

Energy

Sustainable Energy for Development

Improved Cooking Stoves Save Lives



Improved cooking stoves are designed to draw off the smoke and toxins, thus creating a safe environment for women and children.

Cow dung, jute sticks, other agricultural waste, wood – 90% of all Bangladeshis still employ these traditional fuels for cooking, and most use inefficient and poorly ventilated clay stoves that produce smoke, carbon monoxide, and carcinogens; the particulate pollution levels may be 30-35 times higher than accepted guidelines. The women, who cook over these stoves, and their small children are exposed to these high levels of toxins for between three and seven hours a day.

The World Health Organization has estimated that 46,000 women and children die each year in Bangladesh as a direct result of exposure to indoor air pollution, while millions more suffer from respiratory diseases, tuberculosis, asthma, cardiovascular disease, eye problems, and lung cancer. 70% of the victims of indoor air pollution are children under five.

Not only does the inefficient burning of biomass in private households pose such a serious health threat to Bangladeshi women and children; biomass is also becoming increasingly scarce and costly, putting additional pressure on already stretched poor households and depriving the soil of nutrients, resulting in unsustainably low levels of organic matter in the soil. However, Bangladesh's reliance on biomass for cooking fuel will continue for several decades to come; today, only

43% of its 160 million people are connected to the electricity grid and, in the rural areas, where around 70% of the population live, only 25% have electricity. A mere 6% of the entire population has access to natural gas, primarily in urban areas.

The best immediate way of addressing this urgent problem is the rapid and widespread introduction of improved cooking stoves: stoves that burn biomass much more efficiently and – even more importantly – are designed to draw off the smoke and toxins, thus creating a safe environment for women and children. The Program Sustainable Energy for Development (SED), supported by the Bangladesh Ministry of Power, Energy, and Mineral Resources and the German Federal Ministry for Economic Cooperation and Development, through the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, is doing just that.

Various models of improved cooking stoves have been developed in different countries. In Bangladesh, it was a group of scientists at the Institute of Fuel Research and Development (IFRD) of the Bangladesh Council of Scientific and Industrial Research, led by Dr. A. M. Hasan Rashid Khan, who worked with rural women in the early 1980s to adjust the clay, water, and cow dung stoves they routinely build and use: The simple addition

of a grate at the correct depth, which focuses the fire on the bottom of the utensils, and small air holes in the wall of the stove just below the grate reduces the biomass required to cook a meal by 50%. The addition of a chimney eliminates the smoke and particles which so threaten the health of women and children near the stove. The cost: around 800 takas (8 euros).

Disseminating improved cooking stoves

GIZ experience in many different household energy initiatives around the world has shown that a commercial approach is the most successful and sustainable way of promoting improved cooking stoves, if the design is acceptable locally and systems for marketing/maintenance of the improved stove are developed.

The SED Program has put these elements into place: It worked with over 200 partner organizations ranging from big NGOs to very small grass root NGOs and micro-enterprises. Through these partners, people were offered hands-on training courses in which they learned to build the improved stoves under the brand name Bondhu meaning "friend." Those who were interested were also taught how to market these stoves using the ingenious Bangladeshi idea of micro-finance.

However, recognizing that the efficiency of the improved stoves diminishes if they are not made precisely to specification, in 2010 SED began promoting a version of the stove made from concrete that incorporates bits of broken brick. Metal molds allow pre-fabrication of standardized stove parts, which can then be quickly installed in a customer's home. Higher material costs for the more durable concrete stoves are offset by reduced installation costs.

SED has also initiated a new dissemination strategy for these new concrete Bondhu Chula stoves. "Stove scouts" are contacting and training employees of sanitary shops throughout the country. These shops already have the



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expertise to construct and install concrete facilities such as latrines and drainage systems, so they require minimal training to expand their product range to improved stoves made of concrete. Seven SED training teams are scattered throughout the country training the first of the over 1000 sanitary shops that have already expressed interest in obtaining the molds (they must pay half) and producing the stoves.

Since its inception, the SED Program has disseminated over 400,000 domestic stoves and over 3000 commercial stoves, which save at least 400,000 tons of firewood a year. Over 2000 people are earning their livelihood through improved stove installation and maintenance. The long-term vision of the program is to replace all traditional stoves in Bangladesh with improved stoves, thereby saving thousands of lives and reducing the consumption of biomass fuel by over 30 million tons every year – not only easing the critical fuel situation in Bangladesh, but also preserving the forests, and protecting the environment.

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