

Pilot Area 1
Bethanchowk,
Kavrepalanchowk
Nepal



Ganesha Cookstove Usability Survey Results

Pilot Area 1: Bethanchowk, Kavrepalanchowk, Nepal
Survey conducted May & June 2018
Principal Investigator: Basudev Upadhyay

Supported by:



Abstract

In May 2018, 10 Ganesha stoves were donated to Bethanchowk Municipality, Kavrepalanchowk District, Nepal. The municipality provided these stoves to users in return for a fee of about US\$5. After villagers used the stoves for 3 weeks, we interviewed them to determine usability of the stove. Primary conclusions included:

- 1) All users said they would buy the stove for significantly more than they had paid - on average 78% more.
- 2) Villagers used the Ganesha stove to cook all of their normal foods, with the exception of *dhindo*, a dish that requires continuous, vigorous stirring.
- 3) Many users preferred the Ganesha stove to gas stoves (LPG) and other improved cookstoves (ICS). They said it was “easy to light” and “burns clean.”
- 4) Users assessed that fuel costs and emissions (smoke) from the Ganesha stove were significantly less than for traditional stoves.
- 5) Users ranked the Ganesha stove highest among all stoves for safety.

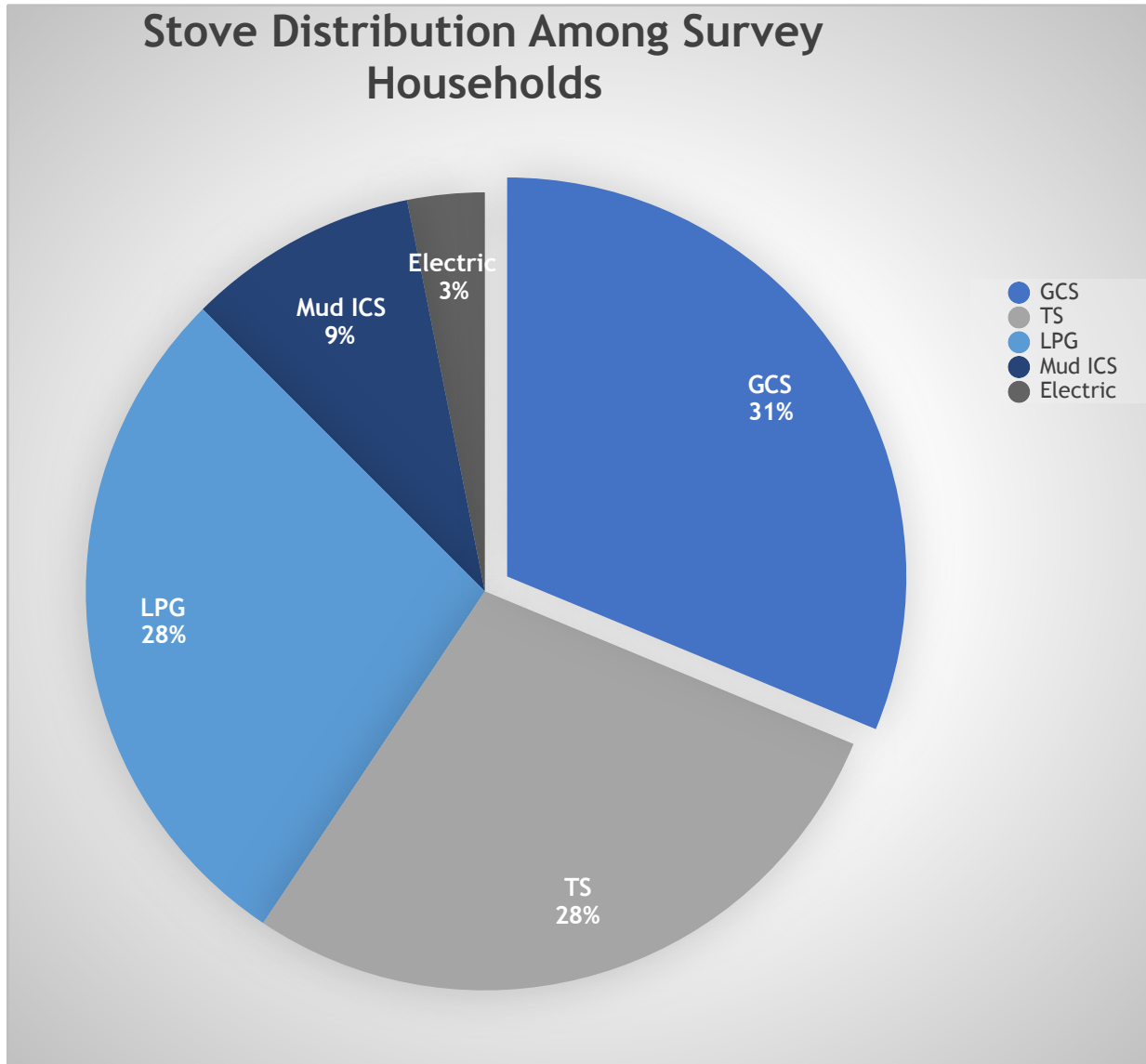




Cooking Habits in the Survey Area

- Villagers in Bethanchowk regularly cook rice, legumes (dal), vegetables, wheat flatbread (roti), animal feed, tea and snacks. They also boil milk and water.
- The types of cooking devices they use include: 1) earthen or metallic traditional open fires (also known as three stone fires); 2) improved earthen stoves with two pot holes and a chimney; 3) gas stoves, usually with two burners, that use standard LPG cylinders; and 4) electric rice cookers. Small numbers of rice husk stoves, which burn wood together with sawdust or rice husk, are also in use.
- The majority of fuel used is in traditional open fires, primarily for the making of animal feed. LPG stoves are used for small-sized cooking events such as snacks like popcorn, tea, and cooking at rush hours. The remaining stoves are used for the major meals such as lunch (rice, dal, vegetables etc) and dinner (roti, vegetables etc).

Types and Number of Stoves in Use



- Before this Ganesha stove pilot project, the most commonly used stoves in the project area (90% of sample households) were traditional stoves (TS) comprising three stone fire; metal, rock or cement brick fire; and metal tripod stand. Most users also had gas stoves (LPG). The 10 households in the survey had 23 stoves total prior to the pilot project, and 33 total after distribution of Ganesha stoves.

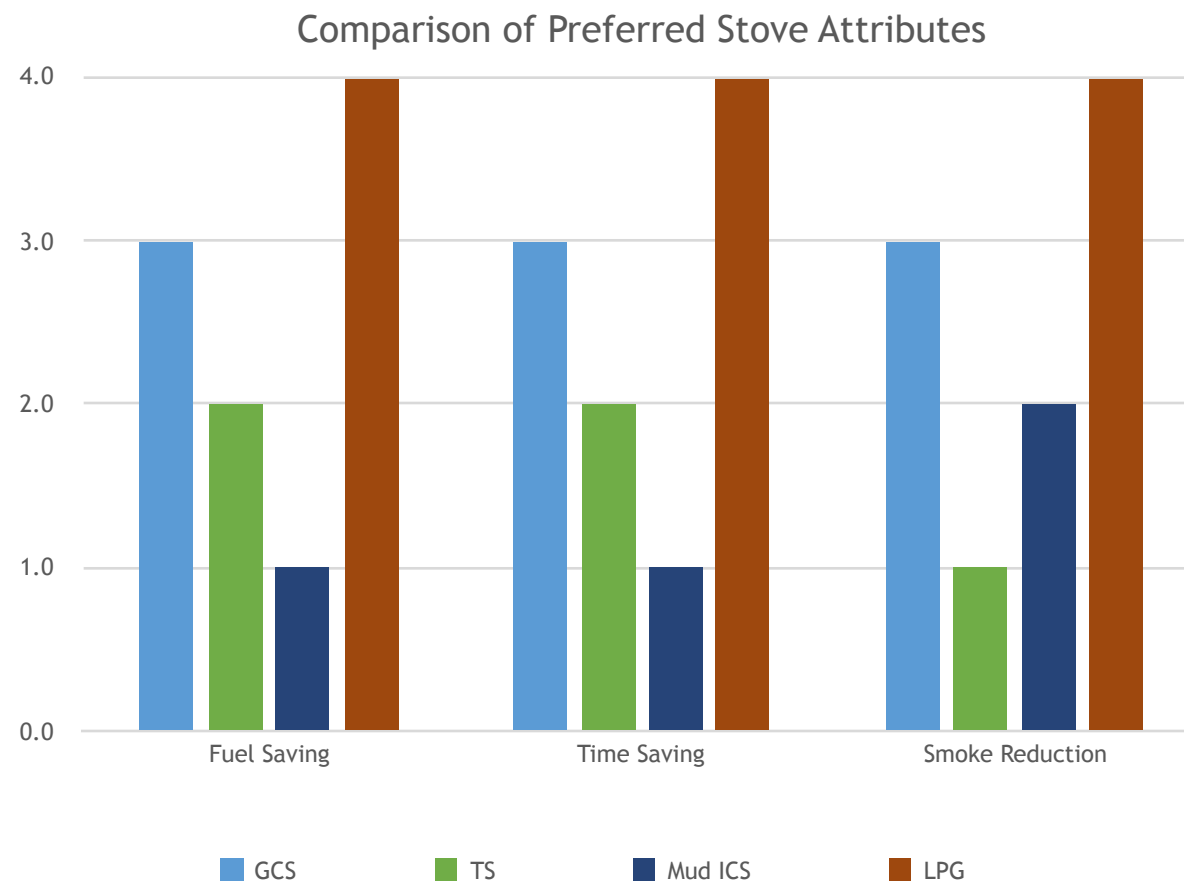
- Mud-built improved cookstoves (Mud ICS) were owned by 60% of the sample population, although only 30% used them during the test period. Electric cookers (rice cooker) and sawdust stoves were also used by 10% each.

- All the sample households were given the Ganesha stove (GCS) to understand its usability in comparison to other stoves.

Comparing the most preferred attributes of a cookstove

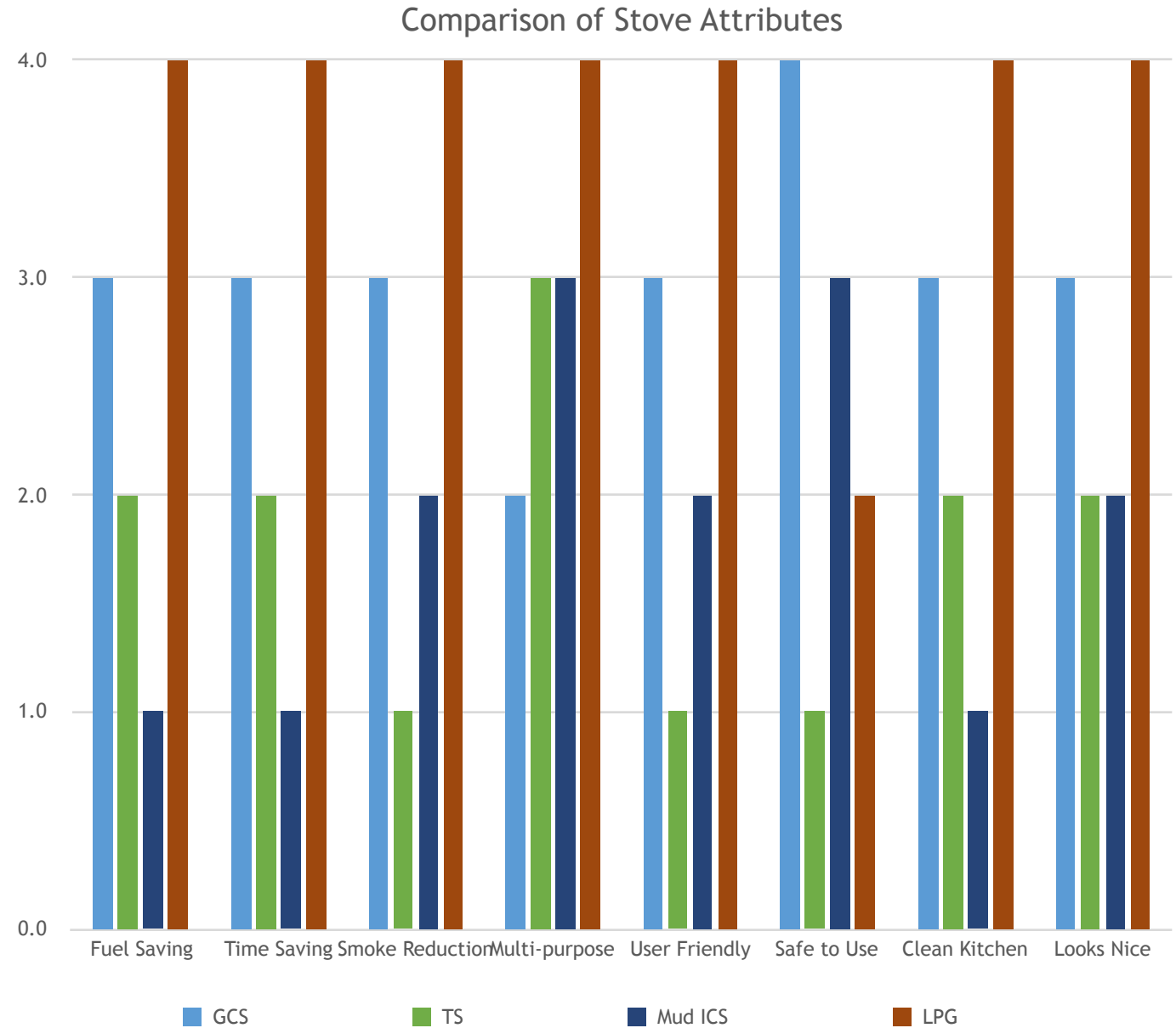
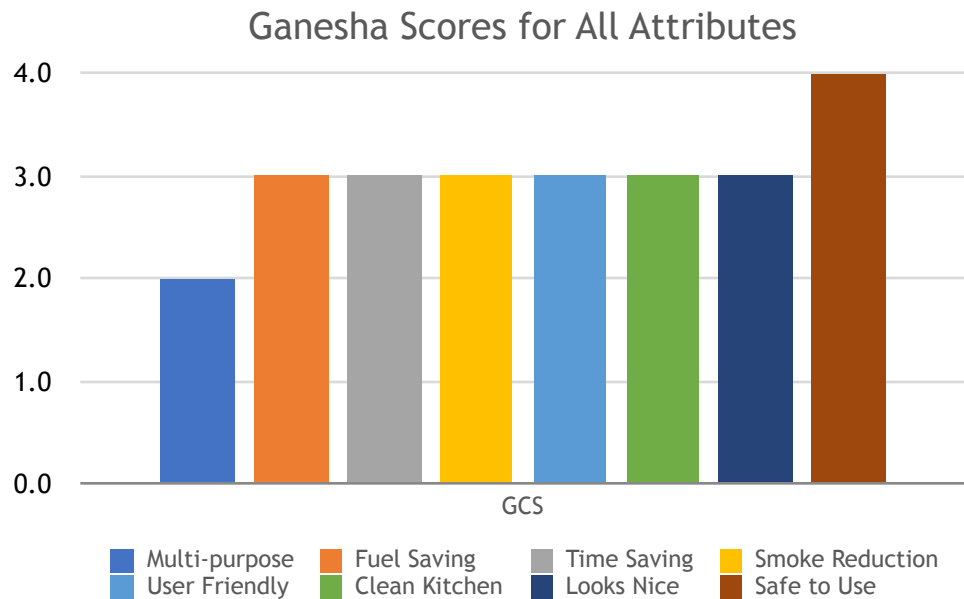
According to a 2017 World Bank study, the three most preferred attributes for stoves in Nepalese households are a) fuel savings, b) time saving and c) emissions reduction. Comparing these three attributes among the six different stoves in use in the survey area indicates that:

- 1) Among biomass stoves, users ranked the Ganesha stove best for all three attributes.
- 2) Users ranked the Ganesha stove's fuel and time saving second, after LPG.
- 3) Users ranked the Ganesha stove's smoke reduction as second, after LPG.



Comparing the 8 attributes measured

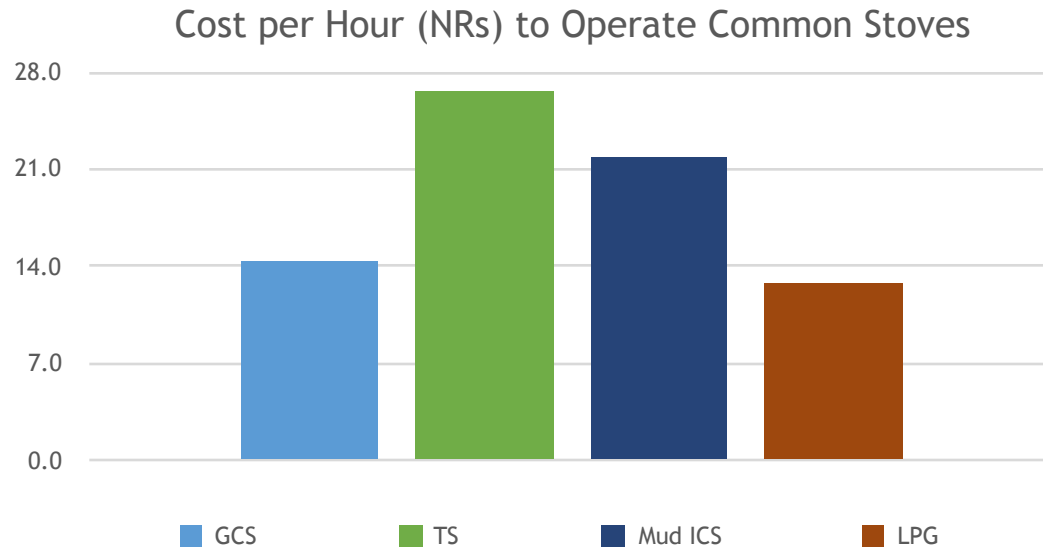
- Users ranked the Ganesha stove as safest, and perceived safety to be one of the best aspects of the stove.
- The Ganesha stove scored highly in all attributes measured.



Cost of cooking

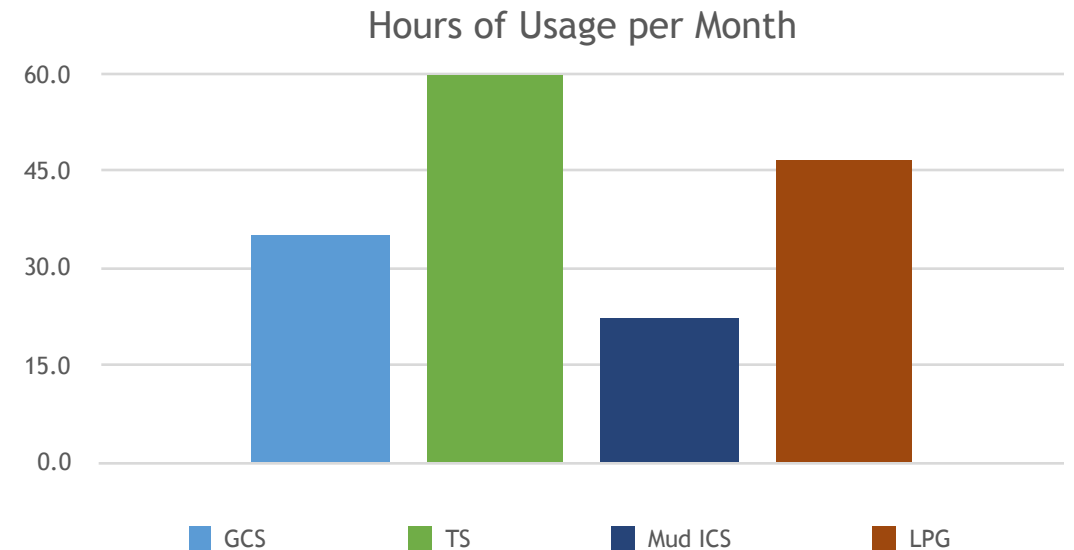
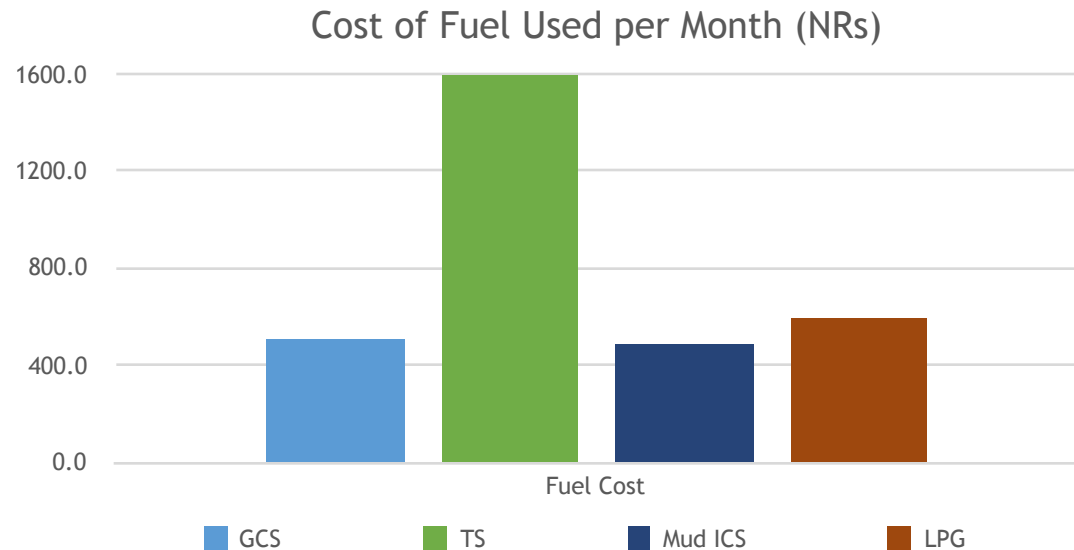
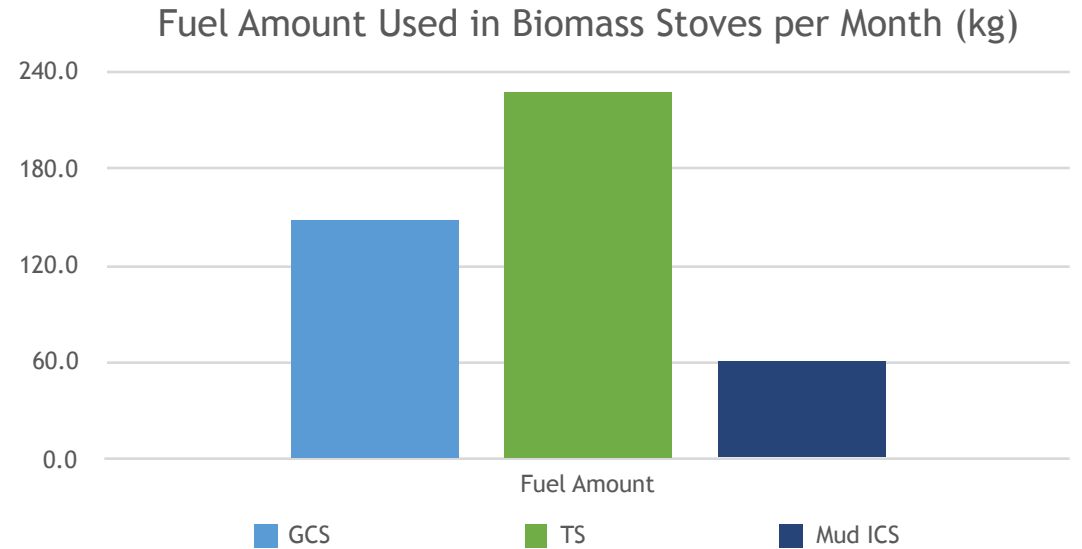
In the survey area, the cost for fuel wood ranged from NRs 5 to 10 per kg, if purchased. People use wood from their own garden/field trees and periodically collect from the community forests nearby. But if not sufficient, they buy. Monthly fuel expenses in this study are based on the total amount of fuel they used and the cost if they had to buy. Findings included:

- 1) Users ranked the Ganesha stove as significantly less expensive to operate than traditional stoves and other improved cookstoves. LPG was ranked as the cheapest option, but users noted that LPG must be purchased with cash.
- 2) As users became accustomed to cooking on the Ganesha stove, they reduced their usage of other improved cookstoves and, in many cases, decreased their use of LPG stoves. About 30 percent of households completely stopped operating other improved cookstoves.
- 3) Users found that they could save wood by using freely available materials like corn cobs and wheat stalks in the Ganesha stove.



Fuel Use and Cost

- Villagers used the Ganesha stove for an average 35 hours per month, and estimated the stove consumed 147.5 kg of wood (avg 4.2 kg/hr).
- Estimates of use and cost by users confirmed that the Ganesha stove was significantly more efficient than other biomass stoves in use in the survey area.



Would users buy a Ganesha stove?

To determine user satisfaction with the Ganesha stove, we asked if they would buy it, what they would pay, and what they would use it for. Findings included:

- 1) 100% of the sample households wished to buy it. The average price they said they would pay was NRs 889 with highest NRs 1000 and lowest NRs 600. It is to be noted that the stove was given to the users against a fee of NRs 500.
- 2) Villagers said they would use the Ganesha stove to cook all of their normal foods, with the exception of *dhindo*, a dish that requires continuous, vigorous stirring.
- 3) Many users preferred the Ganesha stove to gas stoves (LPG) and other improved cookstoves (Mud ICS). They said it was “easy to light” and “burns clean.”



How the Ganesha stove was used

Fuel can be fed into the Ganesha stove in two ways: through a lower opening, which is also equipped with a damper; and through an upper opening above the fuel bed. We asked users how they preferred to use the stove, and found that:

- 1) Almost 80% of users used both upper and lower openings. In general, they would start a fire using the lower opening, and then close the damper as necessary. Subsequently, they would feed fuel through the top opening.
- 2) 10% used only the lower opening.
- 3) 10% used only the upper opening.
- 4) Users burned both normal-size firewood, and smaller items such as twigs, corn cobs and wheat stalks.



User spotlight: the story of Bhagirathi

Mrs. Bhagirathi Timilsina, 45 years old, has to do all sorts of household chores — cooking, cleaning, rearing cows and goats, and farming too. She recently was elected as a member of the Bethanchowk rural municipality, adding to her responsibilities.

She was introduced to the Ganesha stove during a participant selection event for a pilot project. She was interested in using the stove but was skeptical at first. “Stove looks good, but it looks small and I doubt if it can cook for my 4 members of the family.” She explained that she is used to cooking on an open fire.

Three weeks after handing over the stove, the survey team returned to interview her to collect feedback. She exclaimed, “I had been using LPG the most to save time, but now I use the Ganesha stove more than LPG!”

“The stove performed better than I expected,” she smiled. “I cooked dal, vegetables and boiled water for my 4 family members. The milk boiled on this stove is tastier too.” She proudly announced, “I am also making best use of the corn cobs now.”

“This morning I made *selroti*” (*selroti* is a doughnut shaped fried roti). “Would you like to test them?” She smiled, quickly went in and brought some *selroti* and milk and offered to surveyors. Coincidentally, it happened to be a special day. There was a function in the house – the engagement of Bhagirathi’s daughter. She was seen proudly showing and explaining to the visitors the Ganesha stove when the surveyors left the house.

