



Report : Construction of Smokeless Chulhas

More than 68 % of rural households in India use biomass (wood, animal dung patties, farm waste) to cook food on traditional chulhas.

Chulha is a traditional cooking stove used for indoor cooking in rural areas and by the urban poor in India. It is a U or C shaped mud stove made from clay or 3 sets of bricks laid together installed directly on the floor. It has two openings, one at the top and the other is in the front. The top opening is to put the cooking vessel while the front opening is to feed the fuel.



Traditional Chulha emitting smoke and blackening vessels

The method of cooking on a traditional chulha poses a serious health hazard : respiratory diseases and ophthalmic irritation especially for women and children who are confined in the home while cooking. The traditional chulha also contributes to

- drudgery for women and children to collect wood from the forests,
- deforestation and global warming,
- productive time of women being spent in fuel collection, water collection to wash blackened vessels, and
- extended time spent in cooking.

The technical disadvantages of the traditional chulha which are listed below, arise due to lack of appropriate air laden with oxygen entry into the inner chamber of the chulha.

- Incomplete fuel combustion (half burnt fuel, leading to waste of fuel)
- Low combustion rate of fuel (less heat produced)
- Less utilisation of heat produced by fuel (loss of heat due to design)
- Emission of high levels of smoke

To improve the health of women and children by near - zero respiratory and ophthalmic irritation, positively impact the environment by reduction in the amount of biomass used, and provision of livelihoods to masons, the **Smokeless Chulha** has been promoted in **Village Goudagotha, Block Suroda, District Ganjam, State Odisha**.

The **Smokeless Chulha** is a chulha engineered with special features to address the technical limitations of the traditional chulha. It comprises of

- One front opening to insert biomass
- The front opening is fitted with metal rods at a raised level (two inches above the floor) to insert biomass on the metal rods and to allow air laden with oxygen to enter the inner chamber of the chulha through the front opening as well as from under the metal rods
- Two top openings (two vessels may be cooked simultaneously)
- A pipe to transport the fumes out of the house.

The advantages of the **Smokeless Chulha** are

- Full complete combustion of fuel due to appropriate amount of air laden with oxygen
- 40 % less fuel needed as compared to its traditional counterpart due to proper combustion of fuel
- Focus the heat on the vessels, thus cooking is faster and optimal burning of fuel prevents blackening of vessels
- Two top openings, means, cooking two dishes simultaneously, hence overall time spent on cooking is less
- Low level of indoor pollution due expulsion of fumes through pipe
- Saves time and energy of women and children in collection of biomass and water
- Post a two day training, crafting of smokeless chulhas is fairly simple, leading to increased income of masons

The Strategy employed for implementation

KSWA connected with a local NGO who introduced KSWA to a couple of villages, where one of KSWA's representative visited. Based on the size of the village, the need and the openness of the villagers to adopt new healthy technologies, **Village Goudagotha in Block Suroda, District Ganjam** was selected.

To execute the intervention, KSWA deputed a worker with technical skills from May to June 2024. The steps followed were

- Meeting with key villagers and women to brief about the advantages of The **Smokeless Chulha**
- Training of a total of 145 women (50,50, 45) in 3 batches on how to craft a Smokeless Chulha over five sessions
- Distribution of material to 145 women
- Supervision of the women crafting their own smokeless chulhas

Reflected below are the day to day activities conducted by the said worker.

Date	Activities
May 13, 2024	YP staff's arrival in Ganjam district, Odisha
May 14 to 19, 2024	Meeting with local partner; Visit to identified Village Goudagotha, Block Suroda, Meeting Key Villagers to understand the situation; Meeting with vendors to describe material requirement, Obtaining quotations, Quotations comparison, Selection of best quotation, Making payments; Meeting with and selection of local Master Masons for mould making and metal cutting
May 20, 2024	Made home visits, conducted a corner meeting with house hold members to describe the benefits of smokeless chulhas and plan the training schedule
May 21, 2024	Made home visits, conducted the first batch training - session one for 50 women; collected 20 documents
May 22, 2024	Made home visits, conducted the first batch training - session two for 50 women; collected 20 documents
May 23, 2024	Made home visits, conducted the first batch training - session three for 50 women; collected 10 documents; Click photos of old cooking practices and old chulhas
May 24, 2024	Made home visits, conducted the first batch training - session four for 50 women; Distributed material for construction of smokeless chulhas; Supervision of crafting of smokeless chulhas; Click photos of old cooking practices and old chulhas
May 25, 2024	Made home visits, conducted the first batch training - session five for 50 women; Distributed material for construction of smokeless chulhas; Supervision of crafting of smokeless chulhas; Click photos of old cooking practices and old chulhas
May 26, 2024	Made home visits, conducted the second batch training - session one for 50 women; collected 20 documents
May 27, 2024	Made home visits, conducted the second batch training - session two for 50 women; collected 20 documents
May 28, 2024	Made home visits, conducted the second batch training - session three for 50 women; collected 10 documents; Click photos of old cooking practices and old chulhas

Date	Activities
May 29, 2024	Conducted the second batch training - session four for 50 women; Distributed material for construction of smokeless chulhas; Supervision of crafting of smokeless chulhas; Click photos of old cooking practices and old chulhas
May 30, 2024	Made home visits, conducted the second batch training - session five for 50 women; Distributed material for construction of smokeless chulhas; Supervision of crafting of smokeless chulhas; Click photos of old cooking practices and old chulhas
May 31, 2024	Made home visits, conducted the third batch training - session one for 45 women; collected 15 documents
June 1, 2024	Made home visits, conducted the third batch training - session two for 45 women; collected 15 documents
June 2, 2024	Made home visits, conducted the third batch training - session three for 45 women; collected 15 documents; Click photos of old cooking practices and old chulhas
June 3, 2024	Made home visits, conducted the third batch training - session four for 45 women; Distributed material for construction of smokeless chulhas; Supervision of crafting of smokeless chulhas; Click photos of old cooking practices and old chulhas
June 4, 2024	Made home visits, conducted the third batch training - session five for 45 women; Distributed material for construction of smokeless chulhas; Supervision of crafting of smokeless chulhas; Click photos of old cooking practices and old chulhas
June 5, 2024	Home visits to 50 households to check on construction of smokeless chulhas and click photos of completed smokeless chulhas
June 6, 2024	Home visits to 50 households to check on construction of smokeless chulhas and click photos of completed smokeless chulhas
June 7, 2024	Home visits to 45 households to check on construction of smokeless chulhas and click photos of completed smokeless chulhas

Below are photographs of the various activities implemented

Home Visits to understand the situation



Blackened walls, vessels reflecting smoke and soot





Meeting with groups of women to describe the benefits of Smokeless Chulhas





Training of 3 batches of women for five days on how to construct a smokeless chulha





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Crafting of moulds, and..... cutting of metal rods



Distribution of material to craft a smokeless chulha at one's house



Supervision of construction of smokeless chulhas crafted by women



This project has been a powerful way to take responsibility to reduce one's carbon foot prints. It addresses India's journey towards achieving The United Nations Sustainable Development Goals, namely,

Goal 3 : Ensure healthy lives and promotes well – being for all at all ages,

Goal 5 : Achieve gender equality and empower all women and girls,

Goal 8 : Ensure decent work and economic growth,

Goal 12 : Ensure sustainable consumption and production patterns,

Goal 13 : Take urgent action to combat climate change and its impacts.

The photos of the **145 Smokeless Chulhas** constructed are attached seperately.