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## **What Works**

### **Pumping Prosperity**

**ApproTEC's pumps are designed and marketed with an understanding of the culture and psychology of African farmers**

By Ron Russel

Stanford Social Innovation Review  
Winter 2004

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## MARKETING IN DEVELOPING COUNTRIES

### Pumping Prosperity

ApproTEC's pumps are designed and marketed with an understanding of the culture and psychology of African farmers *by Ron Russell*

Martin Fisher arrived in Kenya in 1985 with a Stanford Ph.D. in mechanical engineering and the determination to make a difference in poor people's lives. But as a Fulbright Scholar studying "appropriate technology" – simple tools best suited to the needs of people in developing countries – he was soon disappointed.

Aid organizations with big budgets were inadvertently damaging the communities they were trying to help. In one village he lived in, a project that trained orphans to make bricks ended up putting local bricklayers out of business. Then, as now, many well-intentioned agencies working in Africa funneled their money to the government, only to see it vanish into large-scale infrastructure projects or the pockets of corrupt officials. Almost no assistance went to the private sector, let alone to small-scale entrepreneurs.

Such observations led Fisher to a simple yet profound conclusion: Entrepreneurs in developing economies need a personal stake in any technology that is supposed to lift their fortunes. In 1991, he teamed up with Nick Moon, a British aid worker who had already been in Kenya for nine years, to launch a nonprofit called ApproTEC. With an annual budget of \$2.5 million, the venture now has about 75 employees, mostly in Africa, with a small fundraising contingent headed by Fisher based in San Francisco.

#### Lesson One: Don't Rely on Local Government

ApproTEC's first product was a manual seed press, designed to give poor villagers an alternative to buying expensive cooking oil. A farmer could put sunflower seeds into one end of the press, crank the handle, and – voila! – cooking oil (as well as a high-protein, high-fat residue suitable for animal feed) came out the other end.



A Kenyan farmer uses ApproTEC's footpump. The key to the pump's success lies in its simple design and aggressive marketing.

But the press fell prey to politics. People in the administration of former Kenya president Daniel arap Moi had a financial interest in continuing to import palm oil from India, Fisher says. As a result, the only sunflower seeds the government allowed into the country were hybrids that – not coincidentally – didn't grow well in Africa, making it hard for farmers using ApproTEC's press to produce oil.

Fisher then hit on the idea of producing water pumps to better enable farmers to irrigate their field. Raw materials wouldn't be an issue with making water pumps. "The water is there for the taking, and it isn't a zero-sum game," he says.

ApproTEC's chief product today is a simple, foot-operated water pump marketed through agricultural equipment shops in Kenya and Tanzania. It has added to the ranks of the African middle class both the entrepreneurs

who sell it and the small-scale farmers who use it. The pump, dubbed the MoneyMaker, costs either \$40 or \$80, depending on the model. (It comes in one- and two-piston varieties.) They cost about \$200 apiece to produce.

ApproTEC's pumps are quietly helping to reshape the economies of poor east African nations in much the same way that high-tech innovations of the digital age have reshaped the developed world. Since 1996, about 40,000 of the nonprofit's pumps have been sold, creating a nearly equal number of "microenterprises" in east Africa and generating \$36 million a year in new profits and wages. In Kenya, ApproTEC estimates that revenue attributable to its pumps accounts for fully 0.5 percent of the country's gross domestic product.

#### Low-Tech Advantage

The key to the pumps' success lies in their simple design and

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the hands-on way that ApproTEC distributes them. Seventy percent of Kenya's 30 million people are farmers who survive by growing what they need. The typical Kenyan farmer lives on a 1¼-acre plot with eight to 10 family members. As families grow in size and divide with each generation, their plots get smaller and must yield more food. An obvious way to do that is to irrigate the soil year-round. But only a handful of wealthy landowners can afford motorized pumps and the fuel to power them. That's why during the dry season crops like tomatoes are scarce and lucrative; when it rains, they're common and nearly worthless. For a farmer with an irrigation pump, says Fisher, "There's a lot of money to be made."

That's where ApproTEC comes in.

Its MoneyMaker-Plus (the original, one-piston version) is a low-tech wonder in a no-tech region. Just 2½ feet long, 12 inches wide, and weighing only 25 pounds, the device is small enough to be carried on a bicycle, uncomplicated enough for a farmer to install and repair without any tools, and – most significantly – powerful enough to irrigate 1½ acres a day.

The MoneyMaker-Plus is based on the treadle pump that IDE, a similar nonprofit in Bangladesh, has used to transform numerous villages there. But ApproTEC's version has been adapted to east Africa in several critical ways. For instance, Fisher and Moon added a pressurizing head so water can be driven through a sprinkler or up Kenya's hilly fields, something the basic suction design of the IDE pump couldn't do.

Unlike the IDE machine, which remains fixed in the fields, ApproTEC developed a lightweight, portable model that could be taken indoors at night for protection against thieves. It has no nuts, bolts, or fasteners susceptible to rust, and its valves are engineered to last three years or longer.

## Understanding Customer Psychology

ApproTEC also had to take east African culture into account. The foot pedals of the Bangladeshi pumps were positioned high for maximum lift, but Fisher knew most of his customers would be women – Africa's traditional water carriers – and that the hip swaying required to operate the IDE pump would be too provocative in Africa. Thus, ApproTEC's treadles are lower and shorter.

The next challenge was getting the pumps into the hands of dirt-poor farmers for whom \$40 amounts to more than a month's wages.

While an aid agency might have given the pumps away, ApproTEC chose to sell them. Fisher's experiences in Africa convinced him that farmers who had to purchase their own equipment were more likely to use and maintain it properly, treating it as an investment in future profits. Before launching their venture, he and Moon (who runs ApproTEC's offices in Nairobi) worked for ActionAid, the British development agency, setting up groups of young people and women in communal businesses after teaching them to operate machinery that made roof tiles and other products. But when development workers left town, such businesses often collapsed. "Workers in communal businesses have neither the incentive nor the ability to keep them going once the sponsors move on," Fisher says.

Another stint with the aid agency trying to persuade community leaders to invest in water wells taught him something else: Trying to get people to adopt new ideas solely because life will be better for them if they do isn't sufficient. "The argument may definitely be appealing, but then poor villagers aren't necessarily attuned to that," he says. "The men of the village may say: 'What do we need a well

for? That's why we have wives and daughters. So what if they have to walk 20 miles to get water?'"

## Getting the Right Message and Marketing it Aggressively

In Kenya, ApproTEC advertises its pumps in local newspapers and on FM radio. It also uses billboards that read: "Stop! See it here! Irrigate your *shamba* (vegetable garden)." An arrow points to a nearby nursery where a MoneyMaker is in use. Pumps are often sold in front of the country's ubiquitous agricultural shops, with sales agents rocking back and forth on one to extract water as they make their pitch.

"Poor farmers are among the most risk-averse people you can imagine, but a farmer who's trying to feed his family is also among the most motivated people you can find," says Fisher. For that reason, the pumps tend to sell themselves. They also pay for themselves quickly, since a farmer using one can boost the yield of his land sevenfold.

"As we like to say, and we mean it, donating the \$200 it takes to make and distribute one of our pumps can bring a family out of poverty forever." □

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