

The Upesi stove for households in Kenya



Neil Cooper

▲ The Upesi stove reduces smoke levels bringing health benefits for users, Kenya.

Biomass for cooking: improving energy efficiency, environment, employment and health

Around half the world's population relies on biomass for their energy needs. Biomass includes fuel wood and organic waste. It is the major source of renewable energy.

Most of this biomass is used for cooking on open fires or poorly constructed stoves, usually inside the house. This leads to very inefficient fuel use and a high level of indoor air pollutants.

One of the simplest, most immediate ways to improve the quality of life for those using biomass as a fuel is to provide access to improved stoves. The Upesi stove, developed by ITDG with its partners in East Africa, is made of clay and fired in a kiln. The design allows it to burn agricultural residues as well as wood, such as waste from sugar cane.

The Upesi stove benefits poor people in several ways:

- It can halve the amount of fuel wood needed by a household. This reduces drudgery and improves the sustainability of fuel wood resources.
- It provides employment. About 10 000 stoves per year are made and sold in West Kenya alone.
- It alleviates household smoke.

ITDG has also introduced a new design of kiln which has substantially reduced the fuel needed to make the stoves and the scrap levels from stoves cracking during firing.

As a product, the Upesi stove has had a widespread impact in Kenya, while other types of improved stove, adapted for local needs, are used in many other developing countries.

The technology is relatively straightforward. What makes the Upesi a success is the way in which non-technical issues including the use of the market, the participation of the community, entrepreneurial training and skills development have been addressed as part of the development approach to the technology.

Stoves commercialization

The community is actively involved in the manufacture and promotion of stoves, which are sold commercially on the open market.

The Rural Stoves West Kenya project has trained 13 women's groups (approximately 200 people) to make improved stoves. As well as production training, the women gain skills in business management, including marketing.

The training is participative. Women identify their own training needs, devise the programmes and control their pace.

The annual production is estimated at 10 000 to 11 000 stoves, and the profit generated by the stoves provides artisans with a higher than average rural wage. As a result, the women involved have gained status, self-confidence and financial independence.

The empowerment of the women was also instrumental in achieving an improved kiln for making the stoves. ITDG worked with three groups of women potters to design and test prototypes. Their involvement created a forum where they could also learn how to construct and use the kiln.

The project continues to pilot new approaches to commercialization. It is currently working to improve the linkages between potential stove users and producers by identifying and training intermediary marketing groups, thereby encouraging key players to market

▼ A paddle is used to get the correct thickness of clay which is important to the stove's durability, Kenya.



Simon Ekless

themselves more efficiently, promote the benefits and expand consumer choice.

Business services

The technical training of the women, by itself, would not have been sufficient to achieve success. Training on group organization, management, marketing and business skills was crucial, particularly because the aims of the project focused on the benefits to producers and the development of a commercial market for stoves.



Clare Heyting

The initial market for the Upesi was developed at a time when similar stoves were being subsidised, leading to artificially low prices and unequal competition. A key target was to create a market with a more realistic pricing structure reflecting real production costs.

Marketing awareness among the producers also fed back into the technical training. The Upesi had to be a high quality product, because the market had been damaged by stoves of inconsistent quality. Although a higher production standard may initially appear to raise prices, in fact people with little money need to have confidence that what they do buy is reliable.

A further business service which was crucial to this project was the establishment of a strong network of the key actors – producers, installers and retailers of the stove – and the effective dissemination of information and knowledge between them. For small scale producers the lack of information and knowledge, every bit as much as economic mechanisms, constitutes a major barrier to use of the market.

▲ As well as being end users, women in this project benefit from manufacturing and selling the stoves. Keyo, Kenya.

Pollution reduction

When biomass is used inefficiently, it produces high levels of particulates which are a major contributory factor in several potentially life-threatening diseases. Household smoke is the major cause of death for children under five, worldwide (WHO: Health and Environment in Sustainable Development, Geneva 1997).

ITDG is working in Kenya to determine the best, most cost-effective ways to reduce levels of smoke in the homes of rural poor people. The levels of smoke in the kitchen are being monitored over a typical day for fifty homes in a 'before-and-after' study, in which the benefits of windows, eaves space, smoke hoods and improved stoves will be statistically evaluated.

Improved stoves can be a key contributor to reducing particulate levels in households – though other adaptations to reduce fuel use and smoke levels are also required.

By working at household level, ITDG hopes to extend the range of benefits to people's quality of life which the improved stove can offer.

The Upesi stove is a good example of the benefits of working closely with a community to find out what type of stove best suits their lifestyle. Its high level of adoption reflects this success.

▼ 8. Like many rural women in developing countries, this woman carries the burden of firewood collection, Zimbabwe.



Paul Harris