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Not fired with logic

In the development business doing something for both women and the environment is the equivalent of holding a royal flush in poker. Which is why, a few years ago so many people signed on to the idea of an improved cookstove: in September 2010, for instance, Hillary Clinton announced the formation of the Global Alliance for Clean Cookstoves (GACC), which calls for 100 million homes to adopt clean and efficient stoves and fuels by 2020.

The basic idea is simple. The world's poorest people use the cheapest available fuels — dung and twigs and even leaves. This might sound like protecting the environment — after all we are not burning something that needs to be pulled out of the earth. But it is not. These are among the dirtiest fuels available, in terms of the amount of particulate matter and carbon dioxide released into the air; coal is clean by comparison. And when a woman bends over the stove to cook, a lot of those newly liberated particles travel more or less directly into her lungs. A lot of the rest swirls around the house, ending up in the respiratory system of those who spend a lot of time at home, like young children and the elderly. The World Health Organisation (WHO) estimates that 2 million people die from this kind of indoor air pollution every year, which is about as many deaths as malaria and tuberculosis combined.

Improved cookstoves seemed to be a simple but brilliant solution to the problem. Why not enclose the fire so that neither the heat nor the smoke can escape from the stove and channel the smoke out of the house through a simple chimney? Enclosing the heat saves energy and lowers emissions; and sending smoke out is obviously better.

This is what the new generation of stoves were designed to do and when tried out under controlled conditions they seemed to work: this was why there was so much excitement about them. Yet, a recent study by some of my colleagues from Harvard and Massachusetts Institute of Technology (MIT) that followed several thousand households with and without improved stoves in Odisha over four years reluctantly concluded that having a stove at home made absolutely no difference. The study was done with great care: households were selected by lottery to receive a subsidised stove to ensure that those who got those stoves were exactly like those who didn't. It was not that the stoves just never arrived — Gram Vikas, one of India's most respected NGOs, was in charge of implementation and every eligible household that wanted a stove got one. A wide range of outcomes — from school attendance of children to the carbon dioxide in the lungs of their mother — were measured. Quite remarkably, by the end of year four, there was really no good news to report, whether it was health that you cared about or fuel use or time spent cooking.

It is instructive to try and understand why the promised miracle did not happen. At one level the answer is simple — people stopped using the improved stoves. They had them in their homes, but they used their old unimproved stoves. Interestingly, this was true from the very beginning. People never stopped using their old stoves, though the new stoves did get significantly more use in year one than in year four. Correspondingly, in year one carbon dioxide in the lungs of women does go down, but it goes back up over

time, as the new stove falls into disuse.

One advantage of the old stoves is that they are portable. When the weather was not too hot or wet, cooking was more pleasant outside than inside their small single room houses. The new stoves, with their fixed chimneys, could not be moved. But surely there must be something else to the story — remember all of this got started because there was enough cooking inside to be a health hazard. Well, it turns out that improved stoves, like all stoves, have a tendency to crack. But a crack in an improved stove defeats its whole point. Smoke comes into the room through the crack rather than exiting through the chimney. Heat leaks out, reducing fuel efficiency. New stove owners, data shows, spend significantly more time repairing their stoves. And since such repairs in rural Odisha are a man's job, this probably involved a fair amount of persuasion by the woman.

The improved stoves also demanded more attention. There were two burners, and both need to be covered all the time, even if only one was being used — otherwise the smoke just leaked out through the other hole. If you got distracted and forgot to put the cover on, because, say, a child was crying outside, you would come back to find yourself in a room full of smoke.

For the hyper-rational being that lives in economic models, none of this ought to matter. They would never forget in any case, and even if they did, they would recognise the superiority of the new technology and stick to it. But I know how I would react: I would be so frustrated with all the things that keep going wrong with new stove (especially after all that hype) that I would stop using them.

The broader point is not at all that new technologies never work or that the poor cannot adapt to them — no one who has seen the cellphone sneaking in and out of the ghunghat in rural Rajasthan can believe that. It is not even that such a stove cannot be made to work — there might even be one already somewhere that does. But it does remind us that technology works best when it sits lightly on the lives of its users. And most importantly, it warns us not to declare victory too soon — the fact that we think something should work is not enough — it needs to work for the people who use them.

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