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## Technology Quarterly

## Green homes

## Another green revolution

Sep 4th 2008

From *The Economist* print edition

## Most homes are in the developing world. They are going green, too

A CLAPBOARD house in Cape Cod is very different from a one-room mud-brick hut in the Indian state of Orissa, but making them into green homes involves a similar approach: using as little energy as possible to meet the occupants' needs. But in the developing world the impact of new technology can be far more transformative.



LUTW

Consider the cooking of food, which is usually done by burning wood or dung. Typically 80% of the fuel's energy is wasted, and the resulting smoke pollutes indoor air and contributes to more than 1.6m deaths a year, according to the World Health Organisation. But using a carefully designed stove to enclose the fire and direct heat into the pot, fuel consumption and pollution can be reduced dramatically.

The problem, says Bryan Willson, a professor of mechanical engineering at Colorado State University, is that efficient use of wood requires a careful mix of fuel and air to maintain combustion at the appropriate temperature. To that end, Dr Willson and his students developed stoves with simple carburettors that can cut particulate emissions by 75% and fuel

## Soaking up the sun

consumption by half.

Their design is now being commercialised by an NGO called Envirofit. It produces four models in China and India that sell for \$10-80. Ron Bills, Envirofit's boss, hopes to sell 10m stoves worldwide by 2013. Dr Willson's team, meanwhile, has devised an experimental stove that generates electricity using a thermoelectric device and powers a white light-emitting diode (LED).

LEDs present an opportunity to leapfrog from dim, flickering flames straight to bright, clean electric light. In 2002 Dave Irvine-Halliday, a Canadian engineer, set up an NGO, the Light Up the World Foundation, to distribute small, solar-powered LED systems. (A solar panel charges a battery that powers the light at night.) LEDs are becoming increasingly affordable. In a scheme set up by the University of Illinois and the Jagannath Institute for Technology and Management, an engineering college in Orissa, rural workers earning \$1-2 a day snapped up solar-LED lights for \$20.

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Bryan Willson's design is being commercialised by Envirofit. Light Up the World Foundation distributes solar-powered LED systems. The University of Illinois describes its joint venture with the Jagannath Institute for Technology and Management in Orissa.

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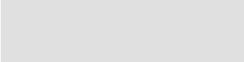
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For people using kerosene lamps, the fuel saved by switching to a solar-LED system can add up to a month's earnings each year. LEDs are safer, too. To Western eyes they may be a "green" technology, but to buyers in the developing world they are simply safer and cheaper than the alternatives.

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