

HASSAN COMPOSITE VERMICOMPOST - BIOGAS PROJECT

Non-technical summary of the project design document

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Action Carbone
Objectif Développement Durable*



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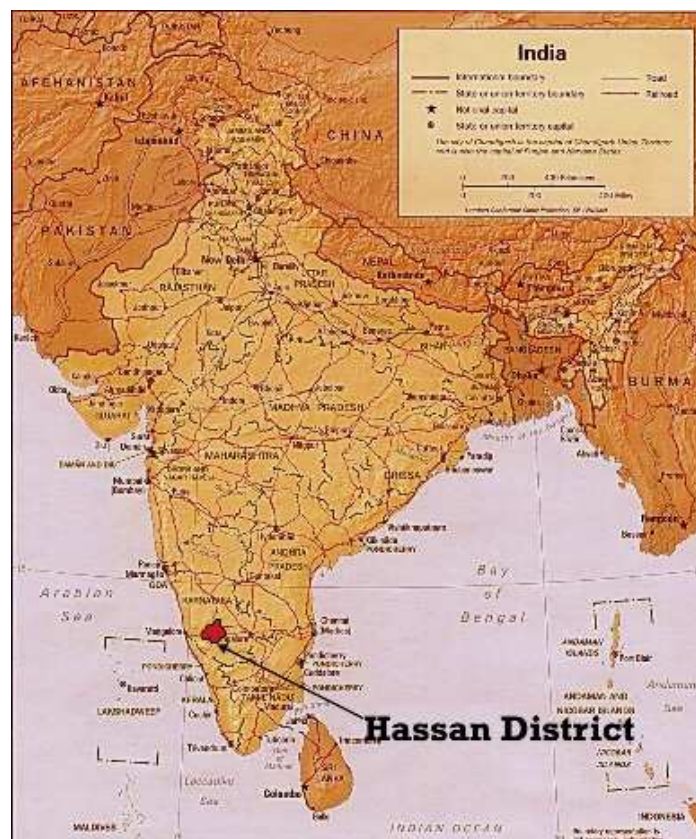


Introduction

This document presents shortly the vermicompost cu.m biogas project in Hassan district that will be implemented by SKG Sangha from May 2008 to July 2008. Its purpose is to give a global overview of the current situation, the project and its implementation, as well as its environmental and socio-economic impacts.

The final objective of this document is meant for starting a discussion on the project and its impact, in order to gather comments and remarks regarding the project, to comply with the Voluntary Gold Standard requirements for carbon finance.

Currently, most of the families in Rural India use firewood, dried dung cake and /or kerosene as fuel for cooking and lighting. Women and children have to go into the fields or forests for collecting fire wood for about 2 to 3 hours many days in a week. The women suffer with smoke from the traditional firewood stove and kerosene burning. This indoor air pollution is causing health problems to women and children. Indian rural houses consist of one room with partition for cooking. So the smoke encircles the entire house causing inconvenience to entire family mainly to women and children. On the other hand women do not have their own income and they have to depend on men for their total needs. Many times they can not support for their and their children's health and education also. On the other hand the farmers' situation is also not good. Because of the indiscriminate use of chemical fertilizers and pesticides the expenditure on agriculture has gone up and the land fertility has come down resulting lower yields. The use of chemical fertilizers has converted the land into barren and the water retention capacity of the land has come down drastically.



The project

To change this situation SKG Sangha has developed a system called 'Composite vermicompost bio reactor. This system mainly consists of two main parts.

Biogas Plant



One part is a family size bio reactor and the other one is vermicompost production unit. The idea is to use cattle dung and kitchen soft waste and waste water to produce bio gas in a bio reactor. The unmanaged cattle dung can be managed properly if fed into a bio reactor. The reactor produces bio gas which is about 60% methane and 40 % carbon dioxide along with traces of other gases. This is used as cooking fuel and for lighting in some cases in place of traditional inefficient wood and kerosene stove. Biogas is a clean and efficient fuel.

Because of the biogas the need for collecting firewood is avoided. The cooking is speeded up and time on cooking is reduced. Women have spare time to take care of their children and their education. A portion of their spare time is spent on sustainable income generating activities.

Technical details

The biogas plants built will be of 4cu.m volume and will produce about 2.5cu.m of biogas per day. They need to be fed every day with 50kg of dung, and 45L of water. The waste water from kitchen is generally enough to feed the plant.

Vermicompost Unit

In this case a part the time saved in collection of fire wood and on cooking is used on vermicompost production unit which converts the slurry from the biodigester and the unmanaged organic wastes generated in and around house hold and agricultural lands into nutrient rich manure thus creating sanitation and valuable organic manure. About 50% of the produced vermicompost will be applied in the beneficiary's own lands to replace chemical fertilizers and pesticides so that saving the soil fertility and the money on chemical fertilizers.



Remaining manure will be sold in the market that gives regular income to the women. Women now have their own income and can take care of the important family needs like health, children education etc. Rural youth are engaged in the project activity and this will create employment to them and check migration to urban areas.

Implementation of the project

SKG Sangha will build 500 units in the Hassan district starting from the end of May 2008. The process of implementation is likely to take two to three months. Most of the beneficiaries (around 450) will be selected in the Arkalgudu Taluk, while 50 other units will be build in other Taluks of the district as an example for the local people. It is very important that villagers can see example units work, so

that they come to trust the technology and see by themselves the benefits of the project. In that way, they will be demanding for the project, and willing to fully cooperate.

The process of implementation will be in each village as follow:

- SKG Sangha members will interview villagers, considering if the cattle they have is enough to feed the biogas, and if they have sufficient land to fully benefit from the vermicompost unit and sufficient place to install the units.
- Trained masons from SKG will conduct the construction of the units.
- Training will be held in each village for two days by SKG Sangha members in order to teach the beneficiaries how to use the units, to do the upkeep and small repairs.

In each area, a local person will be hired by SKG Sangha to collect the feedbacks and complaints of the users. He will contact SKG Sangha or appropriate people in order to do the repairs and maintenance of the units and ensures the same.

The units will work for a period of twenty years if they are maintained properly. They are expected to last longer since 95% of all the biodigesters installed by SKG Sangha since 1992 are still functioning.



Impacts of the Project

All impacts of the project has to be considered, and assessed, starting from the impacts of the implementation itself (building of the biodigesters, transport of the materials), up to the long-term impacts of the use of biodigesters and vermicompost.

This part presents a non-exhaustive list of impacts of the project that were assessed up to now. If you can think of any other possible impact of the project, please contact us.

Impact on natural resources

- **Reduction of pressure on the forest,**
as the families will use less wood (or no wood at all) to cook. There is an important deforestation in Hassan district, and villagers, who previously went 2km from the village to collect wood, are now going 4 or 5 km ahead
- **Restoration of soil fertility**
The chemical fertilizers are damaging the soil fertility, and the annual crop yields are decreasing. Studies have shown that when vermicompost is used, the crops increased of 13%.
- **Control of local water contamination**
Leaching of organic wastes and chemical fertilizers can occur when they are not managed. Thanks to the project that manages organic wastes and reduces the use of chemical fertilizers these risks are lessened.

GHG emission reductions

- **Fuel emissions**
GHG emissions from deforestation will be reduced. (See reduction of pressure on the forest).
- **Methane emissions**
The methane emissions from unmanaged animal waste will be mitigated
- **Chemical fertilizers production emissions**
Chemical fertilizer use will be lessened, thus GHG emissions from the production of these fertilizers will be reduced.

Emission Reduction from one combined installation

Biogas Plant	
Wood saving	3,50 TCO ₂ eq
Animal Waste management	1,38 TCO ₂ eq
Total Emission Reduction : 4,88 TCO₂eq	

Air pollution

- **Firewood smoke**

Cooking indoor with firewood fills the house with smoke, that contains toxic particles, carbon monoxide, and other toxic elements. All of these can cause lung diseases. Biogas stoves are smoke-free.

- **Sulfur dioxide**

Sulfur dioxide is a toxic gas that irritates lungs. A small amount of it is emitted in during the anaerobic digestion in the biodigesters. However, the combustion of firewood also emits small amounts of Sulfur dioxide.

Socio-economic benefits

- **Extra-income for the families**

The families will save money from the wood and chemical fertilizers they were buying. Moreover, the production of vermicompost is sufficient so that families can sell it and make extra income up to 15000Rs.

- **Women empowerment**

As the woman is the one in charge of the vermicompost, she will take care of this extra income, and the project participates to women empowerment.

Health benefits

- **Sanitary conditions**

The management of waste will improve sanitary conditions in the villages.

- **Indoor Air Pollution (IAP) diseases**

As said before, firewood smoke was causing IAP diseases, and biogas stoves will solve that problem.

Finance

Carbon finance

This project's most part is funded thanks to carbon finance and the voluntary carbon market.

Carbon offsetting allows companies and individuals to mitigate their Greenhouse Gases (GHG) emissions by financing projects that reduce emissions such as energy efficiency, renewable energy or reforestation projects. Concretely, individuals and companies, can calculate all the GHG emissions linked to their activities (commercial activities, transportation, cooking, house heating etc.), , and decide to give money to carbon offsetting programs such as Action Carbone, to compensate these emissions. Carbon offsetting programs will finance projects that reduce GHG emissions.

In order to be sure of the quality of these emissions reduction, there are voluntary standards, which are foundations of NGOs that provide approved methodology to assess the exact emission reduction of the project, as well as its environmental and socio-economic impacts.

This project is funded by Action Carbon, the main French offsetting program, and will be labeled as Gold Standard, which is now considered as the highest quality standard in terms of emission certification, and sustainable criteria commitments.

Assessing the Emission Reduction

The emission reductions will be calculated by comparing the emissions of the project (assessed thanks to the monitoring of the project), and the emissions of a baseline scenario.

Baseline

The baseline scenario is the most probable scenario that would have occurred without the project. In the case of the combined biodigester – vermicompost unit, the baseline scenario is the continuation of the current practices: families still using wood and kerosene for cooking purposes and chemical fertilizers in the fields. A study to assess this baseline consumption will be done on a sample of beneficiaries.

Monitoring

Two times a year, the project emissions will be assessed by a survey on a random sample of beneficiaries, collection data on biogas use and fuel consumption. During this survey, data on the current state of the units, and sustainable development criteria will also be collected.

Contact

If you have any comment or remark regarding the project, please contact us.

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