

Fuel-Efficient Smokeless Stoves, Pakistan

Themes

- ★ Energy efficiency
- * Linkages with other environmental goals
- ❖ Technical capacity development
- ❖ Institutional capacity development
- ❖ Awareness, culture and practices
- * Poverty alleviation (MDG 1)
- * Gender equity and empowerment (MDG 3)
- * Health (MDGs 4-6)

PROJECT DATA

Name: Fuel Efficient Smokeless Stoves
Implementing Organization: Escorts Foundation (NGO)
Location: Changa Manga region near Lahore, Pakistan
SGP contribution: \$7,500 (July 1995) and \$32,698 (November 1999)
Start Date: July 1995

ENERGY OVERVIEW

Energy Resource: firewood
Technology: efficient stoves
Application: cooking
Sector: domestic
Efficiency improvement: use 50% less wood than traditional stove
Households Served: 11,728 (70% adoption rate) in 54 villages

BACKGROUND

The Changa Manga region, about 80 km from Lahore, includes about 55 villages surrounding one of the largest man-made forest reserves in Pakistan, the Changa Manga Forest Reserve. There are also six villages located within the forest, and additional "squatter" settlements in the general area. The reserve is a protected area, but is subject to pressure from local inhabitants who depend upon firewood for cooking. These communities are very poor, with very low literacy rates. There is a high rate of theft of wood from the protected area, with some villagers selling firewood from the forest to generate income. Women use traditional stoves for cooking, which produce smoke and soot, leaving their kitchens, cooking utensils and hands coated with soot. Women also suffer from a variety of illnesses and pains related to smoke inhalation.

PROJECT DESCRIPTION

Overview

This project spread the use of smokeless stoves among women in these villages in order to reduce their dependence upon firewood and improve their health and general living conditions. The grantee, the Escorts Foundation, was founded by a private company in Lahore, and focuses its efforts specifically upon the development of the Changa Manga region. Thanks to the Foundation's high level of success in this area, it is now hosting

training sessions for other NGOs interested in carrying on similar projects elsewhere in Pakistan. In Pakistan, SGP has funded seven other organizations to participate in training offered by the Escorts Foundation.

Implementation

The Escorts Foundation made use of a stove construction and dissemination model successfully implemented by the Family Planning Association of Pakistan, which in turn was adapted from work on improved stoves in India. However, unlike projects in India, the Escorts Foundation does not subsidize the stoves at all, believing that users must invest in the stoves if they are to continue using them and promote their use to other villagers.

In any village, the implementation process begins through conversations with the village leader which lead to discussions with various stakeholders and planning for the training. The next step involves canvassing the village, collecting population, fuel use and other data while distributing advertising for the training. Then the training itself is provided. Originally, the project began by training two women from each of six villages, and then encouraging those women to go back to spread the stoves around their villages. However, this approach was unsuccessful. Although the women were paid a small amount – about \$1 – per stove they constructed, adoption rates were low because traditionally the rural women make their stoves themselves and were not willing to pay anybody for constructing their stoves. A site visit by SGP staff led to the suggestion that the women conduct public demonstrations, boiling water with the old and the new stoves, and measuring the differences in the time needed to boil the water and the amount of fuel used. This proved helpful, but the Escorts Foundation also decided to change its approach and train more women per village. In the project area, a typical household consists of four or five families sharing a compound but maintaining separate kitchens, so the Escorts Foundation started training one woman from each compound, who would in turn construct stoves for other residents in her compound, and in doing so would train them to make these stoves. At the end of each training session, two particularly motivated women would be chosen from each village to take home construction kits. These women would be responsible for motivating other women to use the stoves, and for evaluating and monitoring post-construction use of the stoves. Project staff also make three follow-up visits to each village to help ensure proper maintenance and encourage expanded use. Using this refined approach, adoption rates are now at 70%.

Technology

This stove is modeled after the Naada stove, named for the village in Pakistan in which it was first developed and implemented. This stove has been further refined for local needs in the process of the Escorts Foundation's work in Changa Manga. The stove has two burners and a chimney that conducts smoke out of the home. It is made out of locally-available and inexpensive materials, such as concrete-mud, a mould to make the 10 bricks needed for the stove, some tin cans for a chimney,

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and some metal rods. It must be cleaned every one-two weeks in order to continue to function properly. When used properly, this stove uses 50% less firewood, and does not produce indoor smoke.

Environmental Benefits

Global: The major global benefit is the reduction in greenhouse gas emissions from burning fuel wood. In 2000, the project estimated that the project avoided at 10.84 Gt of carbon dioxide emissions annually through the 5,476 stoves in use in 24 villages at that time. (Subsequent increases in the number of stoves used have substantially added to the estimated emissions avoided.) The estimates were based on an average usage rate of 5-6 kg of wood per day with traditional stoves, which the improved stoves would cut in half.

Local: The local forest reserve is now less subject to illegal wood-cutting. This is a benefit to the diverse flora and fauna located in the reserve.

Livelihood Benefits

Health: Women who use the stove now breathe in less smoke. Although no official health studies have been done to illustrate the exact impacts, there seems to be a general improvement in women's health since the implementation of the project. In addition, hygiene is improved, since women now have an easier time keeping their hands, cooking utensils and walls clean in the kitchen due to less smoke. This also saves water, which can then be used for other purposes.

Income: Many families buy wood for cooking. Now, they need to buy 50% less than before, resulting in saved income that can be used to meet other needs.

Social: Women have reported more satisfactory relationships with men, since meals are cooked more quickly using two burners, and the food tastes better.

Gender equity: The project has opened up new possibilities for women in an area where traditionally women have few opportunities. The project employs local women to run the smokeless stoves project. These young women originally faced social pressure not to work for the project, but the situation has changed significantly; now families come to them to help their daughters get jobs.

Beneficiaries

Women are the direct beneficiaries of the project, since the project trains women to construct and use the stoves and women are primarily responsible for cooking. However, entire families benefit from better food and reduced smoke.

Capacity Development

The entire project is geared around building women's capacity to build and disseminate the improved stoves, thereby enabling women to take action to improve their own well-being and that of their families. The Escorts Foundation has introduced several new ways to support women in achieving these goals, including:

- Condensing the training sessions from five days to three days, to make it possible for more women to participate.

- Inviting more women from a single village to a workshop to be trained to make the stoves. Even though only two of these women are selected to be promoters of the stove after the workshop, having a larger group of women in that village with knowledge about the stove provides needed support to the promoters and in general results in greater adoption rates.

Partners

In addition to the communities themselves, SGP has been an important partner. On several occasions, monitoring visits by SGP staff resulted in suggestions for improvements, which were implemented by the foundation with positive results. In addition, since the Escorts Foundation's success in getting the stoves adopted, it has begun training other agencies, some of whom have been funded by SGP grants to participate in training sessions. These agencies include CARITAS Pakistan, Punjab Rural Support Programme, Shaheen Welfare Society, Rural Development Project, Haripur and the Shahbaz Welfare Foundation. The Escorts Foundation has also trained the staff of the Pakistan Community Development Project for Rehabilitation of Saline and Waterlogged Land – a UNDP and AusAid funded project.

LESSONS LEARNED

Environmental Management

Many stove projects around the world have met with only moderate success in achieving goals of reducing fuel wood use. One reason for this is that stoves have not always been designed to meet the particular needs of a community. This project has taken care to adapt the stove to meet local needs. In fact, at several points during implementation the technology of the stove has been refined to make it easier to build and use given local conditions.

Barrier Removal

Technical: By training local women to build – and teach others to build – the improved stoves, the project does help remove technical barriers to the widespread use of these stoves. In addition, the Escorts Foundation has been training other NGOs, who now have the technical knowledge to build stoves as well.

Financial: While the project does not subsidize the purchase of stoves, it has made every effort to keep the stoves low-cost by using locally available materials and tools.

Information/awareness: Information about the stoves is now more readily available in the villages. The women who attend the training are provided with illustrative materials to help share the technology with others. However, there is little evidence that the project helps increase awareness of the global environmental benefits that the project produces, namely, greenhouse gas emissions reductions.

Scaling Up

The project's efforts to train other NGOs to start similar projects elsewhere are an important step toward scaling up this project. At present, other NGOs are promoting these stoves in 12 districts of Pakistan.

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