

TRAINING-CUM GUIDANCE WORKSHOP ON BIOGAS AND COOK-STOVES 1ST NOVEMBER 2014 AT SHARDA UNIVERSITY, GREATER NOIDA

Purpose of Training:

Several GEF/SGP NGO partners have been taking up Biogas Units and Fuel-efficient Cook-stoves on a mission mode in their projects. Each one of them are using different models, technologies and ways of doing masonry work. We wanted to have a cross learning and sharing of experiences so that all can benefit from a more Learning by Doing Approach !! The experiences in the GEF/SGP has been good, but there has been considerable progress in this domain and therefore two experts on this were also called to share, guide the experiences.

Focus was on

- why biogas units fail/or reasons that they are not producing optimum quantity of gas and, therefore, a strong need was felt to have a training for GEF/SGP project partners;
- which is the most cost effective designs of bio gas units and smokeless chulhas under what conditions;
- what are the requirements from end-to-end to ensure biogas and the smokeless chulhas work well. A value chain timeline were developed in the training;
- focus was also on the cost sharing, roles and responsibilities sharing between communities and NGOs/CBOs/Institutions while doing bio gas units and smokeless chullhas; and
- look into the sustainable ways of working for the bio gas units and smokeless chullhas.

A structured training programme was organized on **1st November 2014 as a Side Event to the function held by Junk Morphia at Sharda University, Greater Noida.** The objective was also to have a mix of partners from different States to learn from their experiences and sharing with others to provide them a choice through a variety of technologies for taking decisions that suit them the best. A copy of the Programme for the training is enclosed.

Participants:

A total of 28 persons participated (list attached). The participants included GEF SGP NGO partners; Resource Persons from SINTEX and BHAGIRTH Sansthan; Architects and Academicians of Sharda University who had come from different States, like Gujarat, Orissa, Jharkhand, Madhya Pradesh, New Delhi, Uttar Pradesh and Uttarakhand.

Proceedings:

After a brief self-introduction, Mr. Sodhi welcomed the participants and explained the purpose of the training programme and mentioned that is a two-way process, i.e. experience sharing and learning. After each presentation, the question-answer session was initiated to provide clarifications by the presenters and GEF/SGP adding value to the discussion. Mr. Sodhi informed the participants that they should not depend upon the grants for an indefinite period but should shift their operations towards self-sustainable business models. This should be done by collecting beneficiary share for any technology that is adopted by them in their projects – no technology should be provided completely free otherwise it may not sustain and will be seen as subsidy driven. The presentations were made one-by-one by the participants as under:

Presentation by Sintex: Mr. Vishad Shah, Manager-CSR of Sintex had brought a prototype of **float-gas model** for demonstrating to the participants as to how it works and makes good pressure of gas that reaches in a uniform manner upto the burner, unlike the irregular pressure from the Deenbandhu and other models. He explained that 20,000 float-gas units are operational currently that include 2,500 units on kitchen waste. Each unit of 1 cum reduces roughly 0.9 kgs of CO₂ emission.

The mix-waste (cow dung and kitchen waste) is acceptable in the units provided they are all biodegradable waste items. They informed that the suggested sizes should be 1 cum for hills and 2 cum model for tropical areas for ensuring good gas pressure. They have the models from sizes 0.2 to 10 cum in their range. The height of an average 1 cum plant is 4 feet. He explained how and when the mixing of waste is to be done to ensure better efficiency and provided a comparison between the conventional and the float gas models. The selection of specific models/sizes depending upon the size of the family and the quantity of waste was explained for the participants to select a model ideally suited to them. Various suggestions were provided on the location and size selection, distance between the installed unit and the gas utilization point, and also on the operation and maintenance of the units. Sintex informed that they are ready to consider a substantial discount if bulk orders are placed on them by the SGP partners.

Bhagirath Gram Vikas Pratishthan, Sindhudurg District: Under an Umbrella Programme on Natural Resource Management, supported by NABARD, they have constructed 4,500 biogas units during the past 10 years by establishing a revolving fund from NABARD. There is a potential of setting up 70,000 units in Sindhudurg District alone as it has substantial amount of cow-dung. A Centre has also been established by them to train the masons. They suggest that whenever they are expected to provide a training, an advance intimation should be sent to them and 2 masons and one supervisor is encouraged to come for 10 days training at a cost of Rs.6,500, that includes their stay charges. They have tried an innovation to develop biogas units using **Bamboo** instead of steel. This biogas unit costs merely Rs.1,300 against a cost of Rs.4,000 for ferro-cement and Rs.12,000 to Rs.15,000 for Deenbandhu Model and Rs.21,000 for Float-gas model. A film was shown on how to construct this bamboo model as well as the ferro-cement models they are putting up, mixed with cement. Questions were asked on the mixture of cement and sand which Bhagirath explained that it should be 1:4. They even suggested that the plantation of turmeric over waste slurry brings good results. The uses of biogas were explained by them in terms of 18 minutes taken in European countries in cooking, and 1 hour in urban Indian homes whereas in rural areas in India the cooking time for each woman is four hours. By using the biogas units, the cooking time reduces by 3-4 times and provides productive time for the women to devote to family welfare and income enhancement activities. Bhagirath brought out an important issue that the SHGs should be formed as a way to sustainability but should not be the ultimate aim with any community. They also explained about the hybrid model of biogas unit that connects the biogas with toilet and also provides raw material from poultry droppings and banana plantation. Mr. Mewa Lal from Muskan Jyoti, Lucknow suggested that they should develop dies of bamboo model to reduce the costing further from Rs.1,300. Chhatrasal brought out that the Government subsidy is available only on Deenbandhu models but not on ferro cement models upto 1 cum in Uttarakhand. Mr. Sodhi suggested to LPSS, SYSS, Aagas and Chhatrasal to explore the possibilities of identifying the masons from their projects and one supervisor to take training at the site of Bhagirath.

Chhatrasal, Ranikhet (Uttarakhand): Chhatrasal is working on biogas in 7 villages of Almora District with 23 SHGs. They have put up a total of 52 biogas units and have also repaired 5 old biogas plants, in addition to their main activities on animal husbandry. They have understood the importance of integrated animal husbandry and concentrating their activities in this direction, by sowing napier and indigenous varieties of grass, promoting local animal breeds, taking care of animal health-care through regular vaccinations and training para-vets and building travesses for the animals for feeding. This holistic approach is resulting into improved animal health and increased amount of cow-dung, in addition to increase in production and quality of milk. With this, the need to put up biogas units has become high.

SAIL, Gonda (Uttar Pradesh): Mr. Piyush Shanker gave a presentation on the project implemented by him and his colleague Mr. Pradip Das on behalf of Steel Authority of India Limited in Gonda District. This is a highly flood-prone area and the poverty rate is very high. They are working with 800 households in 15 villages in Paraspur area in Gonda District with an integrated village development approach, against which introduction of improved cook-stoves is one of the activities promoted in the area. The presentation was given mainly on the fuel-efficient cook-stoves made by them. The process of constructing the cook-stoves was explained step-by-step. Making the cook-stoves by promoting the development and use of dies brings economic operation. Mr. Sodhi informed that the design promoted in Gonda District is scientifically tested by the Indian Institute of Science for high fuel-efficiency. The standard size of the cook-stove promoted by them is 47 cm (Length) x 21 cm (height) x 33 cm (front width) x 42 cms (back width). The cost of each cook-stove works out to Rs.1,100 out of which Rs.700 is paid by the project and the remaining Rs.400 (for the pipe) is borne by the beneficiary. The properties of this cook-stove are that these are safe, user-friendly, able to use different kinds of biomass and above all it is indigenously made (meets with the GoI objective of Make in India).

Some NGOs brought out that the chimney pipe is not easily available. It was informed to them that these are available on sanitary stores and the partners should order for bulk supply depending upon the number of units they want to put up to bring in economy and the ease of procurement. The improved cook-stoves reduce the pressure on forest by using less fuel-wood and improves the health of women and the family who inhale the smoke from the open chulhas (cook-stoves).

SYSS, Seoni (Madhya Pradesh): The project is working with the tribal people in 7 villages of Seoni District, Madhya Pradesh for alternate livelihood through local biodiversity management. The process of preparing the cook-stoves was shown through presentation. They have been able to develop the cook-stove prepared at SAIL project, at a still lower cost of Rs.1,000 by procuring local material. Bhagirath suggested to them that they can reduce the cost of cook-stove further by developing ferro-cement pipe through local material and should share the experience with others after usage for certain time. Bhagarith further suggested if partners could try glass pieces inside the cook-stove, it will further improve the heat. A testing should be done and experience shared with others.

LPSS, Uttarakhand: They are focusing more on improved livelihood of hilly people by linking them with employment through local resources, like water mills and other vocational training activities. They gave a presentation on one ferro-cement biogas unit that has been put up by them. In spite of the training provided by a GEF/SGP consultant sometime back, the biogas unit developed now has some problems. It is generating biogas only for 20

minutes in a day whereas the standard 1 cum biogas unit should provides gas for a minimum of 2.1/2 hours. The participants felt that the dimensions of the unit did not appear to be correct. Bhagirath at this point shared proper dimensions and how the base should be prepared. The inlet pipe also did not appear to be at a right angle – it was shared that the pipe should be fixed at 45 deg. It was a good learning for all the participants to stick on to the proper dimensions and the positioning. LPSS was suggested to make a visit to Bhagirath to learn with more accuracy for putting up more units.

Muskan Jyoti, Lucknow: Mr. Mewa Lal gave a presentation on the work being done by their organization on waste and how to develop manure out of it by decomposing it for 50-60 days. He also explained as to how they are developing liquid manure out of waste, in drums, and making very effective and cost-saving manure. Liquid fertilizer derived out of 2 drums can be used in an agricultural area of 6 acres. A film was shown on the entire activity and how the mixing is to be done in the drums to produce liquid manure. The NGO feels by converting waste into manure and by using liquid manure, the use of chemical fertilizer can be reduced by 70% in a two-year time period. This will also improve the soil composition.

After the presentations, some documentaries were shown on Biogas and cook-stoves, including a film on Airbus Foundation where they have successfully put up about 100 biogas units with ferro-cement technology. The participants were asked by Mr. Sodhi to link up with Corporates on CSR work to expand the scope of sustainability of their operations. The participants also appreciated the cook-stoves and informed that they have found them very useful and these have high acceptance by the community.

Some of the suggestions and advice given to the participants were as under:

- Do not use the pipe size for the cook-stoves of more than 6”, though the preferred size is 4”.
- Our NGO partners, LPSS, SYSS, Aagas and Chhatrasal are suggested to explore the possibility of obtaining training from Bhagirath for them as well as their masons; they should immediately draft the systems approach followed by the NGO.
- Undertake trials on “Bamboo” model of biogas unit instead of “steel” to obtain results and practice, if found successful in respective areas of NGOs. Once found successful and implementable, it is important to obtain the patent of the design;
- Cow-dung should be treated as an asset and focus should be on growing good quality grass, like napier, or other local varieties to produce quality food for the animals and cow-dung for better efficiency of the biogas units.
- LPSS desired to make cook-stoves with locally available construction material (stones with cement) instead of mixing sand with cement. They were asked to try and check the results;
- Use only the tested and technically documented models of cook-stoves and cover the pipe of the chimney to avoid dust and rain-water, without which the beneficiaries will start developing reluctance to new cook-stoves.

With this, the meeting ended with a vote of thanks. The participants who had come also availed the opportunity to listen to the Additional Secretary, MoEF&CC, Mr. Hem Pande, the Vice Chancellor of Sharda University, Mr. Prabhjot Sodhi and other officials of Junk Morphia who had organized various events on up-scaling the waste management (including a Live TV Show with NewsX) and provided a space to GEF/SGP to organize the Training Programme as a Side Event.

It was, however, felt that there is a need to have a similar Training-cum-Guidance Workshop for other regions too where biogas units and fuel-efficient cook-stoves are being promoted under the GEF/SGP projects in a big way.