

**EMPOWERING RURAL POOR WOMEN BY ENHANCING INCOME THROUGH BIOGAS PLANT
BY INSEDA AND WAFD IN BHARTAPUR, INDIA**

By

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INSEDA (Integrated Sustainable Energy and Ecological Development Association) in partnership with WAFD (Women's Action For Development) is implementing a new household biogas design to empower women in the villages of the Bharatpur district, Rajasthan state since 2002.

WAFD had been implementing various activities to empower the rural women, adolescent girls and children in the villages of Bharatpur district since mid 1990. It realized the wide potential for biogas plants as an environmentally sound renewable source of sustainable energy. Most of the villages had cattle but the dung was being used mostly for burning as fuel or for making organic manure in traditional and inefficient manner, by just allowing the dung to gather in a heap till required. The WAFD's biogas construction team with the technical guidance and assistance of the present Secretary General (SG) of INSEDA, who is one of the designers of the Deenbandhu biogas plants (DBP), has constructed over 300 DBPs plants under the aegis of the NPBD of MNES, first through the state nodal agency, NPBD funds routed through the district authority; and subsequently, through a national level NGO nodal agency.

However, in a few years WAFD realized that while the women were the beneficiaries of the biogas plant, the decision makers were men and the biggest gainer. The decisions to invest in the building of plants came from men if they could be convinced that biogas digested slurry (manure) was good for their agriculture, as they were not interested in its cooking value or removal of the drudgery of women by providing them clean and convenient fuel at their door step, using the cattle manure. This was due to the lack of critical awareness and concern on these important issues. Therefore WAFD realized that the real benefit of biogas, as an important tool for development and empowerment could only become a reality if the women in the WAFD target villages could somehow take the role of financial decision makers as well as actively participate in the implementation of biogas plants along with the men.

Another important consideration by WAFD in the selection of new biogas model design was the utilization of locally available building materials and local skills to a maximum extent possible to provide livelihood to the rural landless labourers, and more specifically the women. At the same time to bring down the cost of the biogas plant so that it becomes within the reach and means of those poor people who had the required number of cattle to operate the smallest viable size of 1 m³ capacity and next higher size plants 2 m³ capacity.

Based on the participatory assessment of the local situation, WAFD and INSEDA also recognized that in order to involve rural women in an effective manner, there had to be any activity which would broadly address the issue of sustainable livelihood. Therefore the most appropriate biogas model would be that, which apart from addressing other issues mentioned above, would also provide income to them, either through employment or self-employment in their own villages as

well as provide additional income either during off-season or in their spare time as per their convenient would be more acceptable to them and their families.

Thus the dialogue of WAFD with the Secretary General (SG) of INSEDA (who is also the Regional Coordinator of INFORSE South Asia), who was also one of the designers/developer of the Deenbandhu biogas model, led to the designing of the present Grameen Bandhu Plant (GBP) by him in mid 1990's. The Grameen Bandhu Plant (GBP) is a bamboo reinforced cement mortar (BRCM) model and uses bamboo as the main building materials. The environmentally-benign and ecologically sound bamboo grows very fast, which is either available in villages or suitable species can be prorogated in the local area or can be purchased form the nearby areas. Thus we were able to completely eliminate the ecologically damaging & environmentally polluting bricks, with bamboo as main building material for plant construction.



As a first step WAFD decided to build only three GBP models using its own funds and resources, under the technical guidance of the SC, INSEDA, with three cooperating farmers in one of the WAFD's target villages in Bharatpur district, in 1996. During the construction of this model he also got two of WAFD master masons (MM) trained, so that when in future farmers were convinced and ready, these MM would be used for implementation/construction of GBP.

All these took both WAFD and INSEDA almost two years when we were finally ready with a practical field worthy GBP design with appropriate modifications. The GBP was also comparatively cheaper than the existing most popular Indian fixed dome plant made from brick, and called as Deenbandhu plant (DBP), and was equally strong and sturdy. The response of the plant owner and the local people and others who visited was very positive.

Due to three years of continuous failure of monsoon, Bharatpur district was having draught and farmers were barely able to take one crop in the winter season (Rabi crop season). This had affected these landless agricultural labourers, as both male and female, who mainly depended on sowing, and harvesting of agricultural crops and fodder collections for their 1-2 milch animals (buffalo) had no regular jobs. Some of the male youth with minor skills had migrated to urban centers and big cities. Therefore, WAFD and INSEDA found this an ideal situation to test and asses the benefit of the new biogas model (the Grameen Bandhu model) as a tool for providing employment to poor people, including local artisans and women.



As mentioned, an important innovation for the construction of bio gas plants, using bamboo reinforced cement mortar (BMRC) of 2 cubic meter (2 m³) capacity had already been experimented and field tested jointly by WAFD and INSEDA with 3 farmers in one of the villages, for over 6 years now since 1996. The response of end users (owners) and the local villagers about new model was also very positive. The use of bamboo baskets had brought down the price of this biogas plant christened as Grameen Bandhu (meaning friend of the rural people) so that it was at least 15% cheaper as compared to the existing most popular fixed dome plant, the “Deenbandhu model”, while also ensuring the participation of women in the weaving of bamboo structures for constructing this model.

When WAFD and INSEDA had secured funds for building a few demonstration-cum-training Grameen Bandhu plant (GBP) in the year 2002, we discussed and debated as to how best to associate women from the poor landless households. Initially there was mixed response- how these illiterate and unskilled will make (weave) bamboo structures as per the dimensions of the plant? What will happen if bad workmanship will fail the plants built at farmer’s field?

The participation of women in the fabrication/weaving of bamboo structures one of the considerations, so that they could also earn wages by weaving bamboo structures with in their own villages, for the construction of this biogas model. In fact WAFD and INSEDA also recognized this while designing the GB model, to ensure effective involvement of women in building it.

Starting from December 2002/January 2003 a number of practical trainings on step-by-step building of Grameen Bandhu model were conducted for local project staff, technicians, artisans and the local village level volunteers, as a group known as REEVOCs (Rural Energy and Ecological Volunteer Corps). Above all the training of the women of the landless agricultural families, in one of the WAFD target villages (Nagla Banjara) was the watershed in the involvement of these women as active partners in the implementation of this new innovative, low cost and affordable household biogas model. During the 15-21 days practical training women were given enough stipends to maintain themselves and meet their daily needs. The important thing has been that all these trainings for women weavers were held in their own villages, some of them with very small siblings were able to attend the training, as due to three years of draught they needed the job and money and it was the period of year when there were no earnings from the agricultural operations. Ten selected local women from the landless families were trained in the first training. 20 village women wanted to be trained, but to impart better training and maintain the quality of supervision during weaving only 10 were selected, as these woven bamboo structures had to be used for construction of GBP at the farmers field who were also contributing 60% of the cost of their plants, and the guarantee of trouble-free operation was provided by WAFD.



Twenty women from Nagla Banjara have been trained and re-trained to weave the bamboo baskets while one man (REEVOCs) from the same village has learnt how to guide them in measuring when they start the weaving in the underground moulds (pits). The women of Nagla Banjara now weave the bamboo baskets and other woven bamboo structures to be used as reinforcement for the and every year they are able to get at least 2-3 months of work and earn a small amount of Rs.1000/- per woman. From Nagla Banjara the bamboo baskets and other woven bamboo structures are transported to the site of the construction of the Grameen Bandhu plant (GBP). The bamboo having a long life and flexible material for construction ensures that the final biogas structure has a long life if basic and routine care is taken.

In the absence of any government subsidy, and to overcome this problem we are studying the possibility of granting small loans to the women on special rates of interest for the construction of bio gas plants.

While WAFD and INSEDA trained these landless women from Nagla Banjara initially for building Grameen Bandhu plants, but one of the spin-offs was when we decided to build our training-cum-demonstration, roof-top harvesting system- the same women were utilized for building BRCM storage tank, earning wages. Thus, we have demonstrated that women can play an effective role and also perform the jobs requiring technical-skill and also earn their livelihood through the renewable energy implementation activities, only if we have to keep women in the focus while designing any new technology.
