

## With smokeless chulhas, this woman's start-up tackles pollution

### Business



[Written by Siddhant Pandey](#)

Traditional mud *chulhas* are a common sight in a rural Indian household, often accompanied by black shadows tracing the kitchen walls from soot collected over time.

Notably, these mud *chulhas* are a leading cause of indoor pollution, killing over a million people across rural India every year.

However, a Bhubaneswar-based start-up, helmed by a 23-year-old woman, may have a solution.

Here are more details.

Start-up

**Start-up offers end-to-end clean cooking solution for rural women**



DD Biosolution Technology Pvt. Ltd. was established in 2016 with an aim to provide innovative solutions to social and industrial problems.

It is one of the few entrepreneurial ventures selected in the Indian Institute of Technology (IIT), Bhubaneswar's Start-up Center.

One of the challenges that the start-up has taken on is indoor [air pollution](#), by offering an end-to-end clean cooking solution for rural women.

Cooking stove

## **DD Biosolution's 'zero smoke' chulha converts agro-waste into energy**

Founded by Bhubaneswar-based engineer Debashree Padhi, DD Biosolution offers an integrated biomass "zero smoke" cooking stove to combat indoor air pollution in rural homes.

While mud *chulhas* use cow-dung cakes, coal or firewood for fuel, this smokeless stove uses bio-pellets made out of agricultural waste.

Thus, the stove allows for an optimized lifecycle for agro waste utilization into energy.

Backstory

## **Growing up, Padhi witnessed health impacts of chulhas**



Speaking to [The Better India](#), Padhi revealed the issue of indoor air pollution is personal, having witnessed relatives battle health issues from using *chulhas*.

While studying at the Central Institute of Plastics Engineering & Technology, Padhi developed prototypes for the smokeless stove, which led her to being selected in the government's Micro, Small & Medium Enterprises incubation program, thus kicking-off her entrepreneurial journey.

Information

## **Indoor air pollution can cause cataracts, lung cancer, bronchitis, etc.**

Reportedly, Padhi's childhood home is among the millions of households where women, who often shoulder kitchen duties, suffer from a host of respiratory diseases. Indoor air pollution also leads to childhood pneumonia, emphysema, cataracts, lung cancer, bronchitis, cardiovascular disease, and low birth weight.

Details

## **Padhi designed stove that emits no particulate matter**

Hence, Padhi commercialized 'Agni': a cooking stove that emits less than 0.15 ppm carbon monoxide and no particulate matter.

The stove runs on agro-mass pellets, shaped like bullets, made out of agriculture residue, jaggery, limestone, and clay.

Reportedly, with Agni, cooking is not only pollution-free but twice as fast, with users spending an estimated Rs. 120-150 per month on pellets.

Information

## **Agni cookstove falls in Rs. 2,800-4,500 price range**

The Agni stove went on sale earlier this March after Padhi acquired certification from CSIR-Institute of Minerals & Materials Technology, Bhubaneswar. She built three different burner types, depending on which, an Agni cookstove would cost you Rs. 2,800-4,500.

Local feedback

## **25 Agni stoves already sold; received positive feedback**



Thus far, DD Biosolution has sold 25 stoves in Naami village where locals have already received Agni well.

"My coughing has reduced and my eyes do not water anymore while cooking," Naami-resident Purna told *TBI*, after switching to Agni stoves.

Another user, Sarthak Ravatray, said, "My mom's eye allergy has ended, and the walls in our kitchen are no more black from the smoke."