Ganesha Cookstove Usability Survey Results

Pilot Area 5: Nawalparasi, Nepal
Survey conducted December 2018
Principal Investigator: Basudev Upadhyay

Supported by: IM Swedish Development Partner
and MADE Nepal

INDIVIDUELL
MÄNNISKOHJÄLP
SWEDISH
DEVELOPMENT
PARTNER

MADE NEPAL

GANESHA
COOKSTOVE PROJECT

Abstract

In June 2018, 40 Ganesha stoves were donated to villagers in Nawalparasi, Nepal. This area is in the mid-hills, with a subtropical climate.

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

1) By the end of 6 months, villagers who received Ganesha stoves were using them to do the majority of their cooking - 78 hours per month, vs. 58 hours on traditional stoves.

2) 80% of users said they would buy the stove, for NRs Rs 500 to 1500.

3) 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).

4) Villagers found the Ganesha stove to be the most fuel and time saving way to cook, as compared to traditional stoves.

5) Users reported that cooking on the Ganesha stove was cheaper than other options, at NRs 15 per hour as compared to Nrs 20 per hour for traditional stoves.

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), r*oti* (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 fie, 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

Stove Distribution Among Survey Households

GCS
50%

TS
45%

LPG
5%

Legend: GCS · TS · LPG
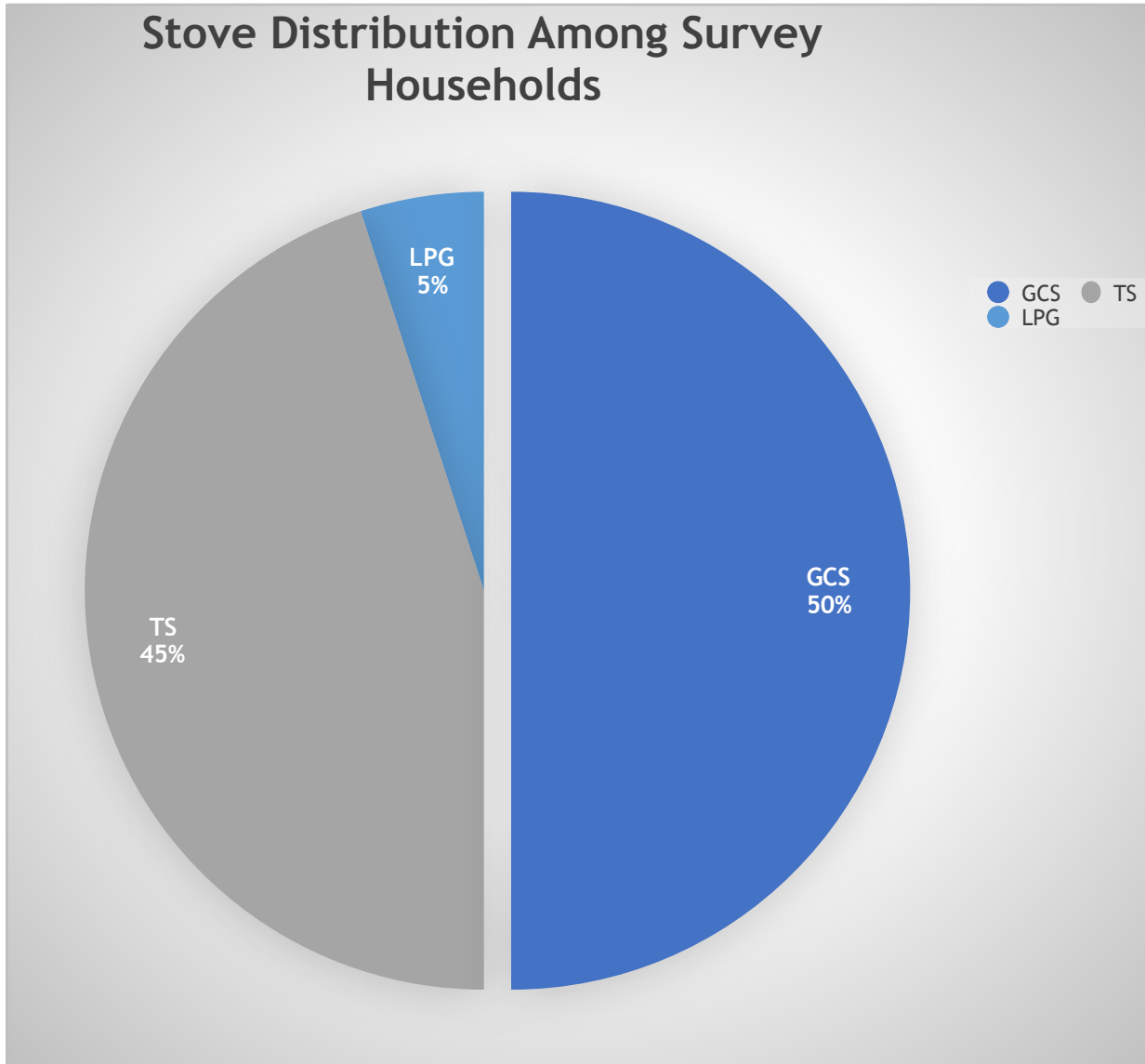
- Before this Ganesha stove pilot project, the most commonly used stoves in the project area were traditional stoves (TS) comprising three stone fire; metal, rock or cement brick fire; and metal tripod stand.

- 10% (1 household) owned a gas (LPG) stove instead of a traditional stove.

- The 10 sample households in the survey had 10 stoves total prior to the pilot project, and 20 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.

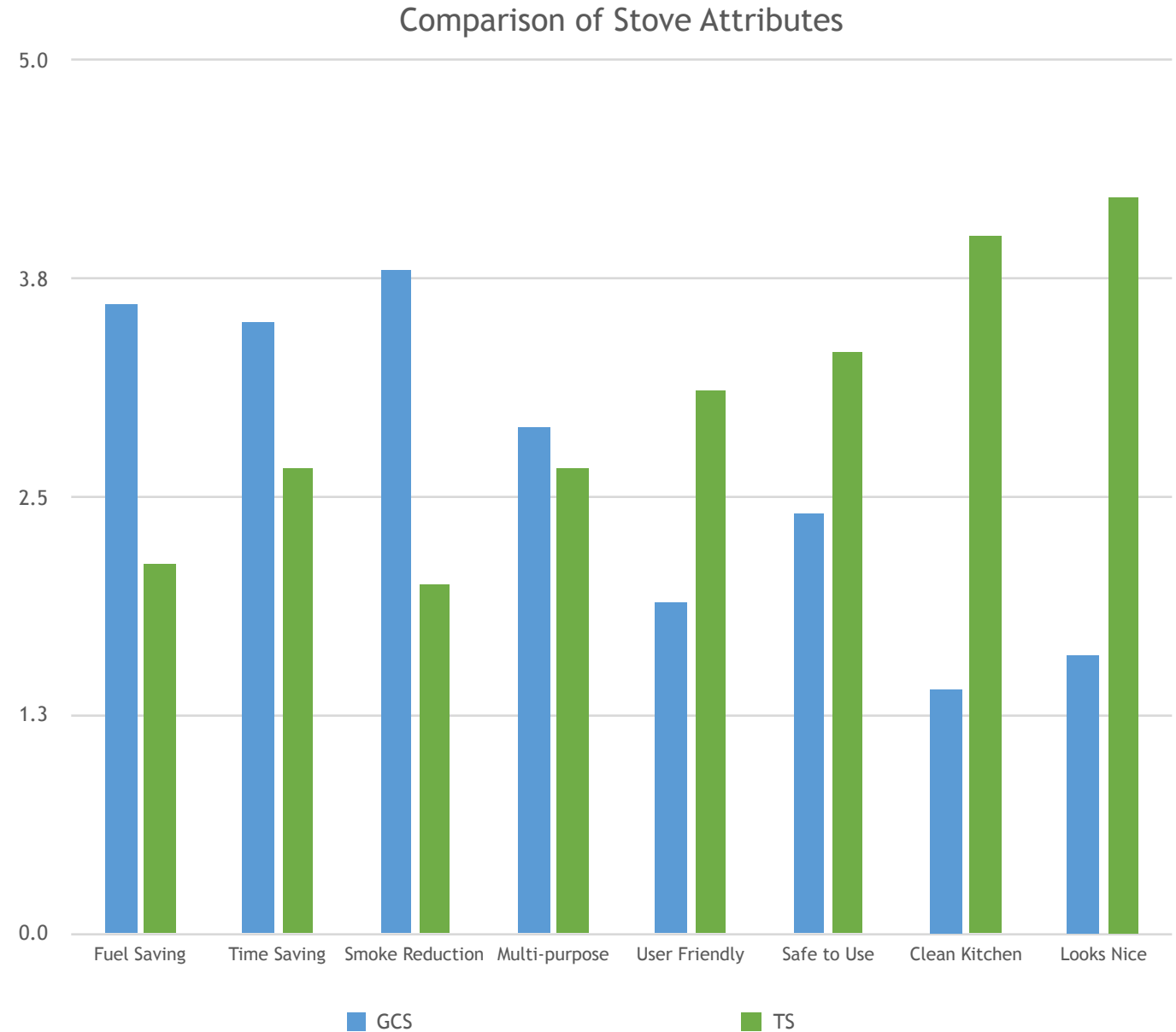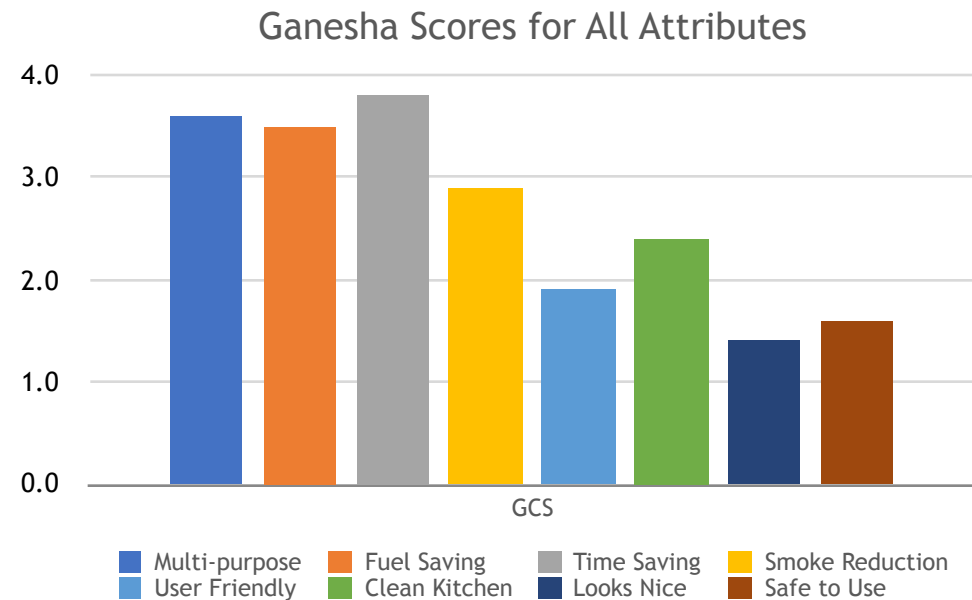# Comparing the most preferred attributes of a cookstove

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) Users ranked the Ganesha stove highest for all 3 attributes.

2) We didn't have enough data to compare LPG stove use in this project area.

Comparison of Preferred Stove Attributes
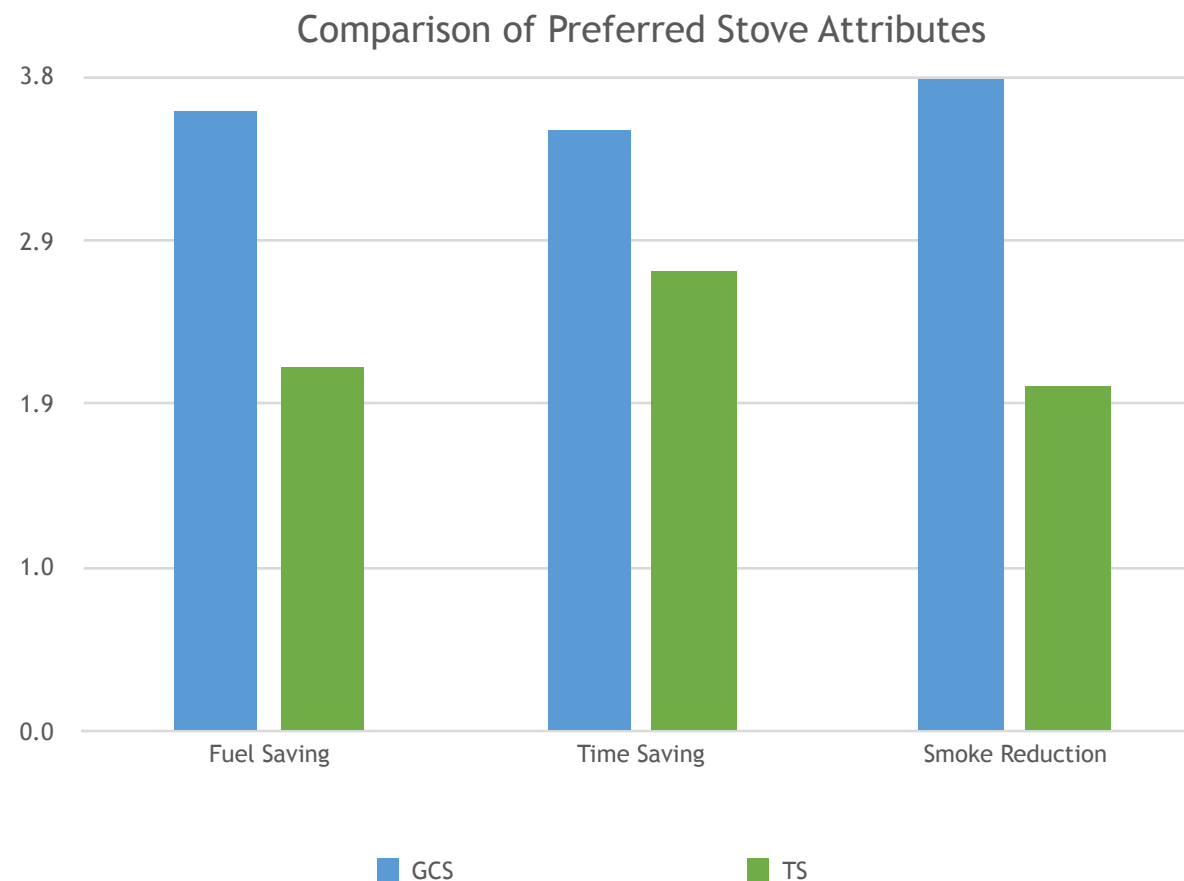
Comparing the 8 attributes measured

- Users ranked the Ganesha stove higher than traditional stoves on 4 measures: fuel saving, time saving, smoke reduction, and multi-purpose.

- Traditional stoves ranked higher on user friendliness, safety, cleanliness, and looks.

- Ganesha attributes liked most by villagers were multi-purpose, fuel saving, and time saving.

Ganesha Scores for All Attributes

Legend: Multi-purpose, Fuel Saving, Time Saving, Smoke Reduction, User Friendly, Clean Kitchen, Looks Nice, Safe to Use

Comparison of Stove Attributes

Attributes: Fuel Saving, Time Saving, Smoke Reduction, Multi-purpose, User Friendly, Safe to Use, Clean Kitchen, Looks Nice
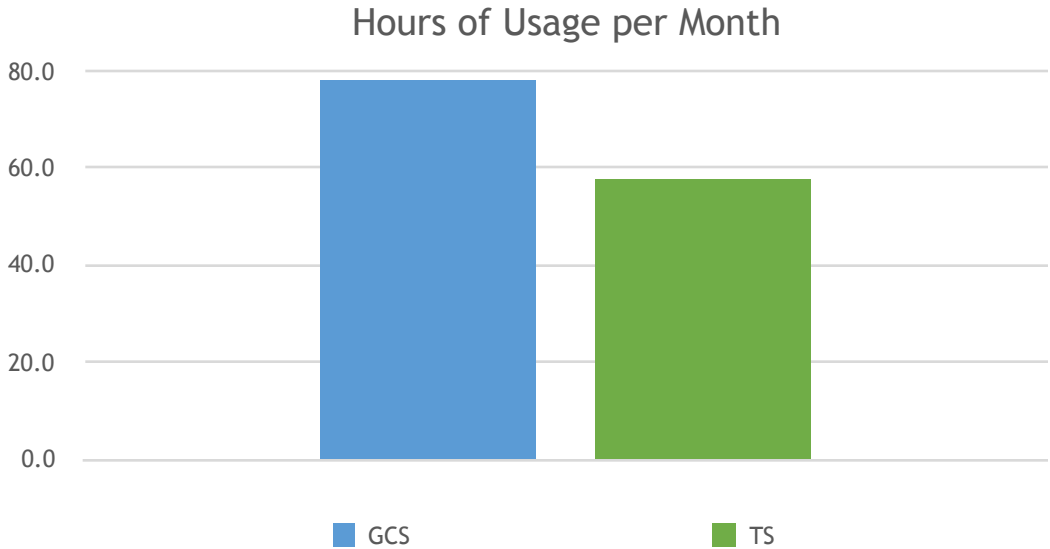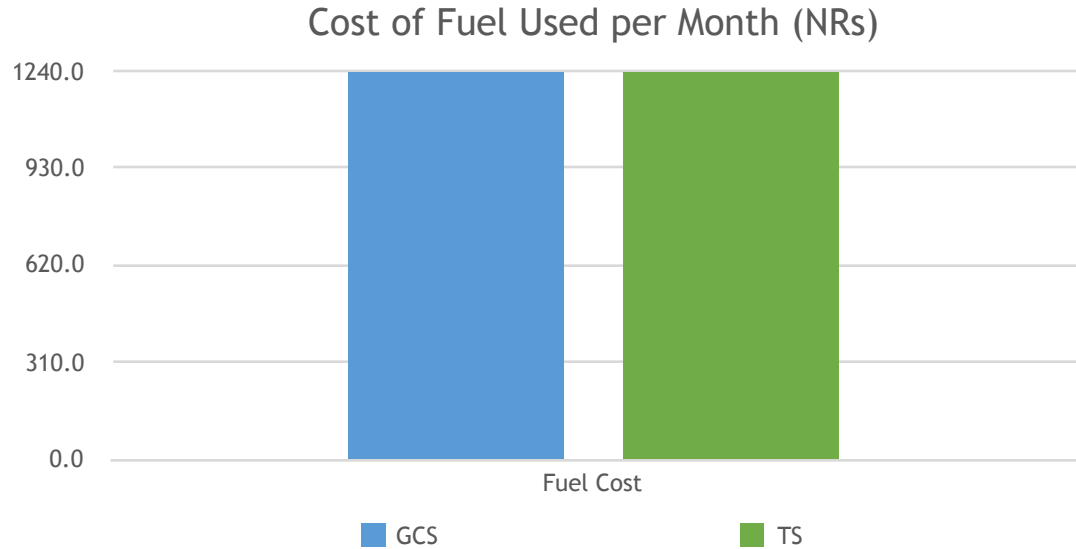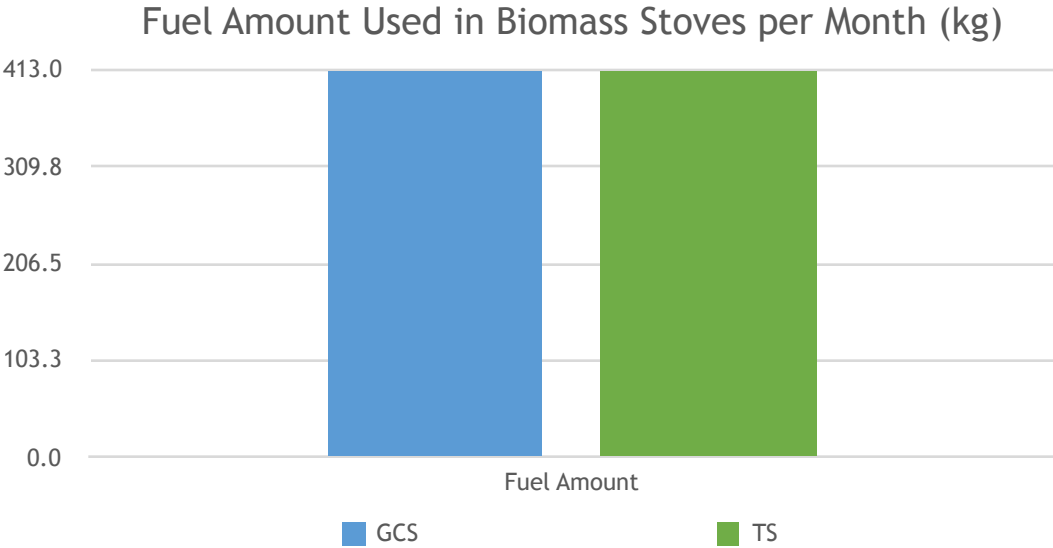
GCS, TS

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 less expensive to operate than traditional stoves - NRs 15 per hour vs. NRs 20 per hour for traditional stoves.

2) Users reported that fuel use was cut by over 50% with the introduction of the Ganesha stove.

Cost per Hour (NRs) to Operate Common Stoves
- GCS
- TS
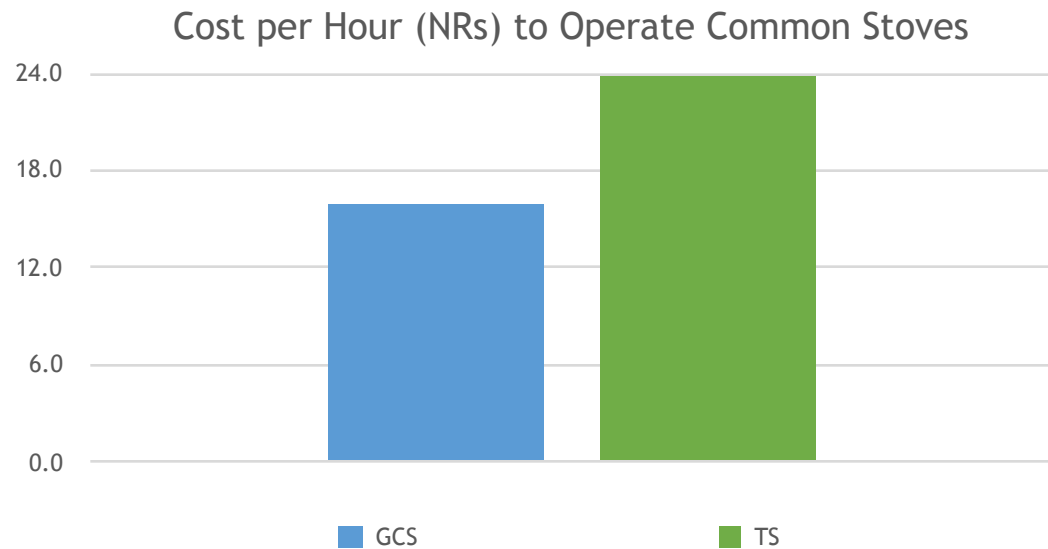
Fuel Use and Cost

- Villagers used the Ganesha stove for an average 78 hours per month, and estimated the stove consumed 413 kg of wood (avg 5.3 kg/hr).

- After 6 months of using the Ganesha stove, villagers were spending significantly more time cooking on it than on their traditional stoves.

- Estimates of use and cost by users confirmed that the Ganesha stove was significantly more efficient and cheaper to use than traditional stoves.

Fuel Amount Used in Biomass Stoves per Month (kg)

Cost of Fuel Used per Month (NRs)


Hours of Usage per Month

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, 7 said they would pay NRs 500 to 1000, and the other 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.

Willingness to Buy

1000-1500
13%

500-1000
88%
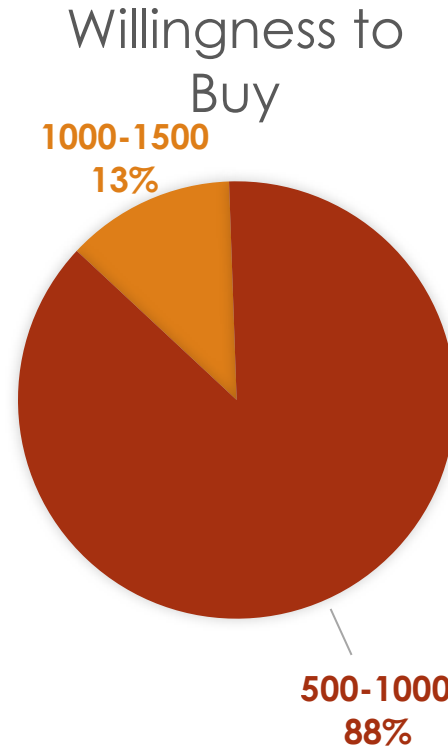
Comparative Functional Satisfaction With the Ganesha Stove

- Users found that the Ganesha stove suited their needs for normal tasks almost 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).

Comparative Satisfaction Ranking

47%   53%

● TS   ● GCS