

Improved biomass stoves (RWANDA)

Subject categories: Environment, Alternative Energy

Project goals

In many developing countries, traditional fuels (wood, grass, leaves and other materials from the immediate environment) form a major contribution to the energy balance. Several problems are related to this: Cooking methods are inefficient, they involve the use of scarce resources and are harmful for the environment. Large amounts of smoke in poorly ventilated dwellings are also a health hazard with women being disproportionately affected. Unrestricted felling of trees and removal of grasses and other plants produce several environmental problems, among them soil erosion and poor air quality. The Bank, as part of its Energy Sector Management Assistance Program, helped to introduce improved biomass stoves in Rwanda. Promoting this technology, however, required the creation of producer incentives (i.e., an attractive profit margin) while making the stoves affordable for consumers.

Project description

The Rwanda improved stoves project has been successful by almost any measure. Three years after the project's implementation, about 25 percent of households in the capital now use improved stoves. The stoves can be purchased in nearly every market outlet and in many department stores. More than 90 percent of the people who use an improved stove say they will buy one again. Householders like the stove for its fuel economy, its longer lifetime, its ease of use and its cleanliness. Tests in stove owners' kitchens indicate that the fuel savings compared with traditional stoves amounted to 35 percent. In fact, the people adopting the stoves decided to name them Rondereza, which means "to save" or "to economize."

The Rondereza stove was initially developed in a laboratory, but its design was later altered in response to producer and end-user feedback. At the beginning of the project, several models were tested extensively by households. The Improved Ceramic Jiko, a popular Kenyan stove, was expected to do very well during these initial tests, but it was not preferred by the householders. The model selected was then tested more extensively in a 500-household sample. Many changes were made following suggestions by householders and stove makers, including alteration of the stove's size, quality, color, door type/construction and portability. The final negotiated price allows an acceptable payback time for stove buyers and gives manufacturers higher profit margins than on traditional stoves.

Private entrepreneurs were responsible for production, distribution and retailing of the stoves without any subsidies. However, assistance was provided to selected stove makers for modernizing their facilities. The project initially provided a liaison between these producers and retailers of stoves, but gradually this assistance was phased out. This is why Rondereza stoves are now selling in all marketplaces and in several shops and supermarkets. Even lower-priced copies of the stove are widely available. The cheaper materials in the latter stoves reduce their lifetime, but charcoal savings are similar to those obtained with the original model.

The entire project was managed by a very dynamic Rwandese team composed mostly of women, along with outside technical support from expatriates and Rwandese specialists.

Government involvement was limited to informing consumers of the economic and environmental benefits resulting from improved stove use for the country as a whole. A systematic publicity campaign was launched to inform charcoal users of the existence of charcoal-saving stoves. In addition, the government provided support for training of stove makers and market surveys regarding consumer satisfaction with the design of the selected stove.

Lessons learned

Three major factors contributed to the success of the improved biomass stoves program in Rwanda:

- Extensive participation of stove users, producers and retailers during all phases of the project assured that the stove would be acceptable to the public.
- The high charcoal prices and relatively low cost of the stoves were great incentives for households to adopt stoves. The stove price struck the right balance between ensuring a short payback period to consumers granting attractive profit margins to private stove producers.
- Government agencies were involved only in technical support, promotion and advertising. Much of this work was done by a Rwandese team composed mainly of women. The production, distribution and selling of stoves was done by private entrepreneurs without government assistance.

Source

Barnes et. al. What Makes People Cook with Improved Biomass Stoves? A Comparative International Review of Stove Programs. World Bank Technical Paper Number 242, p. 22, 1994.

Further Reading

Scientific American article, "Cookstoves for the Developing World" by Daniel M. Kammen, July 1995 Vol. 273 No. 1, pp. 72-75.