

# TIME europe

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## Power Plays

### How innovative small firms are hooking up Africa's poor to affordable energy

BY MARYANN BIRD

In his one-room house in Ongata Rongai, just outside Nairobi, Juma Nyauo sits on a stool, occasionally stirring the pot of kidney beans slowly bubbling on a small ceramic-lined stove. "I have asthma," he says, "and when I cook with charcoal I have to cough." Not any more. Nyauo, 62, still cooks with briquettes: it's the only fuel he can afford on his salary of a few dollars a week, earned as a laborer in a stone quarry.

But he's not using ordinary charcoal. Instead, Nyauo is burning Chardust briquettes, made by compressing the charcoal dust found heaped at the many charcoal sales points dotted around the Kenyan capital. Unlike charcoal, these briquettes are completely carbonized; they contain no remaining wood to smoke when burned.

Chardust director Elsen Karstad says that, in 1996, he and his business partners were looking for fuel to keep the chicks warm at their poultry farm when the piles of dust caught their eye. "Electricity is too expensive," says Karstad, a Canadian environmentalist who has spent most of his life in Kenya. "Wood smokes, and I'm only too aware of the deforestation in Kenya. Because the charcoal dust is already carbonized, we only needed to add a bit of clay and water to make briquettes out of it." Since the mid-1990s, Chardust's plant has churned out more than 50 million briquettes per year — selling for about \$5 per 50-kg sack — for customers like Nyauo. Last week, the Nairobi-based company won a \$132,000 grant from the World Bank to pay up to 300 residents of the city's biggest slum, Kibera, to be "carbon collectors" of charcoal dust for processing into briquettes.

Chardust employs 70 people and has annual revenues of more than \$200,000. It's just one of the small and innovative alternative-technology companies in Africa that work to serve — in simple, creative ways — the energy needs of local people. Energy is an essential to development, but in Africa, according to the United Nations, about 80% of Africans (excluding those in South Africa and Egypt) have no access to national grid electricity. That's why companies like Chardust, as well as a clutch of nongovernmental organizations, are focusing on small-scale projects to help people generate energy locally.

Getting energy to rural African communities involves massive challenges. First, there's a general lack of supply; Africa produces around 420 billion kW/h of power annually, a little more than Spain and Italy combined. Then there's the logistical headache of getting existing power to those who need it. National grids often bypass the towns and villages where half of all Africans live. And there are the toxic effects of pollution. According to the World Health Organization, the thick, acrid smoke from fires and stoves inside African homes is one of the biggest killers of rural women and children, taking some 1.6 million lives annually. Hence the need for alternative technologies like Chardust.

Alison Doig, an energy specialist with the British-based Intermediate Technology Development Group, says: "A lot of what we do is trying to get technologies that fit locally. It's not imposing technologies from the North." Important resources are water and sunlight. By harnessing the power of falling water, hydropower systems can replace diesel generators to run grain mills or provide electricity to homes. Solar water heaters are part of a pilot project in low-cost housing in the Kuyasa area of Khayelitsha, the huge Cape Town township, where officials hope to demonstrate a viable model for reduction of greenhouse-gas emissions.

Meanwhile, Chardust hopes to expand its range of low-cost sustainable fuel beyond charcoal, and is experimenting with coffee beans, maize stalks, sugar cane — and even macadamia nuts. "The shells are perfect to make briquettes from," says Karstad. "They are low in moisture, and plentiful." With any luck, they'll leave dirtier fuels in the dust.

With reporting by Ilona Eveleens/Nairobi

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