



FIRE UP MADHYA PRADESH

FELLOW REPORT

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Executive Summary

Kopernik partnered with local NGO, Haritika to distribute Greenway Smart Stoves in Madhya Pradesh, India. The cook stoves were made available at a subsidized rate of Rs.500 (US\$9). Those from lower income families were given the option of paying this amount in installments. More than 80% of customers live on a monthly income below Rs.6,000 (US\$108).

The Greenway Smart Stove has had a positive impact on peoples lives:

- **65% said it now took less than 1 hour to collect firewood** (whereas initially only 12% of respondents took less than one hour to collect wood for the *chulha*); and
- **74% of customers rated the stove as "useful" or "very useful"**.

The users particularly enjoyed the stove's:

- ease of use (70%);
- increased speed of preparing food (10%);
- using less firewood and emitting noticeably less smoke than the *chulha* (20%).

One of the limitations of the stove that has been identified is its size when used in larger families of nine or more members. The customers pointed out that cooking pots for the family of this size tend to be too large to fit on top of the stove.

Project Background

Local Partner: Hartika

Started in 1994, Haritika is a non-profit organization, headquartered in Nowgong, Madhya Pradesh. It conducts work in approximately 150 villages in Uttar Pradesh and Madhya Pradesh with the financial support from Indian government, UNDP and several international NGOs. Its main areas of focus are water and electricity specifically water conservation schemes, dams, plantations and solar lighting systems. Haritika has partnered with Kopernik to implement the smart cookstove project with the goal of reducing firewood use around the project sites. The organization received 150 cookstoves from Kopernik in May 2012.



A dam constructed by Haritika near Chandanpura



Solar panels constructed by Haritika in Chandanpura

Snapshot of Madhya Pradesh

The stoves have been distributed in three villages in Chattarpur district of Madhya Pradesh: Khakri veerpura, Kasera and Chandanpura.

The large majority of customers work as farmers with the exception of a few households that send family members away for labour work. The average number of family members is 6.2, including 3-5 children. The average monthly household income is Rs.7,786 (US\$138), ranging from the lowest income of Rs.1,666 (US\$30) to the

highest income of Rs.18,750 (US\$333).

The lowest-income village is Chandanpura, where the average monthly income per household is Rs.2,560 (US\$46), ranging from the lowest income of Rs.1,666 (US\$30) to the highest income of Rs.5,000 (US\$90). The community is also the most isolated one of the three being a 20-minute car ride away from the nearest town. The general infrastructure in Chandanpura is poor. Those without the access to solar panels can at times remain without electricity for over two weeks at a time.

The second village, Kasera, has higher levels of household income due to the Bunder Project, a diamond mining venture initiated by Rio Tinto, an Australian mining company operating in the area. The company consequently brings additional sources of income to the surrounding rural communities.

Common Practices Relating to Cooking

People in the area typically cook twice a day, using the traditional stove called a “chulha” (pictured below). It takes between 45 and 60 minutes for approximately half of the households to prepare meals, with the other half taking more than an hour.

Except for three families who seem to have notably higher income levels, everyone collects firewood for cooking. 67% of the households (24) collect wood once a week and 33% of households (12) collect wood twice a week. The task of collecting fuel is generally a job for women though some pointed out that every family member helps

with the job. For 91% of households (33), each wood collection takes between one and two hours plus. In Kasera, the majority of people take more than 2 hours to collect firewood, while in Chandanpura most households take between 1.5 and 2 hours. The time it takes to collect the firewood is also largely dependent on the size of the family with larger families spending more time on collection.



Traditional chulha in Chandanpura

Project Implementation

The Technology

A single burner, high-efficiency cook-stove designed for long-term, everyday use, can use any type of solid biomass fuel. This includes, but is not limited to, wood, cow dung and agricultural waste. The patent-pending design produces 70% less



smoke and uses 65% less fuel than traditional mud cook-stoves. It adds convenience to users' lives by reducing the time and/or money they must spend collecting or buying fuel and allowing for a more comfortable cooking experience. It has been tested and certified by the Ministry of New & Renewable Energy (MNRE), Government of India.

User Satisfaction

While a few users reported no significant improvement in cooking time and larger households found the stove to be too small, the large majority of customers rated the cookstove as "very useful"¹. 70% listed ease of use as the thing that they like most about the cookstove. 10% listed the speed of food preparation while 20% noted the reduced amount of firewood required to use the cookstove and the noticeably less

¹ The rating was conducted using 5 scales, which were "very useful", "useful", "ok", "not very useful" and "not useful at all".

smoke emitted in comparison with the *chulha*, as being the key benefits. The customers did not specifically comment on direct health improvements and did not list what they did with the free time they acquired from the reduced time it took to collect firewood. More investigation is needed to assess the impact on health and behavioral changes.

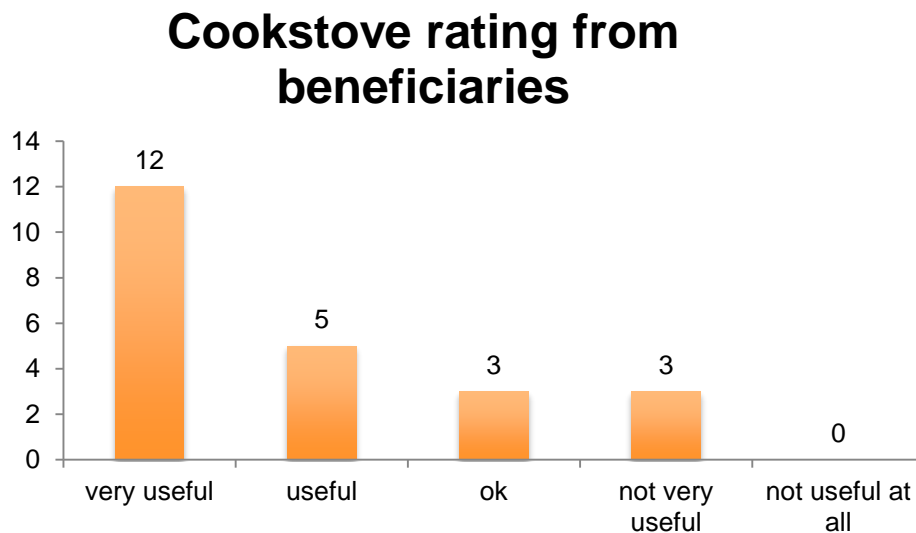


Figure 6. Cookstove rating

Initially Haritika sold the stove at the subsidized price of Rs.500 (US\$9), and required customers to pay in a lump sum.

Following the feedback from the early customers however, Haritika introduced an installment payment method to make the technology accessible to lower-income families. The customers also identified a need for more product maintenance training for Haritika's staff as they were often unable to answer their product-related inquiries.

Case Studies

Aarti (Khakri Veerpura)

25-year-old Aarti lives in a house with her parents-in-law, her husband, her two children and three other family members. Her family makes a living through farming. She assumes all the cooking chores within the family and uses the cookstove approximately once in two days. Though she finds that the cookstove releases much less smoke than the *chulha*, she feels that it is difficult to stop using the *chulha*, to which she is heavily attached. Although her family is large with 9 members, which could cause her difficulties in using the cookstove, she is still able to use it because not all her family members are in the house every day.

Amita (Khakri Veerpura)

25-year-old Amita lives with a large family of 9, including her three children. The family derives its livelihood from farming. When the Kopernik fellow visited her house, she was chatting with her female friends and they were watching the children play outside. She uses the cookstove about once every two days. She likes the cookstove because it releases less smoke. However, she feels that it takes 15-20 minutes more time to cook when compared to her *chulha* because it has less firepower. Her husband, who was the one to buy the cookstove, told the Kopernik fellow that he thought Rs.500 (US\$9) was quite expensive.



Amita and her neighbors

Vimla (Chandanpura)

Vimla is a 38-year-old woman living in a house with three other family members including one child. Her family is one of the poorest in the village, with a monthly income of Rs.1,600 (US\$28). She told the Kopernik fellow that her family is poor because they do not own land for agriculture, instead, they earn money by collecting firewood and selling it to people, or undertaking temporary labour work. Sometimes, they migrate to other major cities such as Delhi and Agra to do labour work. On some occasions all of the family members migrate together, while on others only her husband goes to work. If she has enough money, she wants to purchase appliances such as a TV and a fridge, give education to her child and purchase land. She feels that the cookstove is very useful because it makes preparing meals easier.



Vimla and her neighbors

Narcein Singh (Chandanpura)

Narcein is the head of a household with 6 members, including his wife and his four children. He works as a farmer as well as doing service work once in a while. In the village, he assists with projects conducted by Haritika and receives some money from them. He was the one who decided to buy the cookstove. His wife likes it a lot and uses it for every meal. Instead of collecting wood, his family purchases fuel from local shops. They purchase fuel about once a month and spend Rs.300 (US\$5.40) each time. Narcein's family has just started to use the cookstove, so he cannot estimate how it will impact the cost of firewood for him, but he expects that it will be reduced since it requires less fuel than a *chulha*.