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Heating Homes With Human Waste Is Saving Lives And Tigers In Nepal

By Carter Roberts

Dirt gets a bad rap. I'm sitting on a dirt floor in Badreni, Nepal, in a home built largely of dirt (waddle and daub) and there's nothing dirty at all about this place. I'm a guest in a biogas home--one of 7,500 the WWF has helped build to date and one of 40,000 that will dot this Nepalese landscape five years from now.

A small but powerful blue flame whispers in the corner and brings light to the faces of my host family. That flame lights and heats the home; it also warms the Chiya tea we're all anxious to drink.

The biogas home is about as low on the low-tech totem pole you can go because it all begins with, well… let's just say that one man's waste is quite literally another's gold in this equation. Cow dung, human excrement and a bit of water make up the slurry that ferments in a simple cement-lined pit. Some elbow grease to stir a crank, a heavy dose of microbial action and--voila!--a clean, odorless, and life-changing gas.

I say that this is life-changing because women once confined to a smoke-filled kitchen area for much of the day no longer face an almost certain future of respiratory illness. It's life-changing because

those same women no longer have to spend two to three hours of every day searching for sticks or hacking trees in a forest with some very cool but rather unfriendly neighbors (think snakes, rhinos, elephants, and the highest density of tigers in the world). That time saved can be spent on everything from enjoying the Himalayan backdrop in the company of family to going to school. And the spent slurry can be used as potent and easy-to-work fertilizer that dramatically bumps crop productivity and food security.

That little blue flame has become a symbol of hope and a powerful tool for overcoming poverty in this landscape.

We're in what's called the Terai-Arc of Nepal, a narrow band of forests and grasslands nestled in the foothills of the mighty Himalayas. "Pristine" or "primeval" are words that don't work here. Humanity has kneaded this place into a patchwork of villages and secondary forests. Eleven protected areas--like Chitwan and Bardia [1]--form something of a conservation core. WWF, the local and national government, and the communities themselves have been working to reforest and stitch this place together in a way that benefits both people and animals. Again, enter the blue flame.

A typical non-biogas household will char about five and a half pounds of fuel wood a day to light and heat their space and to cook meals. Any woody debris from the immediate surroundings quickly gets picked clean. So there is a progressively more distant, more dangerous, and more destructive daily exodus into the forest to find fuel.

Biogas homes are great for Nepalese families, but they're also integral to forest reforestation and conservation, the survival of endangered fauna like tigers, and even to the stability of the climate. The demand for these stoves has spiked recently because the benefits are so tangible and immediate.

Part of the success of the stoves as a whole can be attributed to the cost-sharing, micro-lending approach we've used. One unit costs $548 (about 40,000 Nepalese Rupees). WWF has agreed to subsidize 25% of that cost ($137) through Nepal's Alternative Energy Promotion Center. We also subsidize the $27 per unit toilet cost (I never imagined using that phrase in pursuit of saving tigers). And we also spend approximately $34 per unit to monitor the use and functioning of the equipment and to support maintenance of the plant.

That leaves families with a $384 gap--and that's where things get interesting. Interest rates charged by the local banks are too high and require collateral. So we created microfinance institutions at the community level and established a revolving fund for the project that provides a soft loan at an interest rate of 8% (almost one-third of the general bank rates) with a duration of two years. The repayment rate is 99%.

The revolving fund was capitalized with donations from WWF supporters the world over and, importantly, with the sale of Gold Standard credits from the voluntary carbon market. The 7,500 stoves save 617 acres of forest annually; that means 33,000 tons of fuel wood isn't being torched. Each stove eliminates four metric tons of CO_2 equivalents annually, and those carbon savings are traded by a Swiss-based organization, My Climate.

At a price of $18.50 per ton of CO_2 equivalent, we can reach a break-even point on the biogas project in the seventh year. Since the average life of a biogas plant is 20 years, revenue after the seventh year will help us construct more biogas plants in Nepal, making this initiative sustainable. The whole complicated economic and ecological chain is a model for ensuring that local people benefit from emerging programs like Reduced Emissions from Deforestation and Forest Degradation (REDD).

Jari Maya Tamang, the woman who has taken me under her protective wing and who has schooled me with regards to the intricacies of biogas, refills my cup with more tea. After sharing stories, translated with tremendous patience by her brilliant, multi-lingual son, Jari closes the valve and the

blue flame expires, leaving us wrapped in darkness and the fragrance of tea.

[*Image: Carter Roberts*]

As President and CEO of WWFUS [2], Carter Roberts leads World Wildlife Fund's work to save endangered species and their habitats through innovative programs with governments, businesses and local communities throughout the world. WWF, famous for its panda logo, is the world largest conservation network, with over 6 million members and programs across 100 countries.

Links:
[1] http://www.fastcompany.com/1734387/how-the-wwf-translocated-a-wounded-wild-tiger-in-nepal
[2] http://www.worldwildlife.org/home-full.html