

Pilot Area 4
Muchchok, Gorkha
Nepal



Ganesha Cookstove Usability Survey Results

Pilot Area 4: Muchchok, Gorkha, Nepal
Survey conducted November & December 2018
Principal Investigator: Basudev Upadhyay

Supported by: IM Swedish Development Partner
and MADE Nepal



Abstract

In June 2018, 40 Ganesha stoves were donated to villagers in Muchchok, Gorkha District, Nepal. This area is 1,185 meters above sea level (3,900 feet) with a subtropical climate.

After villagers used the stoves for 5 to 6 months, we interviewed 10 of the stove recipients (25%) to determine usability. Primary conclusions included:

- 1) 80% of users said they would buy the stove, for NRs Rs 500 to 2000.
- 2) Users cooked all of their traditional foods on the Ganesha stove, including popcorn, *roti* (flatbreads), and *dhindo* (a maize paste that requires vigorous stirring to cook).
- 3) Villagers found the Ganesha stove to be the most fuel and time saving way to cook, as compared to traditional stoves and gas (LPG). Fuel use was cut by more than 50% with the Ganesha stove.
- 4) Users reported that cooking on the Ganesha stove was cheaper than other options, at NRs 24 per hour as compared to Nrs 35 per hour for LPG.

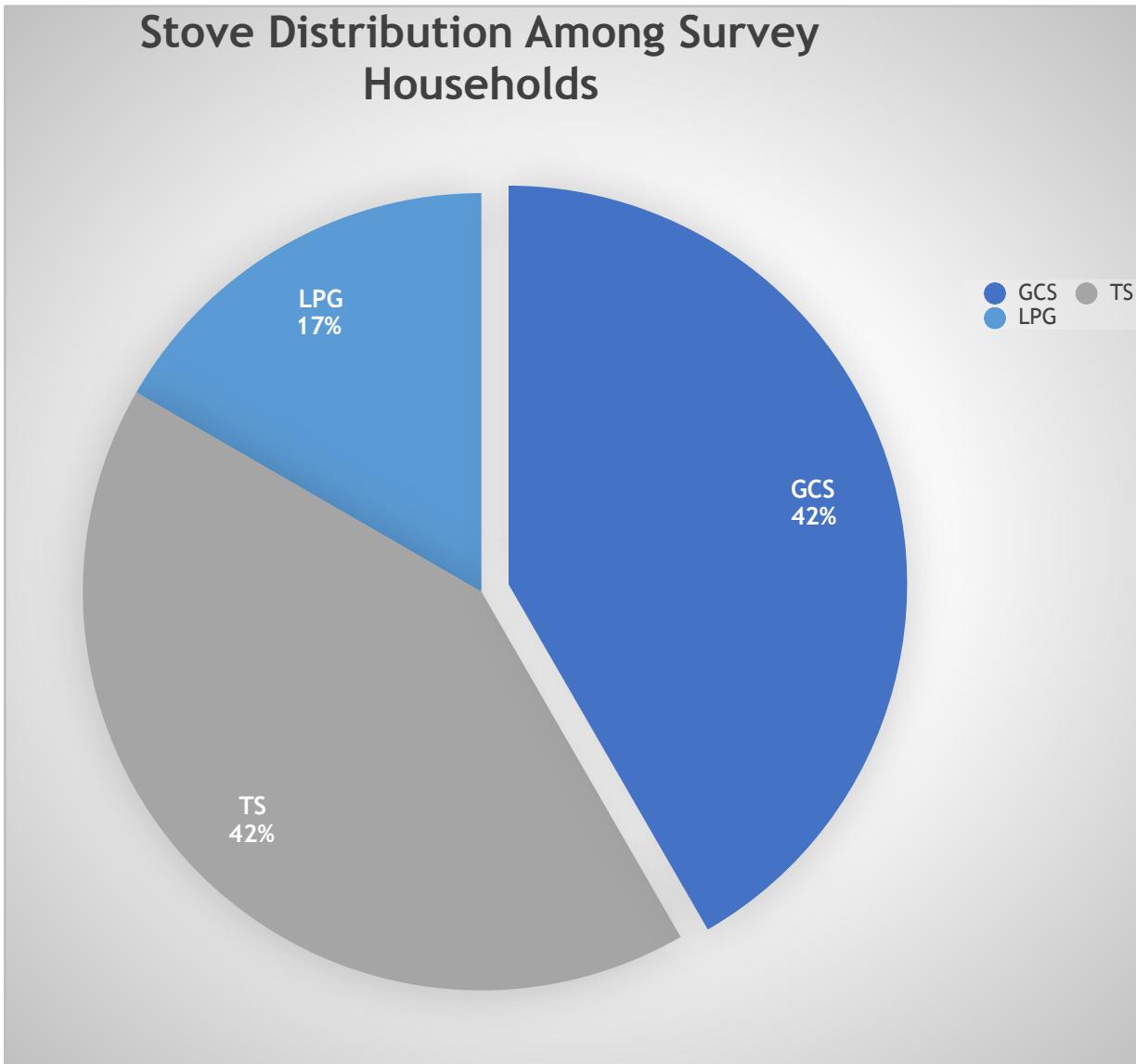




Cooking Habits in the Survey Area

- In this part of Nepal, daily common food includes morning tea followed by early lunch comprising rice, curry (vegetables) and dal (lentils). Then in the afternoon, people eat light snacks that include *cheura* (beaten rice), *makai* (popcorn), *roti* (flat bread) with tea. Dinner includes rice or *dhindo* (corn paste) eaten with vegetables and lentil soup or dairy products such as curds/whey/milk. Normally, July to September are rainy months, October to February are cold months and March to June are warm months.
- A semi-spherical open pot "*karaai*" is used for making vegetables and vegetable soup. A round-bottom pot with a narrow opening, locally known as "*kasaudi*" is used to boil rice.
- Firewood is the main fuel source. It is usually obtained from nearby forests. People sometimes also use agricultural byproducts such as lentil stalks, corn cobs/stalks and twigs and branches of the shrubs and trees from their private fields.
- Traditional stoves include the three stone fire, metal tripod, bricks and blocks arranged as a tripod. Different sized flat bottomed aluminum vessels are the major cooking pots, but pressure cookers are also used in smaller households.

Types and Number of Stoves in Use

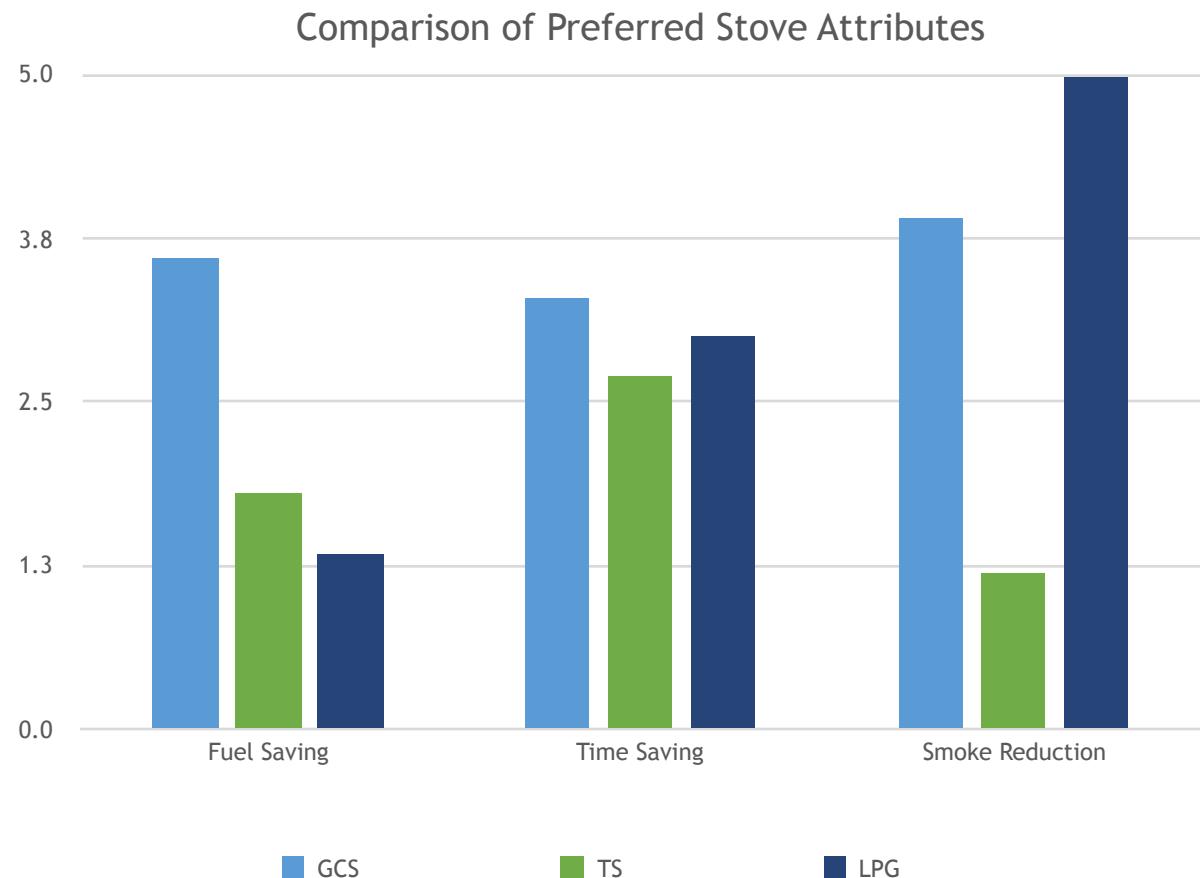


- Before this Ganesha stove pilot project, the most commonly used stoves in the project area were traditional stoves (TS) comprising three stone fire; metal, rock or cement brick fire; and metal tripod stand.
- 17% owned gas (LPG) stoves in addition to traditional stove.
- The 10 sample households in the survey had 14 stoves total prior to the pilot project, and 24 total after distribution of Ganesha stoves.
- 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

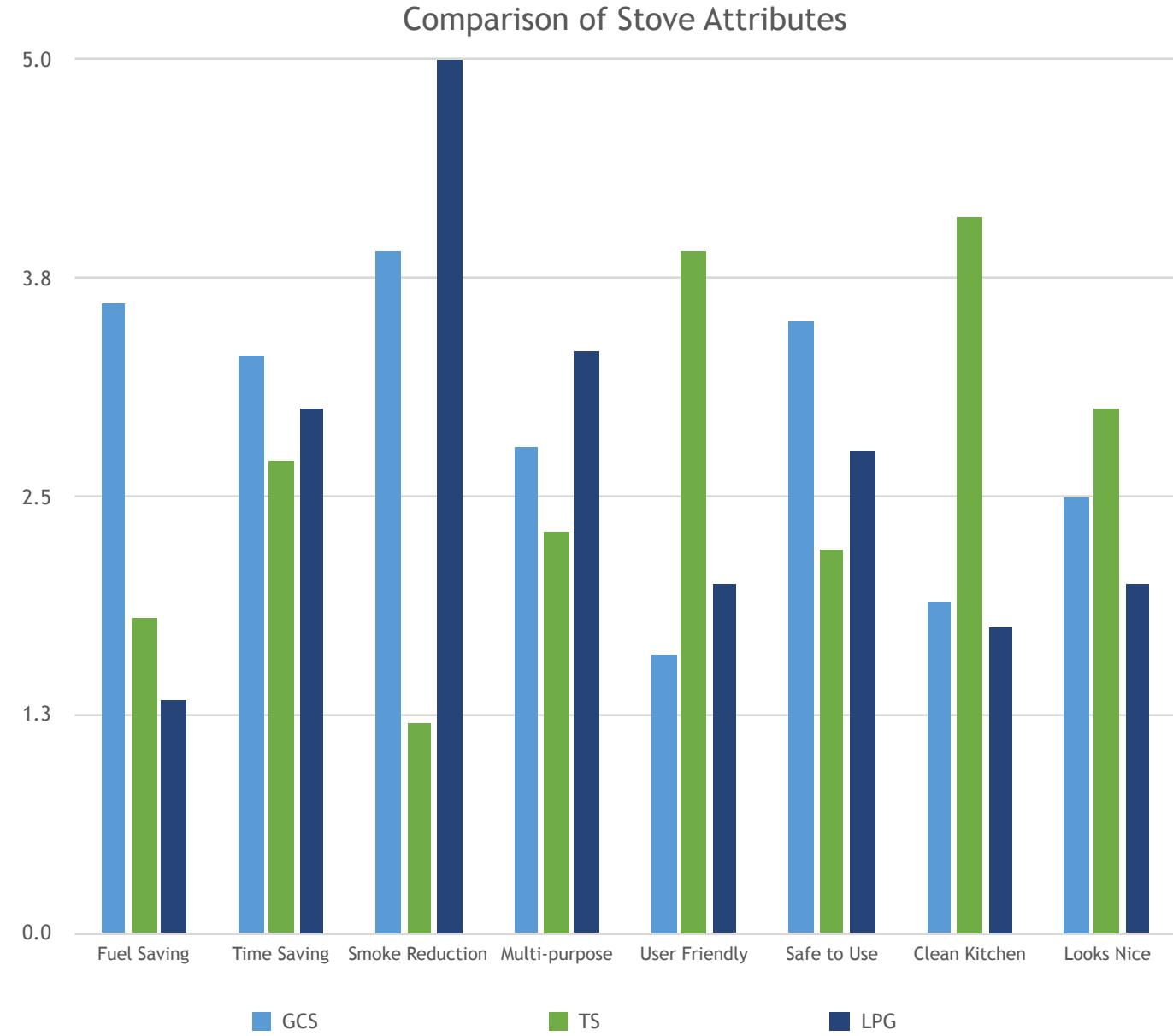
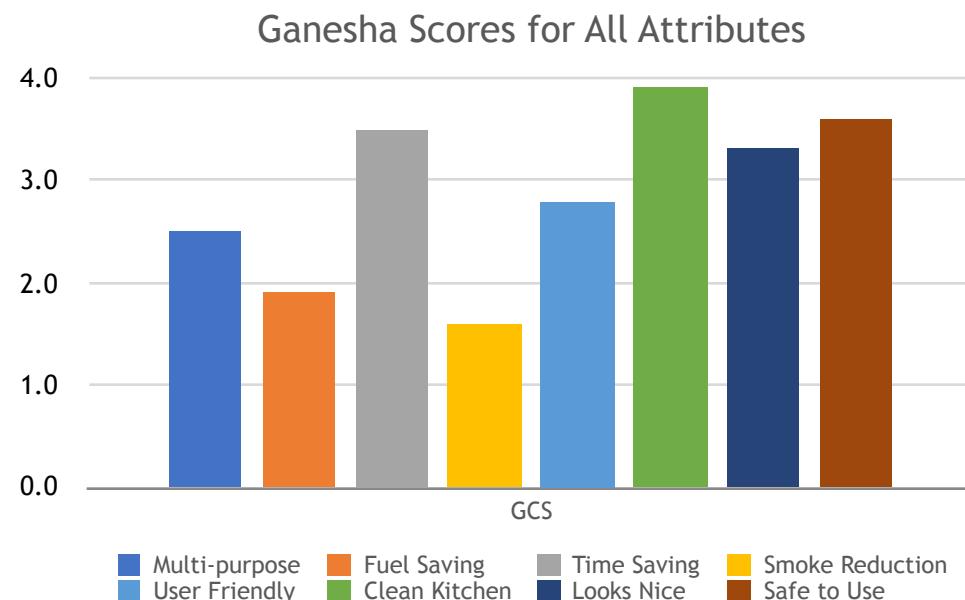
According to a 2017 World Bank study, the three most preferred attributes for stoves in Nepalese households are a) fuel savings, b) time saving and c) emissions reduction. Comparing these three attributes among the six different stoves in use in the survey area indicates that:

- 1) Among all stoves including LPG, users ranked the Ganesha stove highest for fuel and time saving.
- 2) Users ranked the Ganesha stove's smoke reduction second, after LPG.



Comparing the 8 attributes measured

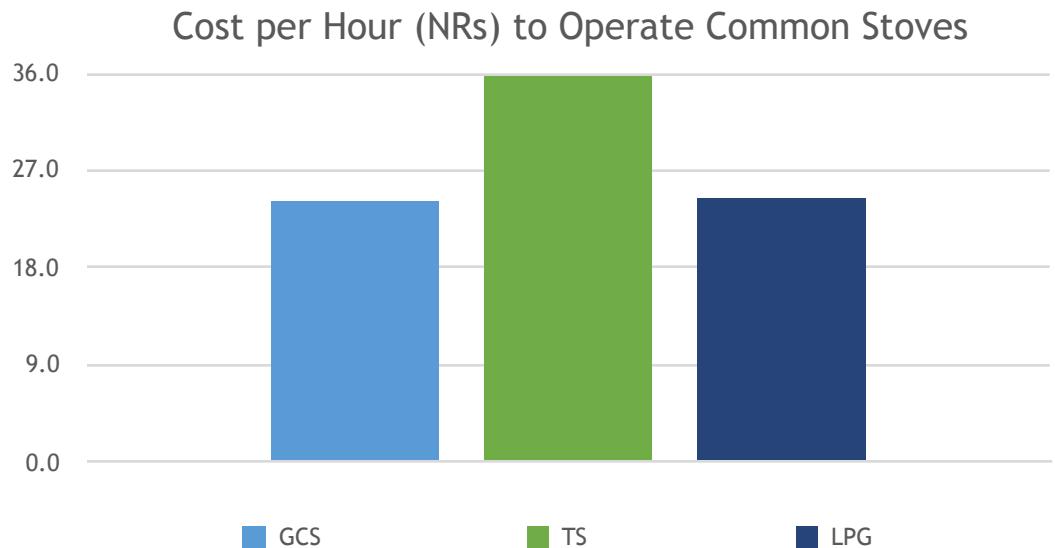
- Users ranked the Ganesha stove as highest for safety, fuel saving, and time saving.
- The Ganesha stove did not score highly on user friendliness, ranking just below LPG for this measure. Users clearly liked their traditional stove for its ease of use.



Cost of cooking

In the survey area, the cost for fuel wood was reported to be NRs 3 per kg. Villagers collect wood and other biomass from fields and forests. 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:

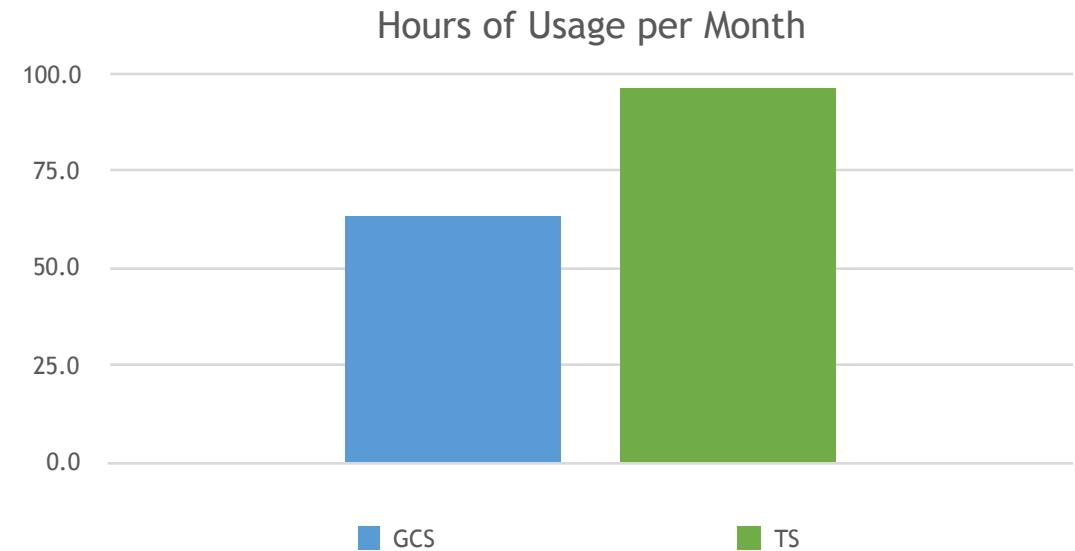
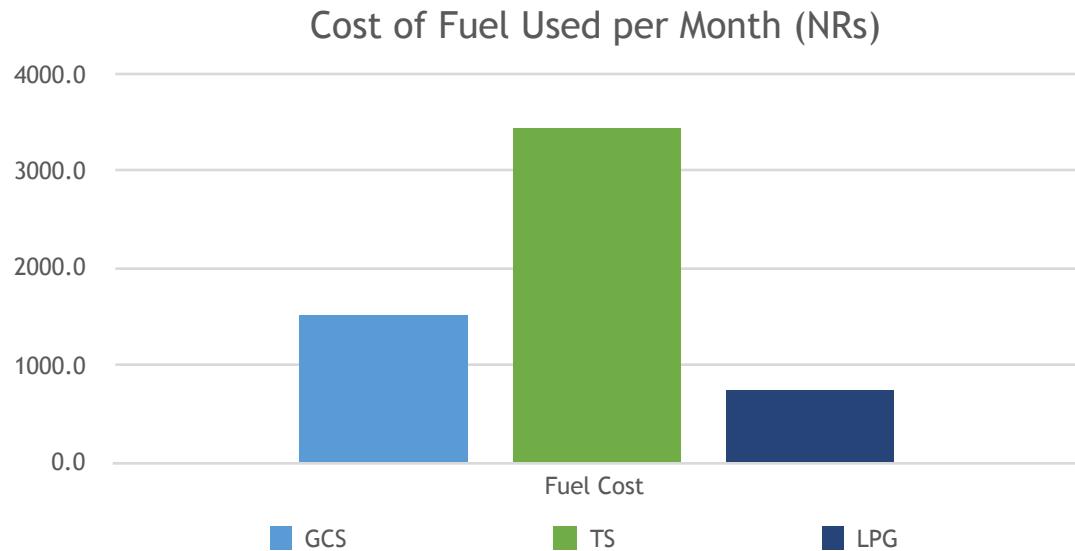
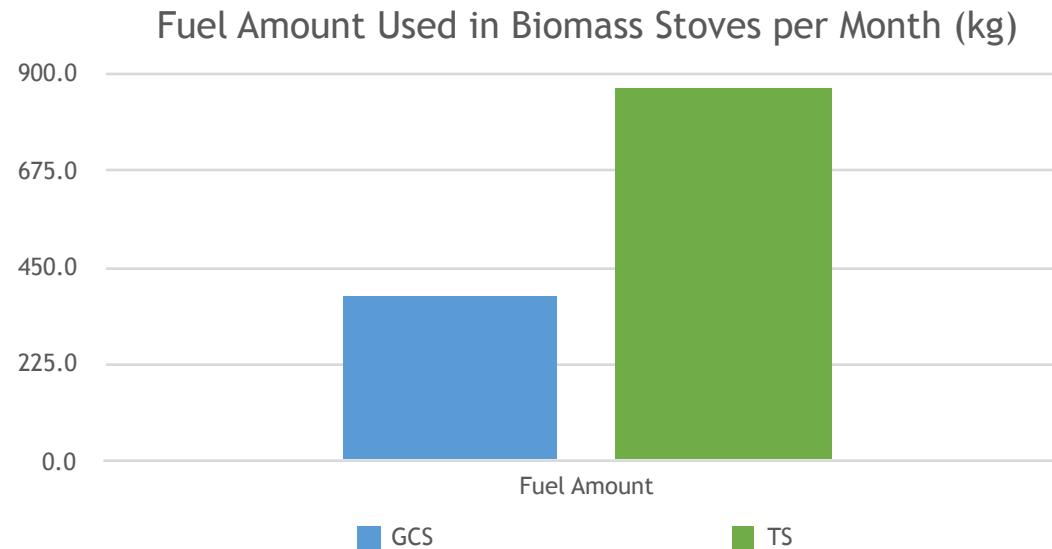
- 1) Users ranked the Ganesha stove as much less expensive to operate than traditional stoves, and comparable to LPG.
- 2) Although users like many of the qualities of LPG stoves, they often don't use them because of the difficulty of obtaining LPG and the associated cost.
- 3) Users reported that fuel use was cut by over 50% with the introduction of the Ganesha stove.



- 40 stove were distributed in Muchchok different place. Stove were distributed to poor and Dalit families who had no gas in their home.
- what was the performance?
→ previously, They had to travel to the forest every three day to gather enough fuel for their family. This stove consumes little firewood so now they visit the forest every one week.
- The traditional open fire has a lot of smoke. It enter the nose and mouth causing severe pain in my lungs, it was also irritating my eyes. This stove has little or no smoke says Parbati Bhatta

Fuel Use and Cost

- Villagers used the Ganesha stove for an average 63 hours per month, and estimated the stove consumed 381 kg of wood (avg 6 kg/hr).
- Owners of LPG stoves said they rarely use them.
- Estimates of use and cost by users confirmed that the Ganesha stove was significantly more efficient and cheaper to use than traditional stoves.

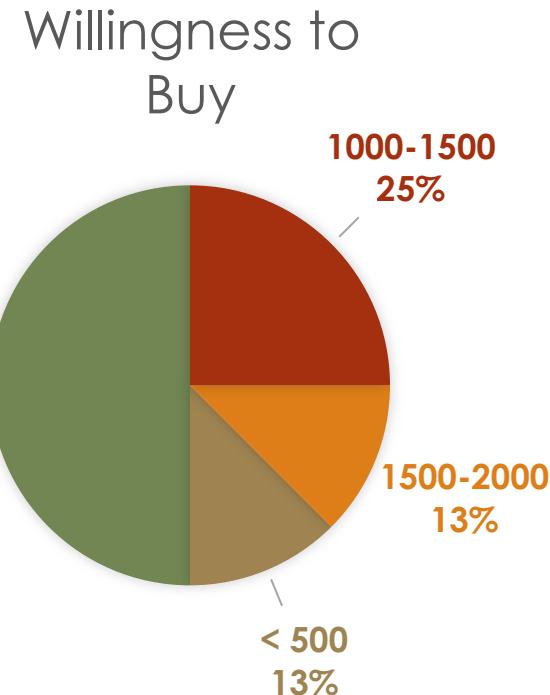


Would users buy a Ganesha stove?

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) 8 out of 10 sample households wished to buy it. Of those, half said they would pay NRs 500 to 1000, and 500-1000 the other half said they would pay NRs 1000 to 1500.

2) Villagers said they would use the Ganesha stove to cook all of their normal foods including *dhindo*, a dish that requires continuous, vigorous stirring.

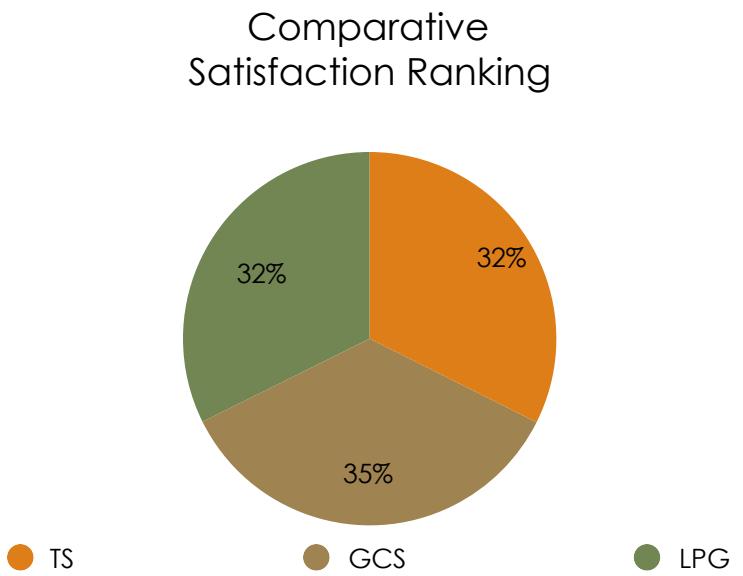


-Others people of the community also willing to purchase stove after seeing the effectiveness of this stove. They can pay \$1,000 per for one stove if it ~~avaiable~~ available in local market.



Comparative Functional Satisfaction With the Ganesha Stove

- Users found that the Ganesha stove suited their needs for normal tasks as well as the stoves they were already using (traditional and LPG stoves).
- They particularly liked the Ganesha stove for its low fuel consumption, fast start, high powered cooking, reduced smoke, and portability.
- This comparison is based on the total scores that users assigned to different stove types (the sum of attribute scores).



- "The improved stove is movable I can take it anywhere I have other chores and do both at the same time" says Sunita Hepaji
- Women were spending between three to six hours per day for cooking but this stove save the time and now they can ready one meal on one hour.
- There is also a strong risk to young children who spend a large proportion of their time close to their mother, breathing in smoke from cooking fires during their early developing years. This improved stove also help to minimize this problems.