

Improved cookstove technology for rural livelihoods for women: sharing experiences from Haryana – India

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Background

In India, the State of Haryana comprises a total of 6759 villages, and an area of 44 000 km². The majority of rural households in Haryana use fuels such as wood for cooking and heating, and kerosene for lighting. In addition, fuels like dung cake and crop residues (mustard, Guar and cotton stalks) are used widely.

TERI has implemented an improved cookstove project under the Haryana Community Forestry Project to enhance the income level of the local communities, to promote the use of biomass in a sustainable manner and to mitigate the adverse affect of poor indoor air quality. During this project, 234 improved cookstoves were constructed in four villages in two districts of the State.

Selection of villages

The four villages selected (in consultation with the sponsoring agency) were Haluheda, Nathera, Bhojawas and Gudha, all situated about 60 km away from Delhi. The population and the households of these villages are illustrated in Figure 1.

Fuel consumption pattern

In the four villages, a mix of fuel was found to be in use for cooking in most households, while for lighting, kerosene was used. The study found that the maximum energy consumption for cooking in villages Haluheda and Gudha was 182 MJ/day and 168 MJ/day respectively. The lowest energy consumption for cooking was seen to be 122 MJ/day in the village of Bhojawas. Most people used dung-cakes and crop residues as these are available in abundance. Kerosene was used for lighting. In all the villages, LPG was only used as an alternative fuel for cooking and for rapid heating, e.g., preparing tea or refreshment for guests.

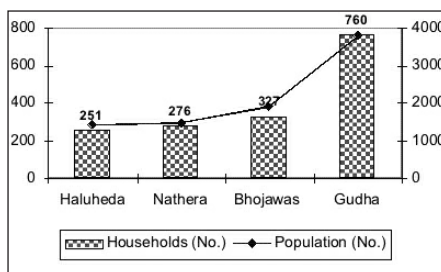


Figure 1 Number of households and population in the villages

The need to involve local women

In rural areas, women play a significant role in procuring and processing fuel for domestic cooking. However, the men in the family make decisions regarding all financial matters such as construction or renovation of kitchen, installing of new devices such as improved cook stoves, cattle, etc., while women are responsible for positioning the cook stove in the kitchen, collection and selection of fuel wood species for use, cutting it in small pieces and storing, etc. (2).

A shortage of fuel in the rural areas, due to deforestation, increasing population, and several other reasons, has encouraged participation of women, who are experienced in the drawbacks of traditional stoves in terms of health and environment. The involvement of women was expected to be advantageous in two ways:

- improving their skills to maintain their improved stoves and help other users
- providing them with an opportunity for enhancing their income level through installation and maintenance of improved stoves in and across the villages.

Awareness generation

Awareness generation comprised technology demonstrations, dissemination of pamphlets, sharing technical write-ups, and open discussion forums,

which provided for community knowledge sharing and helped in clarifying doubts and benefits, etc. This ensured that the community clearly understood the project rationale and improved their participation in implementation.

Village meetings

Village meetings were seen as an entry point to introduce the programme, interact with the households, develop rapport, and foster confidence among the local community. As a result of a meeting for village women, they were convinced that the use of improved cook stoves would result in efficient utilization of fuel wood and forest conservation, would have a positive impact on family health and result in more time for other activities (income generating as well as leisure).

Dissemination of pamphlets

Pamphlets in the local language were distributed in the villages, describing the basics of the improved stove, and how it is used.

Demonstration and dissemination of models

A demonstration of different models of improved stoves was carried out in the village. Under the programme, TERI trained 50 members of Women User Groups (WUGs) and 9 masons in construction, repair and maintain improved stoves (1). Members of the groups were trained to conduct household surveys for assessing the potential of improved stoves, and fuel consumption patterns.

Building local institutions

For building institutions that have the capacity to plan and manage an improved stove programme, it was necessary to encourage and involve those women who were to be more proactive and involved. Two women were selected who had prior experience in community participation and

formation of groups. These women were trained intensively to select suitable locations for construction of improved stoves within the kitchen, identify raw materials (quality and quantity check), construct improved stoves, and motivate beneficiaries.

Formation of groups

Women User Groups (WUGs) for improved stoves were formed. These women benefited from co-operation, coordination and in planning the future activities of the project. Within the WUGs, only a few women were literate. A literate woman member was delegated responsibility for managing group activities and maintaining records of meetings, etc. Activities focused around improved stove installation, which would generate income and ensure sustainability for the group. The literate women in the group were trained to conduct village and household surveys, while other women assisted during the course of survey. The involvement of all members ensured that everyone had ownership of the group activities. It also helped control any bias among the group members.

The project took into consideration the need to ensure that the stoves were properly used, and built local capacity through the WUGs, so that the local community could address the issue of repair and maintenance.

Through this process, the group members learnt more about the project activities in the village and were paid for conducting the survey. This activity built capacity within the group and infused confidence so that they could help in any subsequent village level activity in any future programme.

Performance evaluation of improved stoves

To assess the performance of improved stoves, a kitchen performance test (3) was conducted in the village of Nathera. The test compared fuel consumption of traditional stoves with that of improved stoves in the same 4 households. The results showed that fuel saving through improved stoves was about 15%, and a time saving of 0.5–1.0 hour per day as indicated in Table 1.

Table 1 Comparison in energy consumption

Type of cookstove	No. of households	Daily per capita energy consumption (MJ)	Saving over conventional stove (%)
Traditional stoves	4	22.00	—
Improved stoves	4	18.75	14.77

Table 2 Evaluation of stove by stove users

	Yes	No	Same as traditional stove
Is the improved stove in use?	27	0	0
Ease in use	27	0	0
Fuel saving	27	0	0
Time saving	26	1	0
Smoke removed from kitchen	23	2	2
Cough	2	19	6
Eye burning	0	26	1
Irritation	3	20	4
Usefulness of IC as against TC			
Safety considerations	27	0	
Hand burning incident		18	9
Good food cooking efficiency	27	0	
Good roti baking	27	0	

An evaluation survey of improved stoves, involving 27 interviewees, gathered information related to the performance of the stove as well as its impact, was gathered after five months of installation. The responses are shown in Table 2.

Conclusion

- The study indicated that users required around 15% less fuel. Significantly lower smoke emissions were reported.
- The installation of 234 improved stoves reduced the burden for collection of fuelwood; the estimated fuelwood saving is around 78 tonnes per annum for these households, which in economic terms amounts to about Rs 117 000 (cost of wood ~ Rs.1.5 per kg).
- The ownership of cookstove technology lies with women. Hence, the involvement of experienced women who spoke the local dialect played an important role in rapid assimilation of the technology by the community.
- 50 WUG members and 9 masons were trained to assess potential, construct, repair and maintain improved stoves at the village level, increasing the capacity of the stakeholders. This should assist the long-term sustainability of the technology and help in

establishing a mechanism to meet future demand.

- The study demonstrated that an appropriate technology, backed by local institutional mechanisms, could open new avenues for income generation activities for the trained WUG members.

References

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