

## **STRATEGY IN EXTENSION AND SOCIAL ACCEPTABILITY OF BIOGAS**

**Joe Madiath\***

*Joe Madiath, a well-known activist working in Orissa argues the case for greater extension of biogas with suggestions for its effective functioning.*

In India cattle dung is not considered dirty or not to be handled. On the contrary, it is used as coating or 'gobar lipa' the floor, walls and courtyard, of village homes. Also cattle dung, made into dry dung 'cakes' is used as form of cooking fuel in most parts of India. In the gangetic plain and in other areas not in the proximity of forests, dried cow dung, forms the major portion of cooking fuel in rural areas.

Cattle dung, as it is, or in the form of compost has always been used as organic fertilizer. The world after being caught in the intoxicating embrace of chemical fertilizers, is today realizing the value of organic manure. Cattle dung is an important organic fertilizer by itself and helps all organic matter to become better manure.

Hence, biogas, which is essentially 'gobar gas' in India, did not face much of problem of social acceptability. When combustible gas (methane) is produced from cattle dung, there is practically no inhibition for using this gas for cooking. Unfortunately, the same cannot be said about methane produced from human excreta. Even connecting the toilet to cattle dung plants is resisted by almost all sections of people. Socially, the villagers have to accept the idea that by fermenting animal dung in a chamber without oxygen, a combustible gas could be produced without any machines and that the gas thus produced could be used as cooking fuel and could directly be lit for illumination.

The more difficult thing for the people to accept is the fact that the slurry, which comes out after producing gas is good manure and its 'strength' is not lost by yielding gas, which is combustible. This aspect can only be proved through demonstration.

Though biogas is simple technology, it requires a well planned strategy for its extension and implementation. Perhaps the most important aspect of biogas extension is to sell the idea that biogas plants do really work.

Earlier, KVIC was the sole agency propagating biogas. They built the floating model biogas plants. This is technically an excellent model. However it is a costly model, owing to the mild steel gas holder. These plants, need painting of the gas holders every year. Many farmers neglect this aspect. There was no mechanism for follow-up and maintenance. As a result a large number of plants after working for 4-8 years fell into disuse as the gas holders became rusted and sprang holes or the guide frames broke. These were not attended to on the spot and it was too much of an effort for the ordinary farmer to transport to the town for welding. So, gradually many plants began to get out of order and use and very little was done to put them back to working order. Added to this came the problem of supply of thinner and substandard gas holders, which resulted in giving the programme a bad name.

Then came the gas holderless fixed dome Janata Model Biogas Plants. It was better in the sense that it could be constructed on the sited and except for cement, all other materials could be made in the village itself. The construction of this plant, however needed higher masonry skills and thorough training of masons. Unfortunately, in several areas half trained or untrained masons constructed many defective or non-functioning plants. There has been no systematic effort to repair or replace these plants and restore the confidence of the people.

A new model- Deenabandhu is being introduced. Though, it is simpler to construct compared to Janata, this model needs well trained masons and good technical supervision. Otherwise this model will also meet with heavy casualty.

To build confidence in the people, it is necessary that all defective and defunct plants are put back to order, wherever the owners are interested to recommission the plants and have adequate cattle strength. Hence all plants, which have the potential to work should be recommissioned. Even if the government has to meet the entire cost for this, it, in my opinion, will not be a wasteful expenditure. One non-functioning plant will have more negative impact than the positive impact of 100 functioning plants.

In order to repair all the plants, an objective census of all the plants in the country should be undertaken. This census should also note the present status of all the plants in the country.

In an area, where there is no biogas plant at all, a demonstration plant can be constructed. Once this plant begins to function, intensive motivation drives should be taken up in the villages surrounding the demonstration plant. Audio visual aids and visits to farmers, who have been using biogas plants for more than 5 years, could also be arranged.

After this, as far as possible, construction of biogas plants should be done in clusters. This is to facilitate the follow-up and maintenance of the plants, after construction.

Only thoroughly trained masons should undertake construction of plants and masons under training should be supervised till they are familiar with the construction technique.

In choosing the right size of biogas plant for a family, utmost importance is to be given to the number of cattle of the household.

The plant should be made as per the dung available and not as per the number of people in the family. An average adult cow or bull, which comes to the shed only for the night will only give around 4 to 5 kgs of dung. Hence, for a 1 c.u.m. plant, at least 4 animals would be required. For a 2 c.u.m. plant, 8 and for 3cu.m. plant, 12. A 2cu.m. plant should take care of the cooking needs of a family of 5 to 6. The thumb rule should be 1 ½ ordinary animals per person. If the animals are large and are stable fed half the number of animals will be sufficient for the same size of plant.

Once a plant is constructed, it should be charged or commissioned as early as possible, because a delay might cause the farmer to lose interest or his priorities might change in the mean while, in which case, there will be no end of trouble in commissioning the plant.

After the plant starts functioning, for at least the next three years, the family with the biogas plant should be kept in touch and in due course, especially the women of the family should be trained in regular maintenance of the plant.

If at any time, a plant becomes defective or defunct due to technical problems, it should immediately be attended to repaired and if necessary replaced.

For every cluster of 300 plants there should at least be a well trained maintenance technician. The person should visit each family at least quarterly to ensure that the plant is working properly and smoothen out any problems, that may arise. Once, the biogas plant becomes part of the life of the family, they will take every care. Till then close follow-up is necessary.

Voluntary agencies are by their very nature, ideally suited to implement the biogas programme. However, very few are coming forward because, the government pays only a turn key fee of Rs. 300/- per plant and even this amount is not often. Received and if received, it is received very late.

The amount is woefully inadequate to meet the needs of supervision, while construction, follow-up after construction and to meet the cost of repair or replacements, if plants fail.

The government's attitude to biogas is also not clear. The Department of Non-conventional Energy Sources (DNES) announced the present subsidy pattern in 1973. Ever since that the cost of construction has more than doubled, but recently the subsidy has been reduced. Initially, when the idea was new, it was the bigger farmers, who could afford to take the risk and construct plants. Better subsidies were available to them. Now, when the small and marginal farmers are coming forward to construct biogas plants, subsidies are reduced, whereas the cost of construction has doubled. One sees very little natural justice in such an attitude.

DNES says it is serious about the programme, but when states and a voluntary agencies want to construct more plants, they are not allowed to do so, on the plea of non-availability of funds. The government of India spends around Rs. 2,250 crores on chemical fertilizer subsidies in 1987-88, whereas it spent Rs. 46.25 crores on biogas subsidies. Biogas plants are small non-polluting fertilizer plants first and gas plants later.

These small fertilizer and cooking gas plants should be supported with more funds. On the other hand, the government is taking up a massive tree plantation drive. But for this drive to gain actual momentum, as many people as possible should be weaned away from using wood as fuel. Biogas would be one of the means.

It is time that biogas plants are promoted not just as 'gas' plants, but as 'manure and gas' plants. Continuous use of chemical fertilizers without adequate input of organic manure depletes the soil, and the yield progressively reduces; even with increased input of chemical fertilizers. Organic manure to land is what mother's milk is to a child. Applying only chemical fertilizers is like giving the child only factory prepared tinned milk and vitamins. If every family, which has at least four heads of cattle

could build a 'bio-manure gas plant', what an amount of dung that is at present burned and wasted could be save for the fields! This would directly cut down on the intake of chemical fertilizers, add more humus to the soil and hence get better returns from the land, without depleting and destroying it.

The establishment of one chemical fertilizer plant costs the nation around 500 crores. These factories are very power hungry, hence they need a lot of electricity or natural gas or coal, which are all limited. Besides, most of these plants especially those in the public sector, continue to run at a loss, even after their produce is heavily subsidized. A more balanced and sensible approach would be, to set aside, at least, the cost of one fertilizer plant per year for the promotion of this alternate decentralized, environmentally safe and congenial bio-manure gas plants.

For plantation of fuel wood trees, ultimately, it costs the government at least Rs. 5/- per tree. But how many trees, before it is even ready for felling, is cut down for fuel! If only the section of rural population with adequate cattle strength is neutralized from their need for fuel wood, with a bio-manure gas plant, the chances of these plantations becoming mature would be greater. The geometrically growing need for fuel wood would be checked. As more and more effort is put into fuel wood plantations, side by side, every family with a potential to have a bio-manure gas plant should be identified and helped to own one. This would ensure better availability of fuel wood to those, who do not have adequate cattle, strength to own their own bio-manure gas plants.

The costs involved in subsidising biogas plants, should not be considered as subsidies, but as social costs. The nation will directly gain from less fertilizer imports, less fertilizer subsidies and better yields from agriculture and more and more trees will be spared from the axe of the fuel hungry.