SMOKELESS COOKSTOVE REVOLUTION

A SMOKELESS COOKSTOVE FOUNDATION INITIATIVE

TACKLING HOUSEHOLD AIR POLLUTION THROUGH *'ZERO COST & HIGHLY EFFICIENT'* MUD STOVES BASED ON *'ROCKET STOVE TECHNOLOGY'*

SMOKELESS COOKSTOVE FOUNDATION IN ASSOCIATION WITH GLENMARK FOUNDATION AND GRASSROOTS NGO SPANDAN SAMAJ SEVA SAMITI

A CASE STUDY IN KHANDWA, MADHYA PRADESH

TABLE OF CONTENTS

INTRODUCTION – PROBLEM OF HOUSEHOLD AIR POLLUTION

I. BACKGROUND

Household Air Pollution (HAP) generally caused by solid fuels used in traditional cooking methods, is responsible for over 3.8 Million premature deaths every year as per the latest WHO data. This is about 7.7% of the total global mortality.[1] The WHO ranks this problem as one of the worst health risks facing the poor. In low-income countries, such as those in Africa and Asia, indoor smoke from cooking has become the sixth biggest killer. India alone accounts for about 1 million deaths or about 25% of the total death burden of HAP amongst women and children globally.

The problem is partly the fuels used and partly the lack of ventilation. Cooking on open fires and stoves without chimneys, using basic fuels such as wood, animal dung, crop waste and coal, emits hazardous smoke that causes irreversible ill health and killer diseases. Small soot or dust particles penetrate deep into the lungs, causing lung cancer, child pneumonia and chronic obstructive pulmonary disease. Women and children, whose traditional place is in the kitchen, are the most common victims.

II. ISSUES

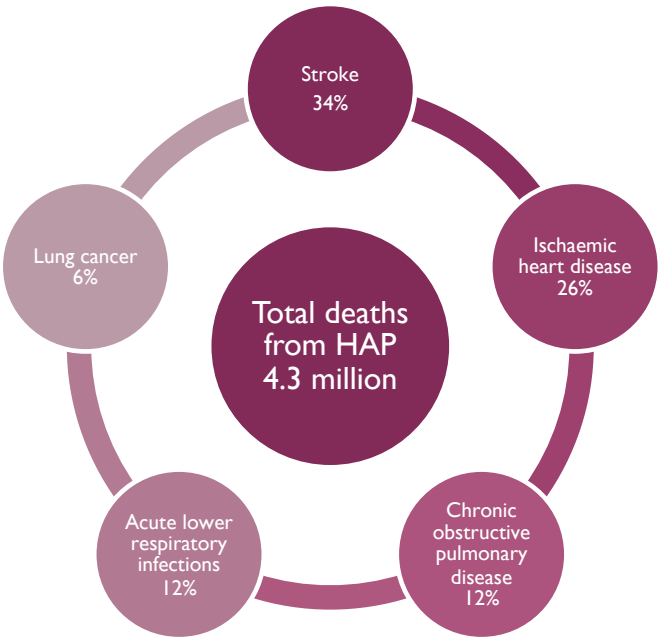
1. Health

Dr Nigel Bruce, consultant at **WHO**, said: "*The problem is caused by the inefficiency of traditional open fires and stoves resulting in very incomplete combustion of wood, dung and other solid fuels that a majority of people in developing countries rely on for their everyday cooking needs. While people are gradually becoming more aware of the devastating health impact of indoor pollution from cooking, there is still much more to be done.*

"In terms of what we call disability adjusted life years, which combines the burden due to death and illness in a single index, indoor smoke from solid fuels in low-income countries ranks fifth, behind childhood underweight, unsafe water, sanitation and hygiene, unsafe sex and insufficient breastfeeding. This is significant, because it takes into consideration the many years of life lost from childhood pneumonia, one of the most important diseases caused by solid fuel smoke pollution.

"The problem is not going away quickly and it won't without concerted effort. The pace of transition to clean-burning stoves and fuels is worryingly slow, and with population figures increasing, the numbers of people who rely upon biomass fuels is going to increase with current trends."

Stoves and open fires are the primary means of cooking and heating for nearly three billion people.



Infographic Source: www.infothatmatter.com

2. Environment

While deforestation for development and agriculture is an issue in itself, demand for fuel destroys forests near villages and towns in many places. With inefficient, primitive cooking methods, this is a critical dimension to the problem.

3. Drudgery

Reliance on polluting and inefficient energy systems imposes other heavy burdens too. In many parts of our country, people depend on fuel that they can gather freely, for use in traditional stoves and open fires. And in many – although not all – societies, traditional gender norms often assign the tasks of collecting and preparing this fuel to women and girls. In many places, boys are expected to earn income in the future, justifying the time investment in their education.

These tasks carry an enormous time cost. The never-ending job of feeding the stove prevents many girls from attending school, and keeps many women from pursuing opportunities to improve their livelihoods in ways that could help raise themselves and their families out of poverty. The daily tedium of collecting, processing and then using these fuels in inefficient devices also robs women and girls of time to spend in rest, socializing or simple leisure – a profound benefit of modern energy sources like gas and electricity that is often taken for granted by the half of the world that uses them.

SMOKELESS COOKSTOVE FOUNDATION

I. INTRODUCTION

The Smokeless Cookstove Foundation is a Non-profit organisation working towards curbing the problem of Household Air Pollution. With its training program - the Smokeless Cookstove Revolution, SCF seeks to train the rural, migrant and tribal population with the skill of making a 'virtually zero-cost, efficient & improved cookstove' that has a considerably reduced smoke output based on the principles of Rocket Stove Technology.

SCF's training program Smokeless Cookstove Revolution, imparts skills and knowledge required in making a virtually zero-cost, improved cookstove that significantly reduces the indoor emission of noxious fumes and use of biofuel input. Based on the Rocket Stove Technology, the Stove uses far less fuel than traditional chulahs and emits lesser fumes, efficiency is also improved as cooking time is reduced and the family members can use that time for furtherance of their livelihood (Daily wage, education, etc).

The raw materials used include locally available mud or clay, cut dry grass, rice puffs, cow dung and bricks. Special metal moulds with specific dimensions are used to make the base for the chulah – also known as the doughnut. The metal mould can be manufactured for under INR 500 (~USD 7) and thereafter be used to make several hundred stoves.

While the Chulha does not compete with other models of the Improved Cook Stoves available in the market, the solution provides immediate adaptability as it is not very different from a traditional chulha and is a 'no-cost' solution.

II. OBJECTIVES

While the Government of India has an LPG program and goal in progress, SCF's solution provides interim relief for the beneficiaries. The main objective of the Smokeless Cookstove Foundation is to provide a clean cooking solution and help reduce the health and environment impact and the drudgery faced by women due to this issue.

SUSTAINABLE DEVELOPMENT GOALS (SDGs) TARGETTED

II. TRAINING PROGRAM

SCF understands the success of its program can only be determined if the solution is adapted to specific cultural and social context of the regions it is working in. In light of this, SCF seeks to penetrate well in a given region, build a solid foundation before spreading itself in other regions. SCF has adopted a 'Train the Trainer' method to create trainers from amongst the community to imbibe a sense of ownership for helping the cause and to localise the process of problem solving in this context.

The SCF training program is divided into two parts –

1. Conducting the field training -A survey is done to understand the cooking methods at the location during this intervention. Post which, a 5 day Smokeless Chulha training programme is implemented.
2. Assessment - Returning to the location to assess the HH level impact through the community trainers
    a. SCF leaves behind a simple questionnaire for each of the trainers. This questionnaire captures details of each HH – name, date of making the stove, number of members in the family – changes in the case of this programme
    b. The audit is be done through a random selection of these HHs from the list provided by each trainer/ grass route level organisation
    c. The sample size to establish the training certification and incentive programme (funding dependent) is 30 HHs per 100 HHs
    d. The Impact assessment program* consists of the following parameters understood through interview with beneficiary HHs
        - *Visible reduction in smoke*
        - *Reduction in cooking time*
        - *Reduction in amount of firewood used*
        - *Health indicators : coughing & breathing issues; watering of the eyes; pain in neck and back*

Duration of the first intervention takes between five and six days with a team of minimum of three trainers from SCF – two visits are made to the location.

- First intervention – Awareness programme + Training programme + survey (Attached as Annexure 2)
- Second intervention – Audit* of the working chulahs (Attached as Annexure 3) + trainer assessment + Refresher training if required
- Intermediate audit, if necessary

The Program starts with a survey to find out the various health and livelihood issues related to cooking process and gathering of firewood from the community before the workshop is planned. (Attached as Annexure 1). This is done by the organisation through some visuals aids of the existing cooking methods highlighting some specific details like:

- Health issues
- Fire wood gathering source
- Time taken to cook food

- The workshop is typically for about 5 days - where some community members are trained who are then expected to act as trainers to install stoves in village homes
- The intent is to train at least 20 such community trainers - who are needed to be pre-identified by the partner or facilitator organisation in advance. These community members can then become training champs and an incentive programme can be developed for them and their efforts in the field.
- A commitment of about 4 to 6 hours is needed from these community trainers every day so that they can understand the whole process of stove construction and it becoming smokeless over a period of few days
- After a pre-determined period and a minimum number of HHs reached, the SCF team will do a post training survey to assess the working of the stove with the intention of assessing the stoves made. The intent is to conduct an assessment at least after 3 months from the time of the first training workshop. If required, this could then be coupled with a refresher training programme
- An incentive programme is designed to motivate the community trainers as trained by SCF team
- SCF team hands over the training kit containing visuals and moulds to the on-ground coordinator post the workshop

IV. OUR VISION & EXPANSION PLANS

The Smokeless Cookstove team has been working tirelessly since late 2016 taking the work into remote regions that are in desperate need of this solution. SCF has conducted pilot workshops across villages in Karnataka, Madhya Pradesh, Maharashtra, Uttar Pradesh, Rajasthan and West Bengal. These have been first level training programmes to introduce this approach and the feedback from the communities have been very encouraging. Now SCF requires funding to take this work forward and create more training programmes across India.

As of today, using their own resources to prove the viability of the project, SCF team have run workshops across regions and impacted the lives of over 800 families. The team has also done a pilot workshop and assessments with Pharma major's **Glenmark Foundation** in the Khandwa region of Madhya Pradesh.

POTENTIAL SCALE IN ONE LOCATION (estimated annually with min. of 6 training interventions consisting of 20 participants each; interspersed with min. two field assessments)

Year	# of Community / Field Trainers	# of HHs with Smokeless Cookstoves
1	100 (1 trainer making 100 SCs in a year)	10,000
2	150 (1 trainer making 100 SCs in a year)	15,000
3	200 (1 trainer making 100 SCs in a year)	20,000
4	300 (1 trainer making 100 SCs in a year)	30,000
5	500 (1 trainer making 100 SCs in a year)	50,000

Smokeless Cookstove Foundation would aim to initiate three such projects over a period of 3 years across 3 Indian States. A training and development centre is also planned to train more and more urban as well as community trainers; this centre will also develop new solutions for efficient burning leading to smoke reduction for various issues – traditional stoves in village schools; crematoriums; stoves used in religious gatherings and melas; community weddings

CASE STUDY: KHANDWA REGION

In June 2018, in association with **Glenmark Foundation** and **Spandan Samaj Sewa Samiti**, SCF launched a Programme in the Khandwa region of Madhya Pradesh to provide interim relief in the kitchens of the Korku Tribe. So far three trainings have been carried out and two assessment visit completed to understand the impact created by the SCF Chulhas.

I. BENEFICIARY PROFILE

As per the partner NGO, Spandan Sewa Samaj Samiti's research, Korku Tribe of Madhya Pradesh is one of the few tribes to still have some of its aboriginal and traditional customs intact. There are about 185 Korku Families (~65%) of the total village households numbering 288. Most of these families are small or marginal farmers and have to supplement their livelihood by daily wage earning as well. Spandan has been working among the community since a decade and has been striving to address the major issues facing them: malnutrition, household food insecurity, distress migration, preservation of their endangered language and culture.

Most of the Korku families shifted to cash crops since 3-4 decades back and have gradually divorced from growing traditional crops and millets that once was the mainstay of community food security and nutrition. Over the years, their major crop soyabean has failed due to erratic rainfall. It has also escalated their debts and further deteriorated their economic conditions.

Information : https://www.spandan4change.in/

Majority of the poor families face acute food crisis during June –October every year and they use most of their farm produce to pay off the debts they incur due to this.

Khandwa is situated in the southwest region of the central state of Madhya Pradesh.

Geographical placement of Madhya Pradesh and Khandwa Region

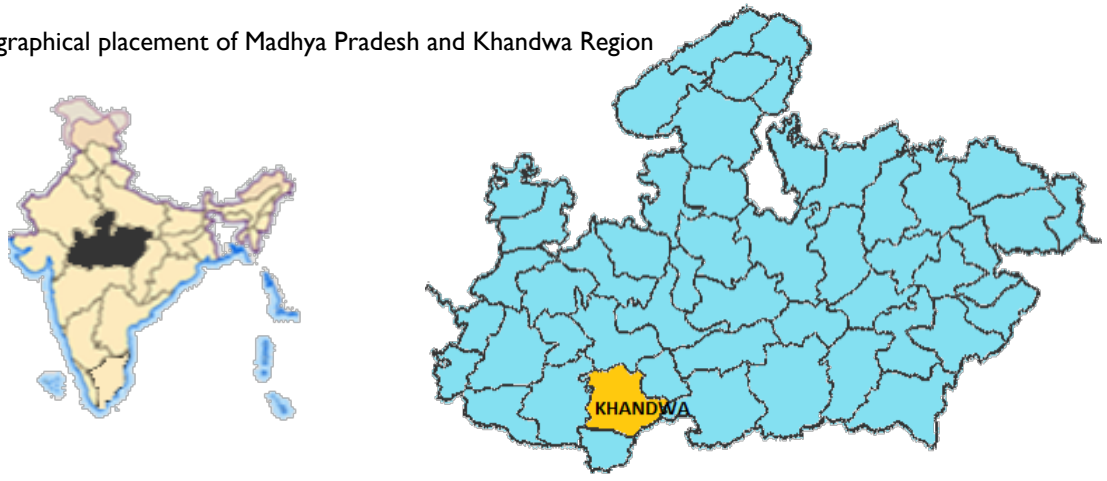


Image source: Veethi.com

II. TRAININGS CONDUCTED

- **Background:** The Smokeless Cookstove Foundation Conducted 3 training sessions in the months of June, July and September 2018, in Khandwa, Madhya Pradesh.
- **No of community participants in attendance:** 79 (22 trainer + 7 Spandan Staff during June training; 22 trainers during July training; 28 trainers during September training)
- **Villages covered:** Over 30 (data not accurately recorded)
- **No of Districts covered:** 3 (Khandwa, Baitul & Burhanpur) in the state of Madhya Pradesh

Key Observations

Training #1 held in Shekhpura Village

- Approximately 4 to 6 hours were spent during each of the training days and the participants were divided into smaller groups for more efficient learning
- Concerns were raised about the size of the feeder. They traditionally make almost 8-inch roti and they find the feeder small to adequately cook the rotis; hence the team instructed scrapping of the lower donut hole further to ensure better usability
- It was learnt that making additional donuts for practising the cut is very crucial; this way the participants are kept engaged at all points in time
- The SCF team did not just conduct the training but, along with trained volunteers, they installed 8 chulhas in the village HHs

Training #2 held in Dhabiya Village

- The team carried out informal assessment of the stoves to understand the adaptability
- Results were positive in most HHs
- Some HHs were not cleaning the ash out properly. They were told to do that and the same was conveyed to old and new trainers both.
- Usage and maintenance should also be covered properly in training
    - Should be added in the presentation given by Spandan to the trainers
- All the trainers should be asked to maintain the written records of each HH (name, number of members and Date installed) they install Chulah in

II. TRAININGS CONDUCTED (Cont.)

Training #3 Sawali Kheda Village, Block- Khalwa, Dist- Khandwa, MP

- Initial day of the training was washed out due to rains and the mud mix prepared was washed away
- However, as the weather let up, the participants were filled with energy and really looking forward to learning the technique of making the smokeless Chula.
- Demo Chula construction was demonstrated among the trainees and the Chula were installed in the Panchayat centre for display.
- New trainers were divided into 4 teams with one trainer assigned to each team for supervision.
- The new trainers were mostly young and enthusiastic and there was almost equal participation from the women participants
- Spandan team were spot on with their execution and data collection
- 6 SCF stoves were installed in 4 different HHs
- 2 SCF stoves were assessed in village Barakund.
- Another SCF chulah was installed in the school at the workshop location
- Final briefing about the Do's and Dont's of Rocket Chula were communicated to the trainers.
- The training tracker was exercised with the newly trained trainees and feedback on the training was taken by the SCF trainers.
- Molds were distributed to all the trainees by Spandan staff.

III. EVALUATION FINDINGS – IMPACT OF THE SCF CHULHA

Surveys were conducted in 16 villages in the Khandwa region, effectively from 49 respondents from a pool of 150 HHs installed with the SCF Chulha. Data was collected through various sources, including but not limited to:

- Responses recorded via the In-person interviews with a member of the beneficiary HHs
- All responses were recorded in presence of Spandan Management or staff
- Almost all responses were recorded with a written approval from the respondent

Data has been reviewed with respect to various parameters such as consumption of fuel, health indicators, and change in cooking time, among others.

Productivity and Efficiency Indicators

The formal assessments carried out in August- September 2018, 49 HHs in 16 villages were surveyed. These HHs had been installed with a Smokeless Cookstove Stove approximately 4 to 6 weeks prior to the survey so the members of the HH had ample time to observe the difference in usage and other indicators that were then captured by the SCF team.

The key parameters that were recorded were in terms of Usage were:

- Daily average hours of use
- Daily average firewood consumption before and after installation
- Change in amount of visible smoke after installation
- Pre-identified health indicators

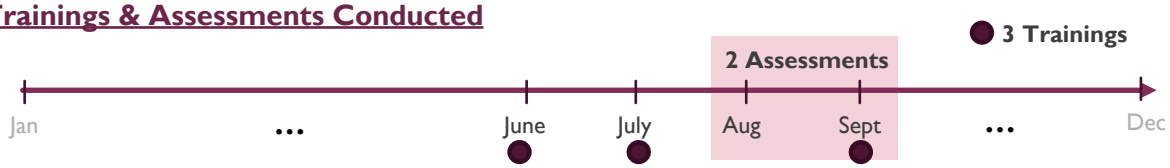
Of the surveyed HHs (49 in all), on an average, the cooking time reduced by 33% or 1.30 hours lending the users of SCs to use this time in their daily wage work and or spend time with their family. As for the productivity, the daily average consumption of firewood reduced by ~47%, which translates to a family saving about 96 Kgs of firewood in a month and about 1,170 Kgs in a year. This indicatively translates to about 2.9 trees saved per household per year, as the average biomass of a 5 year old teak tree is about 400 kgs (approximately.) (*Source for calculation from internet.*) This is a huge fiscal saving given the profile of the HHs and makes the SC a relatively more sustainable option. Apart from this, 100% of the surveyed people indicated a reduction in visible smoke compared to their traditional chulhas. This is further elaborated in the health indicators section.

Health Impact

Respondents were asked about the noticeable changes on their health with regards to breathing issues, watering eyes, coughing etc. About 96% of the respondents reported reduction in watering of eyes, 84% in coughing and 67% reported reduction in breathing problems as well. 84% of the people indicated that they have completely switched over to the improved SCF Chulha and 96% indicated a positive ease of use for the new Chulha.

IMPACT ASSESSMENT

Trainings & Assessments Conducted



Villages Represented during:

Training: over 30

Assessment: 16

Households Represented during:

Assessment: 49

Community Members:

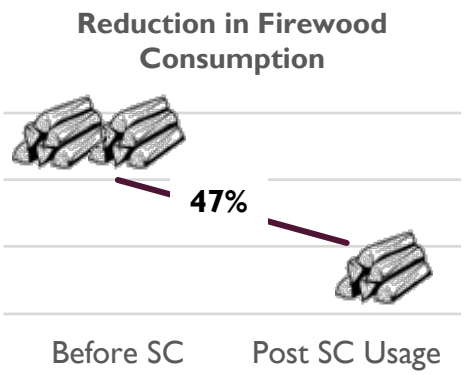
Trained: 79

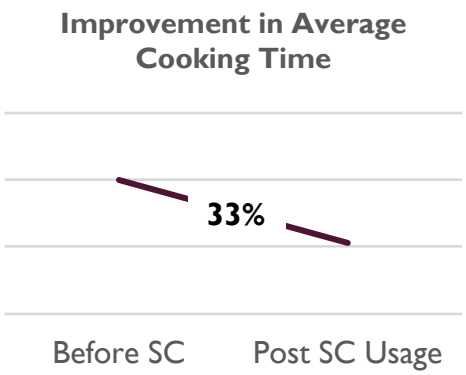
Assessed: 19

Adoption Indicators

- 41 households or **84% of total households**, indicated **complete adoption** – which means they do not currently use their old stove for any purpose
- **96% of households** indicated **positive ease of use** for the smokeless cookstove

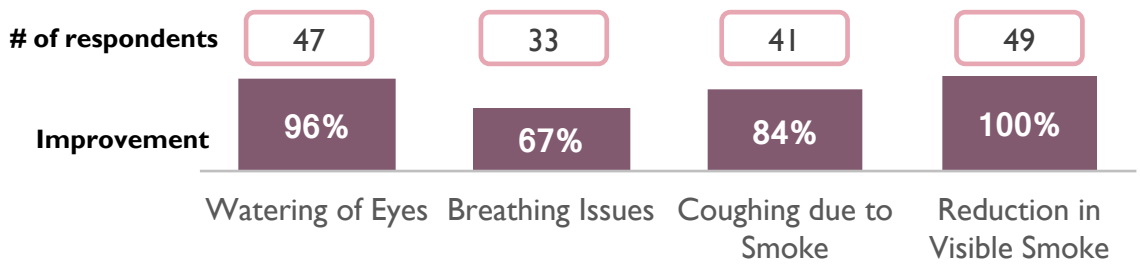
Productivity Indicators





Average Reduction of firewood – 47%	Average Improvement in cooking time – 33%
KG's saved/HH/day – 3.2 kgs	Hours saved/HH/day – 1.3 hrs
KG's saved/HH/Week – 22.4 kgs	Hours saved/HH/week – 9.1 hrs
KG's saved/HH/month – 96.2 kgs	Hours saved/HH/Month – 39.0 hrs
KG's saved/HH/year – 1,170 kgs	Hours saved/HH/Year – 474 hrs

Improvement in Health Indicators



Training and Impact Assessment Summary

S.No	Parameter	Data
1	Trainings conducted	3 (June, July, September)
2	Community members trained	79
3	Villages represented during training	Over 30
4	Chulahs made post 2 training sessions	150 (approx.)
5	HH covered during assessment	49
6	Villages represented during assessment	16
7	Number of trainers assessed	19
	Impact assessed (data basis 30 HH)	
	Firewood consumption	
1	Average Reduction of firewood	47%
2	KG's saved/HH/day	3.2 kgs
3	KG's saved/HH/Week	22.4 kgs
4	KG's saved/HH/month	96.2 kgs
5	KG's saved/HH/year	1170.1 kgs
	Cooking Time	
1	Averaged Improvement in time taken to cook	33%
2	Hours saved/HH/day	1.3
3	Hours saved/HH/week	9.1
4	Hours saved/HH/Month	39
5	Hours saved/HH/Year	474
	Visible Reduction in Smoke	
1	No. of HH reported reduction	49
2	Improvement in %	100%
	Health Indicators	
	Watering of the Eyes	
1	No. of HH reported improvement	47
2	% Improvement	96%
	Breathing issues	
1	No. of HH reported improvement	33
2	% Improvement	67%
	Coughing due to smoke	
1	No. of HH reported improvement	41
2	% Improvement	84%
	Adoption Ratio	
1	No. of HH reporting complete adoption	41
2	Adoption in %	84%
	Ease of usage	
1	No. of HH reporting easy to use aspect	47
2	Positive ease of use	96%

KOKILA SUBHASH PATIL, an ' Aanganwadi cook ' and is cooking for over 150 children on this chulah on a daily basis. She is able t o save one LPG cylinder per month reducing fuel consumption by INR 850 per month.

RUKMA BAI
"Sabji aur roti saath mein pak jaati hai". User keeps an LPG cylinder but is afraid to use it; user would remake the smokeless cookstove in case of damage

SUKAIBAI

"Dhua toh laage hi nai is mein". User also noted that the vessels do not get as black as they used to hence water and time is saved while washing vessels also. Time taken to cook is reduced considerably.

SHANTABAI

The soot on the wall from old chulah Vs. SC is a proof of smoke reduction. Burning of wood has considerably reduced.

CONCLUSION AND RECOMMENDATION

- More than 80% adoption ratio indicates that the solution of reducing smoke, cooking time and usage of firewood through usage of Smokeless Cookstove Foundation's designed chulahs has been well accepted by the Korku community
- Since the training period coincided with the monsoons and also key agriculture period for the Korku Tribes, House Hold level implementation suffered. Due to rains, the drying process took more time than normal and hence the community took time to install the desired number of chulahs. We feel that now the HH installation process will speed up due to dry weather conditions
- Women at the HH level are not confident of making chulahs themselves. More than 85% of women indicated that they will need help of the community trainer to make the chulah. The process of R cut is what they find slightly complicated
- The community has experimented with the ingredients based on their cultural understanding and advice from traditional chulah makers. This is a huge positive sign for the project, as SCF is keen to work with the community to constantly innovate and allow them to fully believe in this solution
- While most of the trainers are now experts in making SC chulhas, some require refreshed training and further practice
- Women trainers seem more confident in their work at the HH level. Perhaps an indication that the future trainings could have more women representation
- Role of a strong grass routes level NGO (in this case, Spandan Samaj Seva Samiti) is the key for successful HH level implementation of this solution
- Strong incentive programme linked to successful HH level implementation is the other crucial factor. We observed high motivation level from the community trainers after receiving initial monetary incentives into bank accounts

CONCLUSION AND RECOMMENDATION

- Once over 100 community volunteers are trained, the focus of the project should be HH level installation. Next phase of training should be planned post 500 working stoves and satisfied HH
- Women who are using SC stoves for more than 6 weeks should be used as local brand ambassadors and encouraged to spread positive experience.
- These women can be further trained through mini trainings held in their villages so they can start making a few stoves in their neighbouring homes
- Medical assessment for health indicators - while based on feedback from users, health indicators are positive for coughing, breathing issues, watering of the eyes, direct heat felt on the body, pain felt in back and neck due to posture and cooking hours; it will be crucial to include a medical examination to further establish and validate these indicator
- Use of relevant technology/ sensors needs to be incorporated to monitor reduction in smoke and cooking time
- Independent testing of the SC stove usage will be crucial step to further establish the proposition

ANNEXURE 1 – PRE WORKSHOP QUESTIONNAIRE

1. Location: Village, District, State
2. Population
3. No. of participants expected to attend the workshop
4. Source of livelihoods
5. Accessibility to fire wood
6. Major social and economic challenges
7. Cooking methods & related costs:
    i. LPG
    ii. Other smokeless cook stoves
    iii. Rudimentary mud stoves
    iv. Rudimentary brick stoves
    v. Any other

8. In case of LPG, what is the penetration of the same? How many homes/ 10 would have access to LPG as an approximation
9. Are there any health issues that have been noted on account of Indoor pollution caused due to inefficient cooking methods?
10. Is sourcing of firewood an issue?
11. Please provide a few photo/video samples of current cooking methods in the community.

ANNEXURE 2 – BASELINE SURVEY

	धुआं हटाओ ज़िंदगी बचाओ A HIMALAYAN ROCKET STOVE FOUNDATION INITIATIVE		Household 1
1	Name		
2	No. of family members		
3	Mobile Number		
4	Mobile Network		
5	Average Monthly Income		
6	Electrification status of Household		
7	Sources of Livelihood		
8	Kitchen Specifications	Kitchen in living area	
		Separate kitchen inside house	
		Outdoor attached kitchen	
		Detached external kitchen	
9	Sources of Cooking	Kerosene stove	
		LPG	
		Mud stove	
		Others (specify)	
10	Monthly expenditure in INR on alternate fuel		
11	Type of fuel used	Cow dung	
		Firewood	
		Crop residue	
		Others (specify)	
12	Average daily usage of firewood (in Kg's)		
13	Average time spent on cooking per day(in hours)		
14	Where do you get the firewood from & how much time does it take (in case of a remote source)		
15	Average cost in INR of firewood used in a week as per current market rates		
17	Are you a member of any Self Help Group (SHG)? (If yes, specify)		
18	Any specific observation		

ANNEXURE 3 – EVALUATION & AUDIT SURVEY

EVALUATION QUESTIONNAIRE /KHANDWA/MP

Household No. (To be provided_____)

Village name

District

Trainer name

HH Details

Name;

Mobile number;

No. of family members; (Adults + children)

SCF CHULAH INSTALLATION DETAILS

Date of installation :

Q1) Who made the chulah in your home

- Myself
- Myself & my family
- Myself and the trainer
- Only the trainer (name)
- All together

Q2) Can you build this chulah by yourself?

- Yes
- No
- Not sure

Q3) How long have you been using the SCF Chulah

- More than two weeks
- More than one month
- More than two months
- More than three months

Q4) How challenging did you find it to make the chulah?

- Very Difficult
- Difficult
- ok
- easy
- very easy
- other : *with reasons*

Q5) Were you able to get all ingredients easily? (Yes / No / Some Challenge)

(if NO or Challenge, which ingredients are hard to find?)

ANNEXURE 3 – CONTD.

EVALUATION QUESTIONNAIRE /KHANDWA/MP

Q6) Did you make any changes to the design? (Yes / No)

If Yes, what changes?

Q7) Will you make this style of chulha again when its time to rebuild? (Yes / No)

If No, why not?

SCF CHULAH USAGE DETAILS

Q8) How often are you using the SCF Chulah?

- All meals
- Only lunch/ dinner
- Only boiling of water
- Only tea

Q9) How many hours are you using the SCF Chulah

- One hour a day
- Less than three hours a day
- Less than six hours a day

Q11) How often are you cleaning out the ash?

- Every day
- After every meal
- On cooling of the chulah
- Other

Q12) How often are you cleaning the oxygen hole?

- Every day
- After every meal
- On cooling of the chulah
- Other

KEY SUCCESS INDICATORS

Q13) How satisfied are you with the use of SCF Chulah

- Very Satisfied
- Satisfied
- neutral
- not satisfied
- not at all satisfied
- other: with reason

Q14) Has the smoke reduced while cooking on SCF Chulah smoke:

- Reduced
- Same
- Increased

ANNEXURE 3 – CONTD.

EVALUATION QUESTIONNAIRE /KHANDWA/MP

Q 17) What was the per day firewood consumption (In Kg's) with your previous mud stove?

Q 18) What is the per day firewood consumption (in Kg's) after using SCF chulah?

Q19) Average consumption of firewood every week on SCF Chulah *(This has to be approximation based on feedback from HH)*

- Decreased (by how much?)
- Same
- Increased

Q 20) What was the total cooking duration per day on the earlier cookstove?

Q 21) What is the total cooking duration now after you started using SCF chulah?

Q22) Average cooking time

- Reduced (by how much?)
- The same
- Has increased

Q23) Health indicators: Have you felt any improvements in the following health indicators

- Coughing – (less / same / more)
- Watering of eyes – (less / same / more)
- Breathing issues – (less / same / more)
- Back and neck ache (Due to reduced cooking hours) - (less / same / more)
- Heat sensation on skin/ Skin allergies/ discomfort
- Any important observation?

Q24) Do you find cooking on SCF chulah easy or difficult as compared to earlier cook stove

4) OTHER DETAILS

Q25) Technical aspects of SCF chulah (Do you know the following…)

- The cut
- Size of the oxygen hole
- Size of the lower pot hole
- Lid for the lower pot hole
- Not applicable with reasons

Q26) Which burner is hotter? (Upper / Lower)

ANNEXURE 3 – CONTD.

EVALUATION QUESTIONNAIRE /KHANDWA/MP

Q27) Can you build this chulah by yourself without any external support? (Yes / No)

Q28) If NO, what support / help will be required to build the chulah?
(verbal instruction / trainer demonstration / brochure / video)

Evaluation Report : Prepared for SCF by _____

Date of assessment

ANNEXURE 4 – DAILY TRAINING TRACKER

धुआं हटाओ
ज़िंदगी बचाओ

Daily Training Tracker & Feedback sheet

Name of the Volunteer Trainer:

Name of Village: Name of District:

Day 1

	Activity	Understanding (Y/N)
1	Ingredients needed	
2	Mixing of the ingredients	
3	Understanding of the molds	
4	Donut making process – 5inches & 2.5 inches	
5	Additional comments	

Day 2

	Activity	Understanding (Y/N)
1	Making the cut (R cut)	
2	Making of the oxygen hole	
3	Scrapping of the feeder hole to make it 6-7inches	
4	Drying process of the donuts and ideal time taken for them to dry	
5	Additional comments	

Day 3

	Activity	Understanding (Y/N)
1	Assembling and stacking of the chulah	

ANNEXURE 4 – CONTD.

2	Making of the feeder	
3	Installation process	
4	Additional comments	

Day 4

	Activity	Understanding (Y/N)
1	Finishing of the chulah and covering of all gaps	
2	Using of cow dung or slip if required	
3	Understanding of the kind of wood needed for firing (twigs and small wood)	
4	Firing process and where to place the wood	
5	Cleaning or ashing process	
6	Fixing of the pods on top feeder	
7	Placing of the vessel/ tawa on bottom feeder to ensuring proper sealing	
8	Concept of initial smoke (all impurities and wetness in the firing chambers)	
9	Time taken to dry and the chulah to be fully ready under natural drying process	

Day 5

	Activity	Score (1 to 10)
1	Overall feedback on scale	
2	Ease of making the chulah	
3	Technicality involved in the design (sizes & the cut)	
4	Training process	
5	SCF Team	

Prepared by SCF

Name of the trainer

Location of the training

ANNEXURE 5 – LIST OF SURVEY RESPONDENTS

HH #	S.NO	Respondent Details
	1	**Village Name - Majgaon ; District Burhanpur ;Trainer Reena**
1	1	Kokila Subhash Patil (Anganwadi worker)
	2	**Village Name - Bijori; District Burhanpur**
2	2	Sunita
3	3	Anita
4	4	Jamuna Bai Rajkumari
5	5	Sonu Gajanan Kasde
	3	**Village Name - Mathapur, District Khandwa**
6	6	Rukma Shiv Karan
7	7	Sukai Bai Patil
	4	**Village Name - Jamnia Sarsaria, District Khandwa**
8	8	Sajori Bai
9	9	Phulwati
10	10	Shanta Bai
	5	**Village Name - Jamnapur, District Khandwa**
11	11	Rajanti Gautam (trainer)
12	12	Sethi Bai
13	13	Sunita Anil
14	14	Lalita Bai
15	15	Mankai Bai
16	16	Durga
17	17	Phulwati
18	18	Situ
19	19	Lalita Bai
	6	**Village Mojwadi; District Khandwa**
20	20	Parmila Bai (Household belongs to trainer Ramrati from 1st Batch training
21	21	Madhu Bai
22	22	Sumantra Bai
23	23	Sharda Devi
24	24	Susheela
	7	**Village Ambapath; District Khandwa;Trainer Gayatri**
25	25	Sunita (Respondent is a minor; secondary respondent and does cooking occasionally)

ANNEXURE 5 – LIST OF SURVEY RESPONDENTS

HH #	S.NO	Respondent Details
26	26	Jiji Bai
27	27	Kamla Bai
	8	**Village : Devali Khurd; District Khandwa; Trainers - Rinku Saichar & Kusum Solanki First batch trainers**
28	28	Savitri Bai
29	29	Savitri Bai Saichar (Trainer's home)
30	30	Sukai Bai
	9	**Village Kalyanpur; District Baitul; Trainer - Namdeo & Rajesh**
31	31	Samoti Bai (Trainer Namdeo's house); user is not the primary respondent
32	32	Ramku Bai
33	33	Shanta Bai
34	34	Laxmi - user has made the stove herself
	10	**Village Ambada; District Khandwa; Trainer Anil**
35	35	Bena Bai
	11	**Village - Bawariya; District Khandwa; Trainer Sajjan**
36	36	Asha Bai
	12	**Village - Auhaliya; District Khandwa; Trainer Gajraj**
37	37	Parvati
38	38	Jayshree
39	39	Sunita
	13	**Village - Gulai Marg; District Khandwa; Trainer Bhola Ram**
40	40	Ravita
41	41	Phulwati
	14	**Village - Patalda; District Khandwa; Trainer Harish kasde**
42	42	Shanta Bai
43	43	Phulwati
44	44	Anita
45	45	Punai
	15	**Village name: Barakund; Khalwa Block, Khandwa; Trainer: Radhey Shyam**
46	46	Phulanti
47	47	Misri Bai
48	48	Samoti Bai
49	49	Basanti Bai

ANNEXURE 5 – LIST OF TRAINERS ASSESSED

S.No	Trainer	Village
1	Reena	Majgaon
2	Anil	Bijouri
3	Shivkaran	Mathapur
4	Kashi Ram	Jamnia Sarsaria
5	Rajanti	Jamnapur
6	Ramrati	Mojwadi
7	Gayatri	Ambapath
8	Kusum	Devli Khurd
9	Rinku	Devli Khurd
10	Namdev	Kalyanpur
11	Rajesh	Kalyanpur
12	Anil	Ambada
13	Sajan Das	Bawariya
14	Gajraj	Awaliya
15	Bholaram	Gulai Marg
16	Harish Kasde	Patalda
17	Rajesh Kalme	Bhagpura
18	Satish	Mojwadi

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