

## **The Patsari Stove**

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Can a wood-burning stove be environmentally friendly?

Readers used to cooking on gas or electric stoves may find it hard to believe, but approximately half the world's population still relies on solid fuels (wood, dung, coal) as their primary fuel source. Not only does the wide use of firewood contribute to local deforestation, but the regular use of open fires in the home is linked to acute respiratory infections in children & chronic respiratory illness (including tuberculosis and cancer) in adults. Regular exposure to indoor smoke has also been linked to other ailments, including ear infections, cataracts and unsuccessful pregnancies. It is responsible for over a million and a half premature deaths each year, disproportionately among women and children.

So, given all the environmental and public health concerns that surround the burning of firewood, how can a wood burning stove be good for the environment? By reducing the amount of wood used relative to traditional open fires and significantly improving both household air quality and family health. The Patsari stove does all these things.

It was developed in Mexico, where approximately one quarter of the population- or 28 million- still rely on open fires for cooking and/or heating. The Interdisciplinary Group for Appropriate Rural Technologies (GIRA), based in the central Mexican state of Michoacán, used a participatory approach in which input was provided by actual users from indigenous Purhépecha communities, to design a simple yet effective stove which rural households are now actively embracing instead of the traditional open fires.

It consists of a closed, boxlike combustion chamber which cuts fuel use in half, and a chimney to channel smoke out of the home, which results in a 70% reduction in indoor air pollution. Hot plates on the top surface, over the fire, provide the cooking surface.



Despite the promise of improved efficiency and cleaner air, families were initially reluctant to change the way they've cooked for thousands of years. The tipping point came rather unexpectedly, when women realized that kitchens with the Patsari stove were both cleaner and easier to keep clean. As of 2006, over 3,500 hundred families and 70 small businesses had installed Patsari stoves. Microcredits and discounts to businesses have been made available to facilitate the widespread adoption of the Patsari stove.

By purchasing the pre-made parts (such as the chimney) from local providers and training local residents in the construction and promotion of Patsari stoves, the project becomes self-sustaining. Local governments and NGOs often provide the raw materials (which are obtained locally), so that customers need only pay the stove-builder's labor. Over 100 individuals have been trained as stove-builders, who in turn train families on proper operation and maintenance. Builders conduct at least three follow-up visits to check the stoves and correct any deficiencies.

Health studies have since shown Patsari households to suffer from 30% less respiratory infections and 50% less eye infections, adding further incentive to switch. These health benefits could be even larger once neighboring households also adopt the Patsari stove.

For all these reasons, GIRA won an Ashden Award for Sustainable Energy in 2006.