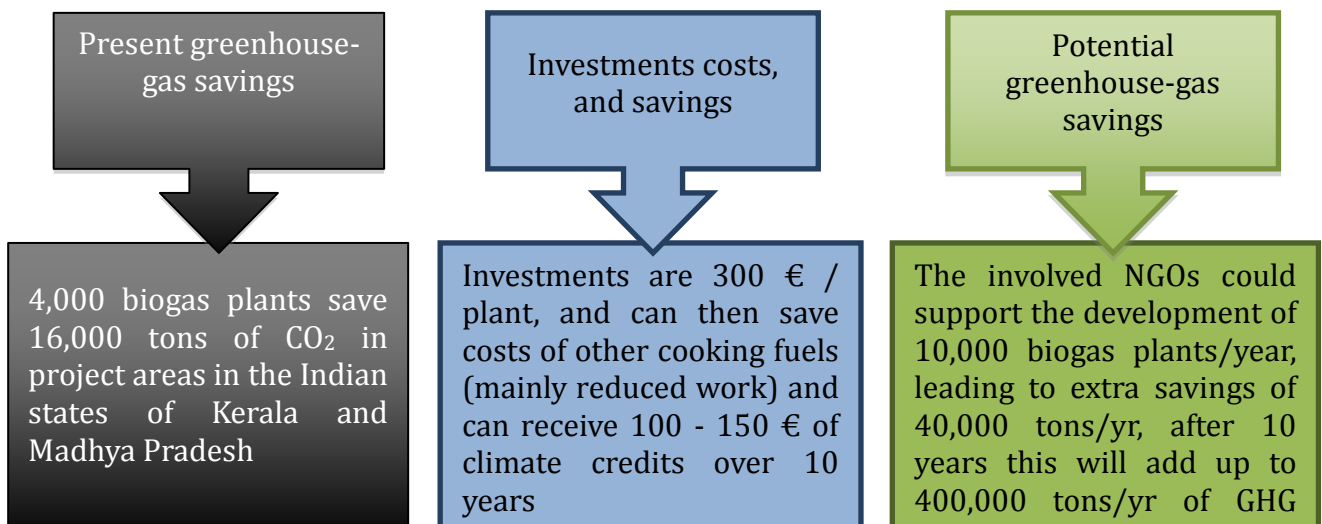
Summary:

INSEDA's Gold Standard VER (Voluntary Emission Reduction) project was aimed at mitigating greenhouse gases (GHGs) via household bio-digesters and at increasing the efficiency rate of the biogas plants by bundling household anaerobic biogas plant installed in the rural areas of Kerala and Madhya Pradesh. Biogas generated from the bio-digesters helped in replacing firewood used for domestic cooking purposes, thus improving the quality of air in the cooking space and also reducing the drudgery imposed on women.

This project perfectly illustrates the immense benefits to be gained for participants in the Gold Standard VER process and the potential for sustainable, nationally appropriate mitigation activities. However, the present process of the lengthy registration, verification, and certification has serious shortcomings, particularly for the project developers. The extensive reliance on external agencies for the detailed documentation of every step is prohibitively expensive; problematic, given a rural setting; and time-consuming for small-project developers.

The absence of funding or a financial safety net (for instance, the lack of a provision allowing advance payments from buyers to ease monetary pressures on participants) can impede the smooth functioning of the process.

It is recommended that, in keeping with the constraints of grassroots needs and finances, Gold Standard process should be reformed and simplified, and a funding process should be put in place. Without addressing these concerns, the most valuable mitigation projects (which are in rural areas) will end up being excluded from this process. It is also recommended that there be further appropriate capacity-building of NGOs and other grassroots stakeholders involved in the carbon credit project.



Introduction

The Integrated Sustainable Energy and Ecological Development Association (INSEDA) is the national organization formed by the Indian grassroots NGOs in 1995 involved in the promotion of renewable energy, with sustainable-energy-based eco-village development (EVD) programmes for over 18 years. However, INSEDA's special emphasis and focus has been on the implementation of biogas technology development and promotion in rural areas of India. For more than 6 years, INSEDA has been involved in the development of carbon-credit project, for small-scale household biogas plants under the Gold Standard Voluntary Emission Reduction (VER). The participants involved under this VER project are INSEDA and its member and partner NGOs from two Indian states, namely, Kerala and Madhya Pradesh (MP).

Socio-Economic impact:

The replacement of traditional fuel with gas from bio-digesters from domestic farm animals and other wastes:

- removes some drudgery from the lives of rural women in the collection of fire wood, and in cooking.
- reduces indoor pollution.

The residues (slurry) is a valuable plant nutrient and soil enricher.

Environment impacts: Reduces greenhouse gas (GHS) emissions by displacing unsustainable firewood for cooking, reduces uncontrolled methane emissions, and eliminates black carbon from households.

This project has been developed under the Gold Standard VER. Like a Certified Emission Reduction (CER), a VER (Voluntary Emission Reduction) is also a tradable commodity and refers to reduction of one ton of greenhouse gas (GHG). The difference between a CER and a VER is that, while CERs are generated according to standards and requirements of the Kyoto Protocol and UNFCCC, VERs are independently verified by a third party according to criteria that confirms that the emission reductions are real, measurable and credible.

A Gold Standard (GS) project ensures that the project is sustainable, flexible and transparent through a participatory approach with initial and main local stakeholder meetings.

2. Description of the Case, its Development and the Background Situation

a). Purpose of the project activity:

The purpose of this ongoing project is to contribute towards sustainable development through the effective utilisation of gas from household biogas plants (which were built in a decentralised manner by NGO members and partners of INSEDA) and to switch over from biomass like firewood to clean renewable energy generated from utilizing animal wastes and other organic wastes in the rural areas of Kerala and Madhya Pradesh.

The project activity is generation and utilisation of clean and environmentally friendly gas from the household (family size) bio-digesters (plants) from domestic farm animals and other locally available organic wastes. This will improve hygienic conditions in the rural areas and will also lead to reduction in greenhouse gas (GHS) emission by displacing conventionally used firewood for cooking, and thus contributing to the mitigation of Climate Change.

In addition, these household biogas plants (bio-digesters) will also reduce the drudgery in the lives of rural women as experienced in collection of fire wood, in cooking and in indoor pollution. It will also contribute positively to the overall empowerment of women and adolescent girls in rural India.



The residues, biogas-digested manure in slurry form, which are discharged after

giving the environment-friendly and non-polluting gas from the bio-digesters, would be used as enriched organic fertilizer, increasing water-holding capacity of the soil and improving the soil for crop production.

b). Description of the Project

The biogas project activity is located in rural areas of Kerala and Madhya Pradesh (MP). Consumption of firewood for household purposes in the rural areas is the main cause of deforestation in the project areas of Kerala and Madhya Pradesh. The project has around 4,000 household biogas plants in various districts of two states of Kerala and Madhya Pradesh. In each of 4,000 households, a biogas plant unit is installed, protecting the trees, and reducing the release of greenhouse gases (GHS) to the atmosphere, contributing positively towards the mitigation of climate change. The biogas units are of different sizes (1, 2, 3, 4 & 6 m³ capacity), depending on the number of persons in the household and the availability of dung from their domestic farm animals. Biogas is generated in the bio-digesters (plants), into which bovine (cattle & buffalo) dung (manure) and other organic waste is fed and is allowed to be digested under anaerobic (in the absence of air) conditions for a prescribed number of days. The biogas thus generated is composed of a mixture of 55-60% methane (CH₄) and 35-40% carbon dioxide (CO₂) plus traces of other gases. It is utilized for household purposes, mainly for cooking (using stove with specially designed burners) and to some extent for lighting (specially designed lamps with mantle).

Apart from the initial and main stakeholders' consultations, the project cycle for a Gold Standard (GS) project is not very different from a regular Clean Development Mechanism (CDM) project. It is essential however, that the project is sustainable, without negative environmental impacts, and compliant with UNFCCC additionality requirements.

c). Project Contribution to Sustainable Development

This biogas project has the goal of disseminating of biogas technology to improve socio-economic condition of the rural people and to reduce GHG emissions. In addition, the project is also helping to improve living standards of rural people. Advantages of the project are summarized below:

Environmental well-being:

- Using biogas as an energy resource contributes to clean environment.
- Organic wastes are transformed into high-quality enriched bio-manure/fertilizer.
- Hygienic conditions are improved through reduction of pathogens by utilizing the animal and other organic wastes in the bio-digesters.
- The global environment is improved by reducing deforestation and improving biodiversity.
- The high-quality manure produced will lead to improvement in soil conditions.

Socioeconomic well-being:

- This project provides employment opportunities to local people during construction and maintenance of the biogas plants.
- It improves the economic level of the local community.
- It reduces cooking times, thus enabling women to take up other activities.
- It is increase overall health situation by reducing smoke and soot in the kitchen, thus eliminating health hazards from indoor air pollution.

Technologically well-being:

- Better, field-tested biogas plants, mainly the most popular India-fixed model approved by the Ministry of New and Renewable Sources (MNRE), improve biogas yields.

d). Steps involved in Gold Standard Cycle for Validation and first Verification

- INSEDA started the dialogue with its members and partners for developing biogas carbon-credit projects in the middle of 2007.
- Started collection of data on the biogas technologies built by INSEDA members and partners, using a standard form; and compiling them and creating database in late 2007.
- Organised and participated in initial meeting with the local stakeholders in early 2008.
- Initiated development of Project Design Document (PDD) and Passport and submitted to Gold Standard Foundation (GSF) for pre-feasibility assessment in February 2009.
- Meanwhile also initiated baseline survey in MP and Kerala using independent external organisation to authenticate the information submitted by INSEDA members and partners to ensure that they were correct.
- Received positive pre-feasibility assessment from GSF in September 2009.
- After receiving the positive pre-feasibility assessment report from GSF and after completion of baseline survey, revised the PDD and the Passport.
- Proceeded with the main stakeholder consultation in Madhya Pradesh (MP) and Kerala in October 2009. INSEDA also sent letters to invite several international agencies as well as the representative of GSF to participate in both the stakeholder consultations/meetings. In the stakeholder meeting, shared the revised PDD and the Passport.
- Prepared a report after the meeting for the consultation with the local stakeholder.
- Identified the DOE (Designated Operational Entity, an evaluator) accredited by UNFCCC and signed agreement in March 2010 for carrying out validation of the INSEDA biogas project.
- Process of validation was started by DOE with the visit of the validator to the two project states (MP and Kerala) in May 2010.
- PDD and the Passport were finalized along with local stakeholder consultation report.
- Final PDD and Passport was uploaded on the INSEDA website in September 2010.
- Organised a meeting the stake holders in MP and Kerala in October 2010 to share the final PDD and Passport with them. INSEDA also sent invitation letters to several international agencies and representative of GSF to participate in these two meetings.
- At the same time, during the period from May 2010 to May 2011, answered various queries raised by the validator, as well as collected and sent additional supporting documents to fully satisfy validator to finalize the validation report.
- Successful completion of the validation process and report was uploaded onto the website of the Gold Standard Foundation (GSF) in June 2011 for their internal review.
- After review of validation report, some queries were raised by the GSF in the middle of August which were satisfactorily answered by the end of August 2011.

- Received formal letter of communication from the Gold Standard Foundation (GSF) on September 15, 2011, stating that our project, "GS 666: Installation of Biogas Plant by INSEDA Members and NGO Partners", is officially registered with the Gold Standard with effect from September 2009 for a 10-year period.
- Based on the formal undertaking by INSEDA to GSF, the project was uploaded onto the GS website, changing the project status on the registry.
- Meanwhile INSEDA appointed the same DOE that had done the project validation on July 26, 2011 to undertake the verification based on field visits to a certain percentage of biogas plants in MP and Kerala.
- The DOE visited the sites of biogas plants in MP during February 2012 and in Kerala in April 2012, to verify that a certain percentage of plants covered under the project for allotment of VER prepared their reports for the issuance of VER credits to INSEDA.
- Based on the on-site verification in MP & Kerala and on clarification of various points, as well as on submission of monitoring report and other documents, DOE finalised the verification report in July 25, 2012 for submission to GSF for issuance of VER credits to INSEDA.
- The DOE's verification report supported by monitoring report and other documents were uploaded on the website of GSF by the end of July 2012 for internal review. The Gold Standard communication received was that the INSEDA project status had changed to 'Registered, verification process complete, ready issuance of VER by GS'.
- After an internal review period of four weeks, GSF sent many queries by the end of August 2012, to be responded to by INSEDA. It took another two months to fully satisfy all the queries raised by the GSF.
- Finally, GSF issued VER credits to INSEDA for a period of two years, Sept 2009 to September 2011, in the second week of November 2012.
- Based on the VER credits, our buyers paid the appropriate fees to GSF, after which the VER issuance was credited to INSEDA.
- The buyers transferred the money for the entire VER due to us in the INSEDA bank account during the third week of November 2012.
- On its part, the INSEDA transferred the amount due to each stakeholder as per the percentage share agreed. The members and partners of INSEDA (whose names were registered in the PDD) were also given the shares their respective plant owners and were listed in the project documents.

e). Second verification for issuance of next one year VER by GSF to INSEDA

- Since November 2012, INSEDA started the verification process for getting issuance of VER credits for the next one year period, starting from September 2012.
- The verification by the DOE was completed on September 16, 2013, and the verification report with supporting documents was uploaded onto the website of GSF on September 18, 2013 for a minimum internal review period of three weeks.
- After the review period INSEDA received few queries and clarifications from GSF, which we have answered during October and November 2013.
- Now we are awaiting the registry of the next set of VERs by the GSF to INSEDA for the 1 year period i.e. Sept 2011 to Aug 2012.
- Once the VERs are registered by the GSF, we will ask our buyers to disburse the next payment to INSEDA, as per the agreement.
- Soon after that, INSEDA will initiate the process for the third verification, which is already due for the period September 2013 to August 2014.

3. Analysis

Carbon-credit projects can bring considerable socio-economic benefits to rural people in India, in South Asia, and in other developing countries, but as mentioned, in the present form it faces many problems and barriers. At present the CDM, Gold Standard, and other registering bodies of the carbon-credit projects use mechanisms, which are not only too cumbersome, but also time-consuming, as it takes as much as 3-5 years. Presently, it is very heavily loaded in favour of highly paid external consultants, as it involves detailed documentations, baseline surveys and other regular field surveys, validations, verifications and monitoring, etc. Because of all of these, the transaction cost becomes too high and the main project developer is at the mercy of these highly paid external consultants, not knowing till the end (which could take up to 3-5 years or more durations) whether the carbon-credit project will be approved for registry or not? If for any reason the project falls through at any of the stages, the project developer has to pay heavily, and if a small developer is involved, it risk financial loss and bankruptcy, as well as a loss of credibility with the other stakeholders. In this process, the real stakeholders (project developer/holder and the local NGOs with meagre resources as well as the poor end users) suffer, and mistrust is generated amongst them due to these delays.

It is very clear that the whole process of registering the carbon-credit projects has been designed by the registration agencies to be time-consuming and resource-guzzling for the stakeholders, like the project developers, the members, partners and the end users. After clearing each step successfully one wonders if it was worth going through it, and whether the next step will be cleared or not. The majority of NGO groups/networks working in the developmental programmes/projects operate on meagre resources and try to reach the normally unreachable target groups in difficult situations. Their concern is to deliver the best to the target groups in as cost-effective a manner as possible, as their resources, both in term of manpower and finances are very limited. At the same time, NGOs also have to maintain their credibility with the local people, as they have to continue working with them regardless of external support, as that is what they have chosen to do. Therefore, in spite of good work, they could never do fool-proof documentation of the entire process. On the other hand, the carbon-credit projects are heavily loaded in favour of over-documentation, perhaps not required so much for registration, but more to protect the registration agencies themselves and their reputation. Because of too much dependence on the approach, many very good grassroots projects which have very strong social dimensions perhaps will never get registered as Gold Standard projects, as the people managing and working for such groups are very far from the grassroots realities.

For the dissemination of household biogas plants, which is a highly decentralised programme, and very relevant to be consideration for carbon-credit, only those who have long practical experience of implementing such projects can understand the many socio-economic benefits that provides to the rural communities, without even studying such elaborate documents like the PDD, Passport, and other reports based on new studies by highly paid external experts.

From the step-by-step process of validation, and verification for the GS registration for the INSEDA biogas project, described above, it becomes clear that there is a need for capacity-building of NGOs and other grassroots stakeholders involved in the carbon-credit projects, to fully understand these requirements of the certification agencies that need to be followed strictly. Most NGOs operating at the state level and the small stakeholders don't have the expertise or resources to send their functionaries for capacity-building to prepare the carbon-credit projects and, later on, to complete the entire process leading up to registration. Moreover, the capacity-building of NGOs and the other smaller stakeholders should be ably backed by good socio-technical organizations with expertise and experience in both theoretical and field-level practical knowledge as well as by financial resources to act as development-oriented consultants to bundle carbon-credit projects by combining a number of small-scale decentralised units/systems. The job of socio-technical organisation acting as project consultant would also be

required to do hand holding as well as to guide and assist NGOs and other stakeholders at important stages of the process. They should also help to prepare monitoring reports, answering all the queries of DOE and international registration agencies satisfactorily to ensure that the project fulfils all the requirements of the registration and issuance of VER/CER credits.

The average greenhouse gas (GHG) reduction per house biogas plant of 2 m³ capacity (if properly fed with cattle manure, and properly operated by its owner) would be 4 tons per year. Under the INSEDA biogas gas carbon credit project, over 4,000 household biogas plants, 1, 2, 3, 4 & 6 m³ capacity (mainly 2 & 3 m³ capacity) were included from the two states, namely Madhya Pradesh (MP) and Kerala. These biogas plants generate over 20,000 VERs annually. If the support were available, then an average of 10,000 household plants/year can be built by the NGO members and partners of INSEDA in these two states of India.

4. Conclusions and Recommendations

Looking backwards why we (INSEDA members and partners) got involved in the carbon-credit project for household biogas plant, and why we continued going through the cumbersome process for registering the project, the reasons were several. One of them was that INSEDA's external consultants were so good in marketing the idea of carbon credit that they sold us the moon in terms of this project, and also we were able to find a very credible and trusted buyer, the First Climate, as buyers. The First Climate (FC) signed the agreement with INSEDA in May 2008 to buy the VER generated from our bundled household biogas project, and ever since have been providing moral support. The FC also agreed to take care of some of the cost on validation, verification and registration etc., as well as provided INSEDA with some advance funds at the very advanced stage of verification and issuance of VERs. Their top executive even visited the project sites in MP, which is one of INSEDA biogas project states, to understand the project and realities at the grassroots level, meeting and talking with the local poor owners of the biogas plants about the direct and indirect benefits. They also made a movie to build awareness in people in the western countries and for promotional aspects. Another reason for continuing the process and not giving up in the middle was because of the faith and expectations of our grassroots members and partners in INSEDA, who along with INSEDA had spent meagre resources for collection of data, field-level information, documentation, and development of this biogas project and in organising various stakeholders meetings, along with their own commitments to their end users, mainly the rural biogas plant owners. Therefore, in spite of five years of long wait, we continued in the entire process and took it to the logical end.

In view of the above, we would like to recommend that the entire process of registration should be completely revamped, to cut down the roles of high-cost external consultants, reducing in the transaction costs as well as project registration time by at least one fourth of the present duration. There is also a need to provide some kind of "Development Fund" or "Revolving Bridge Fund", in the form of grant from the donor groups, which could be used for capacity-building and to sustain the NGO project holders, members, and partner grassroots NGOs until the project is registered.

The registering agencies should be reviewed to ascertain what proactive role they can play and how they can become NGO-friendly and provide hand-holding role, especially in the case of socially relevant carbon-credit projects for highly decentralized applications.

Based on over five years of process-oriented involvement in developing its own carbon-credit project, INSEDA now has in-house expertise and practical field experience to develop carbon-credit projects for registration by the international certification agencies, both CER and VER, using a step-by-step process-oriented approach. INSEDA can act either as socio-technical organisation for the capacity-building of NGOs, provide consultancy to NGOs in developing carbon-credit projects, or act as a partner organisation in any joint development of carbon-credit projects, starting from inception until the registration and issuance of VER/CER credits.