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The overall plan: Phase I, II AND III



Background

In urban migrant settlements firewood is the most commonly used cooking fuel. People are from very poor backgrounds that come in search of jobs to the city and work mostly is construction laborers, coolies or other daily wage jobs. They spend between 800-1000 rupees per month only on cooking fuel which is almost 1/4th of their monthly income. Moreover these are single room tent homes made out of clay, coconut leaves, tarpaulin sheets and casuarinas poles- with absolutely no ventilation. The kitchen is almost always indoors. The fuel wood used is industrial discarded wood (with resin, paint, nails etc). Needless to say the health, financial and environmental implications of this cooking practice are highly detrimental.

Phase I – User Research, Market Research, Testing, Prototyping, Co-designing, User feedback

Aim of the first phase was to understand existing cooking methods and the need for a clean cooking solution in urban migrant tent homes. At the end of the phase we were to determine the guideline of a pilot project which would lead to better cooking solution.

Phase II – Dissemination models

Aim of the second phase was to use the chosen solution and understand dissemination models for the same. As affordability and finance is an issue within these communities, in this phase we also understood the user segment as a market and applied demonstration, training and sales strategies for the same.

Phase III – Monitoring and Evaluation

Through the set of users who opted for the solution in the second phase we closely monitored the solution over three-four months and gauged the level of impact it could have. This phase was important to determine the final approach UCL would take for clean cooking solutions.

Phase I (Background and work conducted so far)




Need Assessment

We used a combination of three different methods to conduct user research – 1. Conversations (baselines interviews), 2. Learn to cook (where we cooked in their homes, the way they cook) 3. Picture this (showing them pictures and trying to understand perceptions, assumptions and current awareness levels. This phase helped us to get to know the user, cooking habits and characteristics and the community dynamics better. There are many user perceptions and characteristics that play a big role in the stove being adopted which became clear after this phase.

Awareness, Training and Demonstrations

We conducted awareness through demos, visuals, videos and general meetings. Just selling the stove is definitely not going to create any impact, there is a learning curve involved and a considerable tact in knowing how to utilize the efficiency the stove came with. Comparative demonstrations, single home demos, user feedback- by letting the user test it at home over a couple of weeks, videos on how to use etc were all used as an approach in this phase. We also linked up with a health NGO to spread awareness about indoor air pollution and how hard this community was getting hit. This phase helped us realize that health is not a priority, however since efficiency is related to economics and could help them save a good amount money- people were still interested.

User testing

We tested 10 stoves (3 DIY rocket, 2 we designed in house with user feedback and 5 available in market) on efficiency, smokelessness and time taken to cook using the Berkley method of stove testing. All testing was done by women from the community, in the tent homes, with the type of wood they use. Results were very disappointing- inspite of most stoves claiming an efficiency of 60%-80% and a smokelessness of 60% or more we found that stove can provide a maximum of 5%-10% increased efficiency (existing traditional stoves were 12%) and can be maximum 20% smokeless. This would neither be creating a good impact on health, nor would it be creating an impact on the money saved per month. They would save a maximum of 100 rupees which would not help recover the cost of the stove even way past the stove warranty. All the stoves tested were between 1200-2000 rupees.

Selection

Through a matrix we considered the stove that was affordable, better on efficiency, availability and quality among all the stoves tested. We chose one stove to disseminate in the hope that over a period of time we would see increased efficiency with training and close monitoring. Also people still showed an interest in purchasing the stove. However the cost of the selected stove was 1200 rupees which could not be paid upfront by any of the users.

Phase II (Distribution models)

-- Challenges and what we set out to do

Create appropriate financing channels/ mechanisms so that stove can become accessible to people who wanted to buy it. These are typically temporary communities with no access to any kind of financial services. The aim was to sell and monitor closely 50 if the selected stoves by:

> Develop sales and Marketing Strategy for 'Cook stoves for Urban Poor'
> Understand and solve community barriers for stove sales.
> Impact direct sales through awareness, demonstrations and empowering individuals from the community
> Carry out other parallel activities that can support and further cook stove sales in slums

-- Sales strategy

We conducted mixed approaches in six different slums
Girinagar, Lingrajpuram, Pai layout, Hoodi, Kodichikkana halli and Krishnappa Garden. Some of them were;

> simple demonstration of cooking roti's or large quantity of food (as there was a strong perception that the flame would not be enough to make Jolada roti's)
> Open invite to come and cook on the stove with available firewood
> Videos of the comparisons we had done with traditional stoves (demonstrating that the flame can be just as good
> Health awareness camps combined with stove information

During all of these activities we maintained that the stove would be not more that 10-20% efficient.
Once a scheme was given of payment on an instalment basis; there was a huge interest in buying the stove.
Activities like 'open invite' and 'videos' were very effective in catalyzing sales and encouraging users to adopt. Awareness and training activities were not as effective and failed to peak the user's interest in knowing and learning something that they

felt was unnecessary.
In three slums the response was great and a huge number of people wanted to buy the stove.
In other slums due to one comment/ remark from a sceptical user the stove completely failed to take off. (Even during the testing stage- we got very good feedback from one slum and complete opposite from another. People play a huge role in influencing decisions of one another; in most community meets- the strongest voice seemed to reflect the voice of the community as a whole. User testing that is done by allowing the woman to use the stove and give feedback on it- we felt was not the best way to test stoves (as it would inevitably give mixed reactions in different locations)

-- Collection agents and schemes

We created collection agents from the community itself and incentivized sales + collections. These were people already working / running a small business. Below are the collection agent's terms, conditions and details of the scheme through which customers purchased the stove:
Each agent was authorized to collect monthly installments-
This is to certify that _____ is an official collection agent for **** only for the cook stove project. This individual is authorized to collect installments of only 300 rupees towards the total payment of the stove. The collection agent will have to maintain records of all transactions as per the following guidelines:

> While buying the stove customer has to give the required customer identification details

> Once a customer makes the installment it is imperative to update the date, installment amount and signature of customer in the records

> A receipt has to be given to customer for every installment given by a customer, with counterfoil duly filled up.

> Once the customer has paid the final (4^{th}) installment an invoice issued in his/her name should be handed over to the customer.

It is the responsibility of the collection agent to ensure and follow up with customers to pay pending installments.

Collection pattern of each stove:

MONTH 1(UPFRONT)	Rs 300
MONTH 2	Rs 300
MONTH 3	Rs 300
MONTH 4	Rs 300
TOTAL PAYMENT	Rs 1200

The collection agent will be entitled to Rs100 from the total amount for every stove collection successfully completed.

If customers are ready to pay upfront they will get a 100 Rupees discount on the stove, the cost of stove for upfront payments will be:

MONTH 1 (UPFRONT)	Rs 1100

If the collection agent makes this sale he/she is entitled to Rs 50 from each successful sale.

The collection agent should only get into this business if he/she have clearly understood the terms above

Collection Agent Monitor (**** representative)

Challenges while selling stoves and identifying collection agents:

- People felt that cost of the stove was above their level of affordability.
- Height of the stove was one of the drawback
- People were not interested in taking risks of collecting money on installment basis from the users of our stove. (We had to convince people to become agents and take the risk on the foundation)
- Frequent migration was one of the main drawbacks in selling the stove.
- Lack of Co-operation by land owners to give the demonstrations (Places-Kodichikkanhalli, Girinagar)
- Theft was one reason why people would not purchase the stove
- Customers did not have any type of identification- voters id, ration card, none (this is something that they need, but unfortunately do not get)



-- Customer profiles and tracking

Customer profiles were maintained as an alternative to id cards. Customer payments were also tracked through the profiles maintained by the collection agent. Below is the format of the profiling-

Name:
Address:

Type of id provided:

Age: M F photo

Phone number(s)

1.

2.

3.

Hometown contact and address

Time spent in their current home

Source of income

Income: Individual_____ overall family_____

Work and Work place details:

no of family members:

co-guarantors/ reference contacts

1

2

3

NO	DATE PAID	AMOUNT	CUSTOMER SIGNATURE
1			
2			
3			
4			

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-- Final outcome and Insights

We managed to sell the target number in no time and continued to track collections

Stoves as a product has a novelty value (being the only fancy product in the market applicable to/ targeted towards only firewood users). It naturally peaks people interests and with the right financing stoves can be sold anywhere to firewood users.

Even with the impact being debatable stoves marketing does yield successful sales.

Achieving numbers with stoves (with the right financing, marketing and incentives) would not the main challenge that needs to be overcome.

Phase III (Monitoring and Evaluation)

-- Challenges and what we set out to do

Since getting feedback from the user and doing technical user testing separately was not yielding satisfactory results we used a different method to monitor stoves that were sold. We planned to use two approaches parallelly- 1. That will give the users perspective/ experience 2. That may validate or conflict with the user's feedback. We monitored the stove through a baseline (before sale) and 2 days, 1 week, 1 month and 3 months after stove sale. We planned to combine every monitoring session with basic on spot testing and surprise visits to check if the stove was being used.

-- Monitoring format and process

CLEAN COOKING MONITORING FORMAT (For migrant laborer tent-type households in urban slums)	STOVE TYPE: COMPANY:
BASIC Information (To be taken after demo)	
Name of customer (M/F): Number of family members: Location: Age: Contact number(s): Reason for purchase: Type of Sale: 1 time payment / installments / donated	
Where are they from: Type of food cooked typically: Special requirements for cooking: chopping/ grinding/ mixing/ others How many times a day do they cook (with specific timings): How much time do they spend on cooking/day Do they use same stove and firewood to heat water as well What purposes do they use hot water for How much water is heated on a daily basis	
Type of firewood used: How do they get it: collected/ bought Time spent on collecting/ buying: Where do they collect/ buy it from:	

Average monthly expenditure on firewood: What do they generally use to spark the firewood: plastic/ kerosene/ paper/ other Any alternate fuel used (if firewood not available): Do they take any efforts to keep wood dry in monsoons/ winter:
Approximate size of the tent: Where do they cook: inside home/ outside home/ nearby Why do they cook there: How much firewood do they buy and store at one time:
Problems/ issues while cooking (if any): Do they (or anyone in the household) experience any the following: extreme persistent cough and cold/ respiratory problems/ chronic breathing/ eye irritation or watering Any safety issues they have experienced while cooking:
Initial Perception of the stove:

Monitoring data 1 (Baseline- to be collected before for existing traditional stove currently in use)	
Information taken from CUSTOMER	**Through test and Observation from Monitor**
Type of Firewood According to them is the wood completely dry (% wise human estimation if possible) Amount of firewood used per meal: Cost of fuel for the meal: Reaction to smoke in the home:	Be present at a time they are cooking. Ensure if possible the type of wood is the wood commonly used in the slum Firewood weight before cooking Firewood weight after cooking Measure co and co2 at a fixed spot near the stove at the beginning to the cooking: mid way: towards the end: Other notes and observations:
Monitoring data 2 (2 days into new stove usage)	
Type of Firewood According to them is the wood completely dry (% wise human estimation if possible) Amount of firewood used per meal in the new stove: Cost of fuel for the meal with the new stove: Reaction to smoke in the home: Their thoughts on using the new stoves (+ and -):	Be present at a time they are cooking with the new stove. Were they using the stove? Or did it need prompting? Ensure if possible the type of wood is the same as used in the traditional stove monitor Firewood weight before cooking Firewood weight after cooking Measure co and co2 at a fixed spot near the stove at the beginning to the cooking: mid way: towards the end: Other notes and observations: Do they want to continue using the stove?
Monitoring data 3 (1 week into new stove usage)	

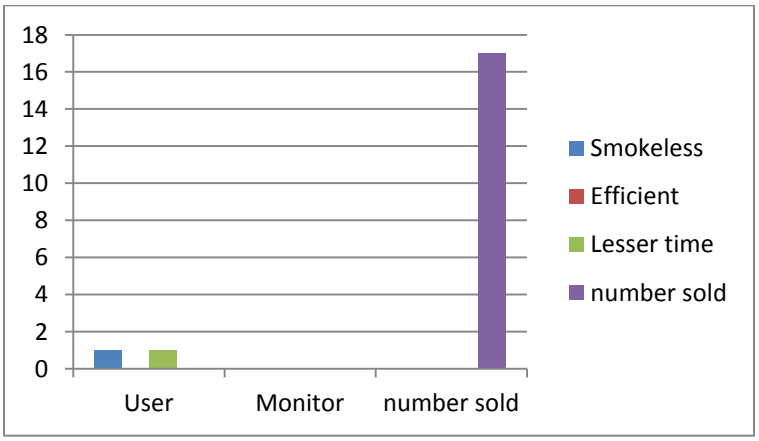
Type of Firewood According to them is the wood completely dry (% wise human estimation if possible) Amount of firewood used per meal in the new stove: Cost of fuel for the meal with the new stove: Reaction to smoke in the home: Did use the stove throughout the week: if no, how many meals did they try cooking? Their thoughts on using the new stoves (+ and -):	Be present at a time they are cooking with the new stove. Were they using the stove? Or did it need prompting? Ensure if possible the type of wood is the same as used in the traditional stove monitor Firewood weight before cooking Firewood weight after cooking Measure co and co2 at a fixed spot near the stove at the beginning to the cooking: mid way: towards the end: Other notes and observations: Does the stove look genuinely used through the week?
Monitoring data 3 (After 1 month)	
Type of Firewood According to them is the wood completely dry (% wise human estimation if possible) Amount of firewood used per meal in the new stove: Cost of fuel for the meal with the new stove: Reaction to smoke in the home: Did use the stove throughout the month: Do they feel any different in the amount they spend on fire wood and the smoke in their room: Their thoughts on using the new stoves (+ and -):	Be present at a time they are cooking with the new stove. Were they using the stove? Or did it need prompting? Ensure if possible the type of wood is the same as used in the traditional stove monitor Firewood weight before cooking Firewood weight after cooking Measure co and co2 at a fixed spot near the stove at the beginning to the cooking: mid way: towards the end: Other notes and observations: Is the smoke visible lesser that with traditional stoves ?
Monitoring data 4 (After 3 months)	
Type of Firewood According to them is the wood completely dry (% wise human estimation if possible) Amount of firewood used per meal in the new stove: Cost of fuel for the meal with the new stove: Reaction to smoke in the home: Did use the stove throughout the month: Do they feel any different in the amount they spend on fire wood and the smoke in their room: Their thoughts on using the new stoves (+ and -): Would the woman recommend the stove for others to buy: How much does she think it's worth:	Be present at a time they are cooking with the new stove. Were they using the stove? Or did it need prompting? Ensure if possible the type of wood is the same as used in the traditional stove monitor Firewood weight before cooking Firewood weight after cooking Measure co and co2 at a fixed spot near the stove at the beginning to the cooking: mid way: towards the end: Other notes and observations: Is the smoke visible lesser that with traditional stoves ? Does the woman feel comfortable with the stove:
Overall Recommendations	Overall Recommendations

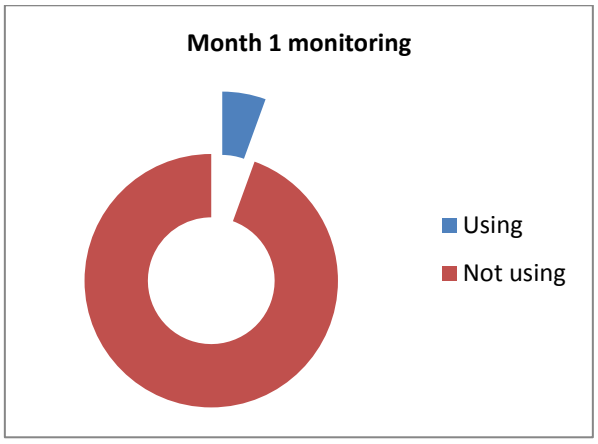
-- Outcome of monitoring

For all the results most things were standardized like- time taken was gauged by time taken to make 10 roti's/ 2 kg rice, time during cooking + point from where CO, CO_2 monitor was used, Type of wood while monitoring.

Location 1



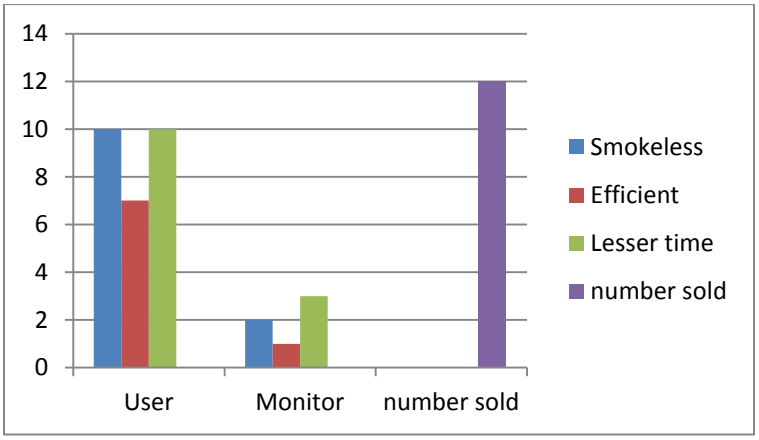



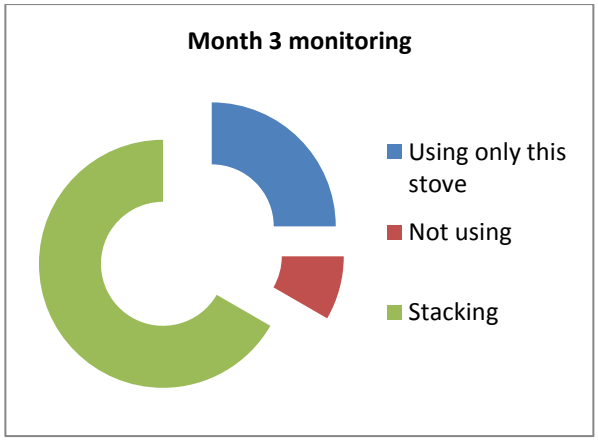


People who had stopped using the stove had opinions like – it was causing more smoke, and it took more time to cook on the stove.
They also said they did not get value for money and were uncomfortable with the stove.
However except for one customer, the others continued to pay their installments

Location 2

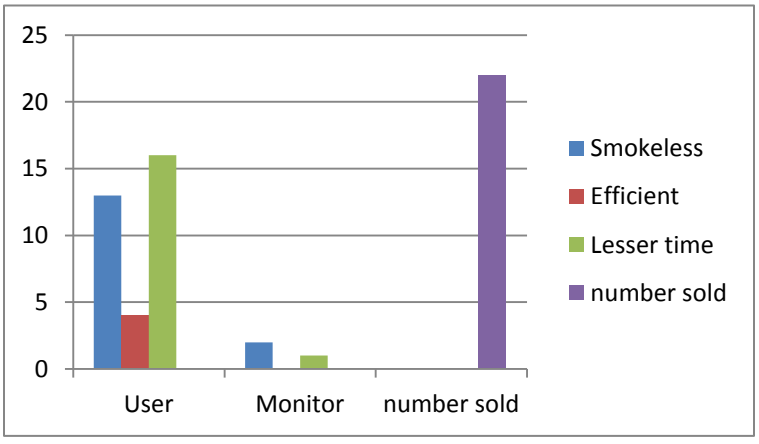


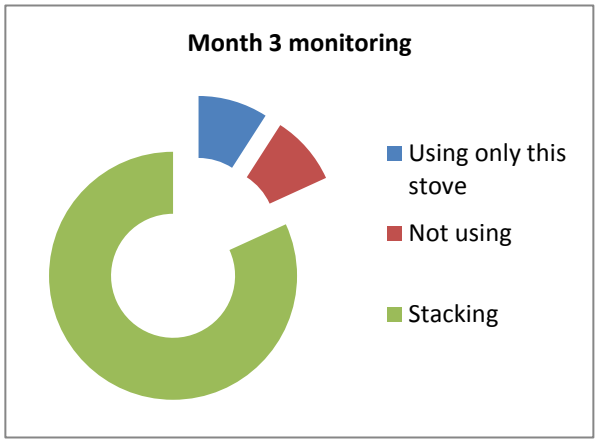





Users would say that they are spending less money on fuel but when comparing their current fuel cost with the baseline answer for fuel cost there was no different. Many of them were cooking 1-2 items on this and the rest on the traditional stove- hence it was very difficult for the monitor to gauge/ measure smokelessness, time or efficiency. In terms of usability everyone said it was fine to use.

Location 3





The user's answers that are not showing- those users have answered negatively Eg: in the graph 1 above out of 22 users, 13 have said the stove emits lesser smoke and 9 have said it's the same/emits more.

Learning's and next steps

Key learning have probably been the more relevant outcome of the project. Some of the biggest being-

> for rural scenarios portable stoves are not the best way to go (ie the need assessments will lead to very different stove specs as compared to any single burner portable stove!). Since space is not an issue, masonry/ cement and mud based efficient stoves with 2 and 3 pots and proper chimney's like tide/astra/sargur etc are way more efficient in many ways and widely accepted (and only these have the potential to completely replace traditional stoves.)

> Metallic efficient stoves do not solve any problems, just selling the stove does not encourage adoption of the stove

> Single burner portable metallic stoves can never replace traditional cooking

> formats for baselines, monitoring and evaluating projects

> Cooking has to be looked at holistically under four areas-

1. The cooking fuel,
2. The kitchen orientation and ventilation,
3. Cooking habit and characteristics,
4. The stove itself.

Next steps is to carry out clean cooking projects along these lines.