

Disseminating Efficient Cookstoves, Bhutan

Themes

- ★ Energy efficiency
- * Linkages with other environmental goals
- ❖ Technical capacity development
- ❖ Awareness, culture and practices
- * Gender equity and empowerment (MDG 3)

PROJECT DATA

Project Name: Improved Community Cooking Stove – an alternative to mitigate fuel wood pressure in North Trashigang; and Biomass Fuel Efficiency Project in Tsirang
Implementing Organizations: Bhutan Youth Development Association (NGO); Tsirang Women's Group (CBO)
Project Location: northern Bhutan (Trashigang); southern Bhutan (Tsirang)
SGP contribution: \$25,670 (Trashigang); \$44,400 (Tsirang)
Start Date: September 1999 (Trashigang); October 1999 (Tsirang)

ENERGY OVERVIEW

Energy Resource: fuel wood
Technology: improved community stoves (Trashigang); improved household cook stoves (Tsirang)
Application: cooking
Sector: public (Trashigang), domestic (Tsirang)
Cost of equipment: \$750 (community stoves)
Efficiency improvement: 50% reduction in fuel wood consumption
Number Served: 20 community stoves (2 stoves in each of 10 religious institutions); 2,000 household cook stoves

BACKGROUND

Bhutan is a small country of only about 800,000 people, but the population is growing at an estimated 2.6% per year. Almost 80% of the population still lives in rural areas, where most people rely heavily on fuel wood for cooking and heating. Bhutan is estimated to have one of the highest rates of fuel wood consumption in the world, at 1.27 tons per person per year, according to a 1991 Food and Agricultural Organization (FAO) study cited in the project evaluation.

North Trashigang is a relatively isolated region of eastern Bhutan, which has suffered great land degradation and deforestation due to heavy use of firewood for cooking and heating needs. The wood consumption rate there is higher than average: 1.47 tons per person per year, according to the FAO study. The area has a number of Buddhist monasteries and communal religious centers at which where holy rituals are performed over 50-60 days per year. The potential savings in firewood and in money to these institutions from the use of improved stoves is significant. It is estimated that each year, each of these institutions consumes 8-10 truckloads (45-57 tons) of fuel wood.



Community-sized metal stoves (Trashigang, Bhutan).

Tsirang is in the southern part of the country and is very densely populated. Most local people use open fire mud stoves, which they use for cooking food both for their families and for their cattle.

PROJECT DESCRIPTION

Overview

The project in Trashigang installed community cook stoves in 10 religious institutions, including two nunneries. Although community training in maintenance could be improved, the project has reduced the use of firewood at these sites by 50%, and has stimulated the interest of the Trashigang District Administration in distributing the stoves in other community kitchens such as schools, monasteries and army camps. The project in Tsirang has resulted in the installation of individual, improved stoves in 2,000 households. The project, which involved the Tsirang District Administration from the start, achieved these results by training women from villages to construct, maintain and repair the stoves; these women have in turned trained others.

Implementation

Led by the Bhutan Youth Development Association (BYDA), the Trashigang project involved local community members in launching this effort to reduce the use of fuel wood in institutional cooking. The demonstration of this technology by religious institutions seems to be particularly effective, as most residents of the Trashigang region are devout Buddhists.

The project's evaluation, however, noted several shortcomings in implementation. First, BYDA was not located on site, and therefore staff had to travel to the region. Implementation, particularly related to training community members in stove maintenance, might have been improved if the implementing agency had been closer to the area. Second, following the implementation of this project, the key staff at BYDA left the organization. Therefore, much institutional memory was lost, which may hinder follow-up on this project's work. However, the stoves have generated great interest in improved cook stove technology within the community, including among local district admin-

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istrators. The project evaluation further suggested that in the future, smaller, individual stove designs be introduced along with communal cook stoves. In fact, another project was recently approved for SGP funding that promotes improved stoves for individual households in a particularly remote and high-altitude area of Trashigang.

The Tsirang project was led by the Tsirang Women's Group, which is made up of women from various villages. Women from 12 villages were trained systematically in building, maintaining and repairing stoves. This helped contribute to the widespread use of these stoves. The Tsirang District Administration was integrally involved in the project from the beginning, providing logistical support for training, procuring materials, and even covering the salary and expenses of the technical supervisor during the project period. This technical supervisor was deputized to the project by the Ministry of Trade and Industry.

Technology

The Trashigang project used community-sized, shielded, cylindrical, metal stoves with hot water jackets. They were manufactured in Khaling, a town in the district of Trashigang where the project was implemented, at a cost equivalent to \$750. Through the project, this model of the stove was demonstrated to use 50% less fuel wood than other stoves in this region.

The Tsirang project used an improved stove that is essentially a mud kiln with a metal sheet chimney pipe and an iron gate. The stove is simple to construct using locally available materials, except for the metal chimney pipes. The pipes must be obtained from the neighboring Indian town of Bongaigaon, but apparently this has not posed a problem for the project.

Environmental Benefits

Global: According to reports from the kitchens of the religious institutions involved in the Trashigang project, fuel wood consumption has dropped by 50%. According to calculations performed by project evaluators, for the 10 institutions, this adds up to 220 to 280 tons of firewood saved per year. The Tsirang project, on the other hand, is estimated to save approximately 7,500 tons of fuel wood per year; assuming that each household has 6 people and that stoves are being used in 2,000 households. Thus, the overall impact of the household-sized stove project is far larger.

Local: Reduced use of firewood is reducing pressure on local forests, which are a major source of firewood in these areas.

Livelihood Benefits

Health: Those individuals who actually use these stoves to cook, in particular women, are now breathing in less smoke, and also spend less time cooking because the new stoves are easier to handle and cook food more quickly.

Capacity Development

Both projects built the capacity of the respective NGOs to undertake such projects. In both cases, this was the first energy-related project for these organizations. BYDA, primarily a youth organization, conducted outreach to schools in local vil-

lages about environmental responsibility. Training was provided for stove users in the religious institutions, but appears to have been somewhat inadequate. The Tsirang Women's Group involved its membership by training them to build stoves and teach others. The capacity development efforts in Tsirang seem to have been more focused toward project goals. Also, the primary constituency of the Tsirang Women's Group was directly affected by the problem of fuel wood collection, which the household stoves helped to solve. In contrast, BYDA needed to train kitchen workers, who were not its traditional constituency; youth were involved more as volunteers in carrying out installations.

Partners

Religious groups: In Trashigang, local religious institutions were important partners in this project. Because of the great respect they are accorded in the community, their adoption of this new technology reportedly had a great influence.

Government authorities: The Tsirang project involved two government agencies – the Tsirang District Administration and the Ministry of Trade and Industry – from the start of the project and their support was integral to project success. The contrast with Trashigang is quite interesting. There the project design was presented to the administration after the project was fully planned and the budget finalized. Originally, the project was to cover only 7 religious institutions, offering them 3 stoves each, which together could handle all of their cooking needs. However, the Trashigang District Administration wanted to cover more religious institutions. The project was therefore modified, with 10 institutions receiving 2 stoves instead. This meant that each institution still had to retain one traditional stove in order to meet all its cooking needs. In the end, the local authorities were pleased with the project results and interested in promoting the stoves further. However, their support during the project might have been greater if they had been approached at an earlier stage.

LESSONS LEARNED

Environmental Management

Both projects illustrate significant decreases in the amount of wood used as a result of the installation of improved stoves. So far, the impact of the household-sized stove project has been far greater than that of the institutional stoves project. This comparison is a reminder that while individual households may have a small impact on their own, if a project is successful in reaching many households its impact can be significant. However, the evaluation indicates the lack of a baseline on how much wood was being used prior to implementation, which would have helped greatly in conducting impact assessments.

Barrier Removal

Information/Knowledge: The choice to work first with religious institutions in the Trashigang region seems to have been particularly helpful in raising awareness, because of the great respect accorded to these institutions in the region and because the large number of visitors coming for religious festivals can help

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spread the word. Awareness programs in schools have also supported the effort to improve local knowledge about this type of technology. In Tsirang, on the other hand, women have been very successful promoters of the stoves. The project trained women from many villages, which helped spread information about the stoves.

Scaling Up

In Trashigang, the project has caught the interest of the district administration, which now wishes to expand the project to other community kitchens, such as in schools, monasteries and army camps. Through this project, enough interest has been generated in the cookstoves among individual households that demand has grown for household-sized improved stoves. Recently SGP has approved a project to introduce household improved stoves in a remote area of Trashigang. In Tsirang, on the other hand, the local government has already invested significant resources in the project itself, and is therefore very

committed to continuing the project's successful efforts at promoting household stoves.

SOURCES CONSULTED

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