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The Success of Biogas Plants in Nepal: A Note on Gender

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This article describes a successful programme to disseminate biogas plants in Nepal, and summarises the findings of various studies on the impact of the biogas technology on the quality of life of women.

The Biogas Support Programme

After a hesitant start, the introduction of biogas plants in Nepal took off in 1992 when the Government of Nepal launched the Biogas Support Programme (BSP). The aim of the programme was to build and sell 20,000 biogas plants in the rural areas within a period of five years. Considering that just 6000 plants had been built and installed in the previous 20 years, this target was indeed impressive.

Within a few years, BSP had built 14,000 biogas plants and was well ahead of schedule. With a few exceptions, all plants were operating satisfactorily. In spite of the rapid increase in supply of plants, there was also a growing excess of demand. The second phase of the BSP has now begun, with the objective of disseminating another 100,000 biogas plants in the Terai and lower Midhills of the country. In view of the difficulties encountered in the dissemination of this technology in other countries, it is interesting to examine the reasons for the success of BSP in Nepal.

Of course, the success of the programme cannot be measured solely in terms of the numbers of biogas plants installed; other relevant indicators include whether and to what extent biogas technology is contributing to the quality of life of men, women and children. This article discusses the impacts of the BPS on women, but first assesses the factors that may explain why this technology has spread so rapidly in Nepal, because they are also relevant to the issue of gender.

On the supply side these factors include:

1. Attractive subsidies were offered to eligible farmers who were willing to invest in a biogas plant. The Government of Nepal was able to provide these subsidies through financial aid received from the Dutch government. The farmers contributed by providing their own labour, the necessary building materials, and a minor share (about 25%) of the total financial costs.
2. The BSP trained masons to build the biogas plants according to a fixed and proven design. The plants were of the fixed concrete dome type.
3. The BSP operated a strict policy of quality control and standards in the construction of the plants in order to minimise the number of malfunctioning plants.
4. The BSP started as a tripartite programme, consisting of the state owned Gobar Gas Company responsible for producing the plants; the National Agricultural Development Bank responsible for the extension of credit to farmers, and the Dutch development organisation, SNV, responsible for overall programme management. Once the programme started to be a success, other private manufacturing companies and private banks were allowed to participate.

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On the demand side, the factors include:

1. The biogas plants were easily adopted by farmers because they increased the social status of men.
2. Each eligible farmer could obtain a credit for the construction of a plant from the Agricultural Development Bank of Nepal. Once the plant was in operation, part of the credit was converted to a grant.
3. Each eligible farmer could obtain a credit for the construction of a plant from the Agricultural Development Bank of Nepal. Once the plant was in operation, part of the credit was converted to a grant.
4. In the Hindu culture of Nepal, the collection of cow dung and the process of feeding the plant was considered a privilege rather than a duty.
5. The digested cow dung provides a better fertiliser than raw dung, and there is no competition for its use. In fact, the biogas plant can be regarded as a fertiliser factory producing joint outputs (gas and fertiliser)
6. As a form of fuel for cooking, biogas is much more convenient than wood (it produces no smoke) and is suitable for lighting (biogas lamps). The use of the biogas also generates considerable time savings for women in cooking and, more important, in the collection of fuelwood.

Thus not just one factor, but a whole set of factors explains why biogas plants have been so well accepted in Nepal. If just one of these circumstances had been different, the dissemination of biogas plants might not have been so successful.

Gender

The biogas programme has undoubtedly helped to improve the quality of life of the women who were given access to the technology. One of the long-term objectives of the programme was to improve the level of hygiene and health of the rural population, especially of women. The use of biogas eliminates the smoke produced when cooking with firewood, it reduces the hardship involved in the collection of firewood, and it encourages the better management of dung and night-soil.

Although the literature is generally positive on the impacts to be expected from biogas plants, few biogas projects have studied systematically the impacts of the technology on women. The BSP in Nepal has been an exception, in that it has conducted case studies to evaluate the effects of the programme on the workloads of women and on the division of labour between men and women (see the references below).

On the whole, the results of these studies have been positive. In four households in the village of Madan Pokhara, for example, it was found that the net time savings varied from 2 hours 20 minutes, to 1 hour 15 minutes per day (Van Vliet, 1993). Most of these savings were due to less time spent on cooking (1 to 2 hours) and cleaning (1 hour). In the village of Puthuwa, Keizer (1994), found total net time savings of more than 3 hours per day for women. In Rupandehi, where fuelwood is scarce, the average time saved in collecting fuelwood was as high as 5.6 hours per day (Van Vliet, 1992). Although Britt (1994) considers this to be an overestimate, she -from her own research- reports an average time saving of 4.5 hours per day in the same village, which is still impressive. If one adds to this the time saved in cooking and cleaning, the average time savings in fuelwood collection, cooking and cleaning may amount to 6 to 7 hours per day. These are estimates for hard conditions, however; the average time savings may be lower. Leermakers (1993c) estimates that, on average, 20% of the rural women's work time is spent collecting fuelwood, which amounts to about 2-3 hours a day.

Whatever the average and variation between these estimates, it should be noted that they are all partial estimates. The overall effect of the introduction of biogas plants on the workloads of women will be considerably less for a number of reasons. First, the time savings need not necessarily accrue entirely to women. Although in Nepal it is the woman's task to collect firewood, in many cases this work is assigned to children or servants. For

many women the time saved in cooking and cleaning may therefore be more significant than the time saved in fuelwood collection. Second, the operation of biogas plants, which is also a woman's task, requires the mixing of dung with water. When water is not readily available, fetching water can be a time-consuming activity that may reduce or, in some cases, even nullify the time saved on fuelwood collection. Third, the time savings generated by biogas technology do not necessarily imply a reduction in workload; it depends on how the time saved is reallocated.

To estimate the difference in workload, Britt and Kapoor (1994) measured the increase in women's leisure time and time spent visiting relatives (*ghumne*). They compared the time budgets of women and men in eight households in the village of Hathilet, four of which had a biogas plant and four did not. They found, surprisingly, that the women without a biogas plant had more leisure time and *ghumne* than the women with a biogas plant. They presented no explanation for this general result. It seems safe to conclude however, as Britt (1994) does, that the net result of biogas on the workloads of women - given present regime of labour inequality - may be that women in biogas households work just as long as they did before, if only by substituting one activity for another. The major benefit of the introduction of a biogas plant may therefore not be the time savings, but the reduction in the hardship of collecting firewood.

The message of these conclusions is that one should be cautious about the positive effects of biogas technology on the workloads of women based on partial estimates of time savings alone. This does not mean that the biogas plants offer no other advantages. An increasing number of households are deciding to install a latrine in combination with a biogas plant, which helps to improve standards of hygiene and sewage management. Cooking times have been reduced in all cases, and cooking on biogas is found to be healthier and more convenient because it does not produce toxic fumes that cause headaches, coughing, respiratory and eye problems. Most women appreciate the increase in comfort arising from the use of biogas. This has been confirmed in many studies, and also by the author's own experience in 1994 during visits to about 50 households that have installed such plants.

The dissemination of biogas plants in Nepal appears to be one of those rare instances of a successful new technology that has only pluses and no minuses. From a gender point of view, the technology helps to improve the quality of life for women. However, this should not be overstated: the programme has not had a noticeable impact on the balance of power between men and women, and it has not changed gender relationships. As noted above, one important reason why the programme has been such a success is that the farmers quickly adopted the biogas plants as means of increasing their social status. It was the men's and not the women's decision to adopt the technology.

It is this very factor which explains why biogas technology has not spread in other countries. In India for example, Moulik once mentioned that the male heads of the household do not usually give high priority to investments in biogas, because the daily benefits accrue mainly to women. This was not the case in Nepal however, where the biogas plants were found to add to the social status of the farmer.

So it was coincidence rather than self-determination that had generated the advantages for women. Apparently self-determination is not a necessary condition for the betterment of life, and options that would improve the quality of life of women (and children!) are more likely to be adopted if they also serve the interest of men. This is shown by cases discussed here, and may be one of the lessons that can be drawn from the experiences of the BSP programme in Nepal. The case shows that synergy can be a most efficient form of energy, also when gender is at stake. After all, isn't gender all about synergy?

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