

Energy Saving and Drudgery Reducing Technology Initiative

Jagriti, India



Woman cooking using LPG. Photo: Jagriti

In rural mountain societies, if women are to become empowered, they need to be freed from routine drudgery that takes away a good part of their day. In the hills, the dependence of most households on firewood, for cooking and heating is well appreciated. For women the burden of firewood gathering is relentless; daily, 365 days a year, all their working life. Forest loss and degradation in recent decades exacerbates the situation. This burden, in addition to women's reproductive role, confines women to their house, effectively barring them from any active participation in community social life.

The primary objective of the project in Kullu was to reduce the daily drudgery of poor mountain women. As a result, women and girls are spending less time and energy on gathering firewood, cooking, washing blackened utensils and heating water in inefficient ways. The time saved by women is productively used in learning skills that help generate additional income for themselves and to get together in groups to save money, begin small individual or group enterprises and more importantly, to either talk about and participate in community social development work, or simply for leisure.

In December 2003 the project commenced with distribution of LPG connections (Liquefied Petroleum Gas) to women members of Women's Savings and Credit Groups. This was supplemented by adding pressure cookers in July 2004 and further consolidated by distribution of hamams (local water heating devices) in November 2005 to address wasteful firewood use traditionally employed. Till now 383 LPG connections (124 for Scheduled Castes - SCs) on a 60 percent cost sharing basis, 207 pressure cookers (34 for SCs) and 362 hamams (121 for SCs) on a 90 percent cost sharing have been distributed. The enthusiastic response from women (seeing the obvious benefits) and willingness to share costs, has helped Jagriti expand and strengthen the drudgery reduction initiative over the years.

At the same time, there has been a gradual but consistent accumulation of savings by women. Through intra-loaning within groups, incomes from small enterprises like milk

and cheese production or making and marketing of vermi-compost or honey has further added to groups' bank balances. Even small improvements in economic status have made women more enthusiastic about group activities and learning new skills. The project has diversified to improve existing knitting and weaving skills and help with marketing of new products. More women members now talk confidently in village council meetings and are improving their skills in negotiating with men to further their interests. Leadership is beginning to emerge as evidenced by some women recently winning village council elections.

Interventions were initially donor funded, but have carried on and later, in the case of hamams, have been subsidised by 10 percent by Jagriti's own fund. Judging by the good response received, the basic aim has been achieved but more is to be done. Unintended positive outcomes include non-members procuring energy and time efficient devices; men and children more willing to help women with cooking and water heating; members' realising the economic and political potential of working in a group.

The three devices: LPG, a pressure cooker and a hamam cost IRs 2,200 (the subsidy being IRs 1,200 and more for SCs). These devices free up five to six hours daily. Daily trips to the forest are reduced by one to four trips per week. Heating 25 litres of water in a hamam used two kg of agricultural waste or twigs compared to 10 to 12 kg of hard wood. The freed time helps women generate income to pay for the LPG and save, as well as greatly reducing effort in gathering firewood.

Impacts

- *Reduced fuelwood consumption:* Hot water is required throughout the year with double the demand during winter. Average hot water requirements per day per household in the winter months (i.e for six months) is 50-60 litres. Hot water in the winter is not only required for bathing but also for washing utensils, clothes and as drinking water for livestock. A comparative study of fuelwood consumption in a traditional chullah as against a hamam suggests that to heat 20 litres of water in a traditional chullah takes roughly 10 -12 kg of hard wood and 35-40 minutes whereas, in a hamam it takes two kg of household litter, crop residue or small twigs to heat 20 litres of water in 15-20 minutes. So, with use of a hamam for approximately 130 days in year, a household saves one and a half tons of fuelwood.

In a household of six members, on average 10-12 kg of fuelwood is saved per day by cooking on LPG. In the three to four summer months, an average of three cylinders is used with each lasting for one and half months. Roughly, by using LPG each household in a year saves about 1.4 tons fuelwood.

- *Time saved:* Time saved in cooking and in fuelwood collection is very significant and has important implications for empowerment of women by greatly reducing their drudgery and toil, freeing them to engage in other income enhancement activities and/or socially rewarding pursuits. Fuelwood collection for most women involved a daily, backbreaking grind varying between two and six hours (depending on the distance of the forest), first thing in the morning. For those who bought LPG, the time

spent was reduced to one to four trips (two to six hours) per week. In nine cases, the collection frequency was down to one to four trips per month.

- *Active participation of men and children in household chores:* Since a hamam is easily portable and is placed outside the house in an open area, most of women members indicated that children and other elders have now taken up bringing water and heating it in the hamam. When water was heated on a traditional chullah, the responsibility automatically fell on women. The children are now more willing to take a bath and wash their own clothes. In one village they carry the hamam to the stream, use twigs and fallen pine needles to heat the water and then wash clothes or bathe there.



Hanam. Photo: Mamta Chandar

Some women indicated that men and children are more willing to share cooking responsibilities. Often, when women are away for some work, men and children prepare food themselves whereas, earlier women had to prepare it before leaving the house.

- *Increased scope for engaging in economic activities:* There has been a noticeable increase in women's participation in daily waged work especially during summer when there is heightened agriculture activity.
- *Reduction in indoor pollution:* According to a study "LPG: A key to empowerment of hill women" supported by NORAD, women mentioned positive health impacts in terms of less coughing, eyes not hurting or watering and less respiratory problems. Women also mentioned that the use of LPG leads to better cleanliness, less sweating in summer and clothes not getting as dirty as before. There is less drudgery involved in washing utensils.
- *Environmental impacts:* The preferred firewood in the valley is green oak (*Quercus dilitata*), a slow growing tree, difficult to regenerate. Less lopping for firewood benefits this species. Fallen pine needles and cones are good for burning with a

hamam. Greater production of vermi-compost (using an indigenous species of *Eisenia feotida*) and its use in agriculture fields reduces the application of chemical fertilisers, at the same time helping soil texture and microfauna. Similarly, growing use of vermi-wash lessens the use of chemical pesticides. Both encourage organic farming. Encouragement and training to farm indigenous bees, *Apis cerana*, is helping to revive their populations and benefitting local flora. With the use of LPG, a near smoke-free environment exists in kitchens with obvious health benefits

A measure of sustainability is that the project has survived three years beyond its initial funding period, 2001-2004 (the hamam initiative was introduced after). As women members save one rupee a day and are making supplementary income, they can buy and sustain the use of devices like LPG. Not one woman member has so far discontinued use of LPG. Jagriti has played a key role in group mobilisation, supporting and encouraging poorer women to organise, save and then invest. This support is crucial in helping women overcome the initial economic, social and psychological barriers to change.

The organisation of poor women into savings and credit groups has had several other benefits. When a woman has a bank balance, a growing or potential income and time, she will go regularly to group meetings, to the bank, to the market and even to visit government offices. Her social status and confidence grows as does her network. Women begin to keep records and understand money matters. Back in the village many women are beginning to understand social development and gender issues and to participate in grassroots democracy. Women with more exposure to the outside world begin to look more closely within their own household. Possibly she will have fewer children. Her concern for children's health and schooling increases. The higher enrollment of girl children among women members illustrates this.

The high initial cost of LPG was a big barrier to its adoption by poorer households the project targetted. Costs were brought down by negotiating with stove manufacturers: LPG dealers waived charges for tubes, less security for the cylinder and providing a free igniter. Bulk buying brought down prices. Phobias among women about gas cylinders or pressure cookers were assuaged by demonstration. It was difficult to convince women that using LPG was actually cheaper than other fuels including firewood if one factored the cost of collection. Eventually, getting a few women to use LPG and share their experiences proved more convincing than calculations. Once a few women in a group began to use LPG, then demand surged. By the time the hamam was introduced there was general acceptability of these devices and women adopted them eagerly despite only a nominal subsidy.

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