INCLUSIVE INNOVATIONS

Bringing Clean, Affordable Water to Poor Communities Through Decentralized Water Treatment Kiosks

HIGHLIGHTS

- Decentralized water treatment kiosks can be constructed in six weeks, providing immediate access to clean drinking water.
- The kiosks can reach millions of users not connected to public infrastructure, at a lower cost than alternatives.
- Companies train community members to run and operate kiosks, helping to ensure project sustainability and accountability.

Development Challenge

An estimated 748 million people in the world lack access to an improved drinking water source, and 73 million of them rely on untreated surface water, according to WHO and UNICEF. WHO further estimated that inadequate drinking water, sanitation, and hygiene caused 842,000 diarrheal disease deaths in 2014. In addition to negative impacts on health, lack of access to water stifles economic growth by keeping people out of work and school, with disproportionate effects on women and girls. Centralized filtration and expansion of existing piped water distribution systems are resource intensive and time consuming, and often politically prioritized. In contrast, decentralized water treatment models treat ground and surface water locally, providing safe, healthy, and affordable drinking water to communities previously without access. These solutions usually require construction of a treatment plant and the design of a low-cost sales and distribution systems.

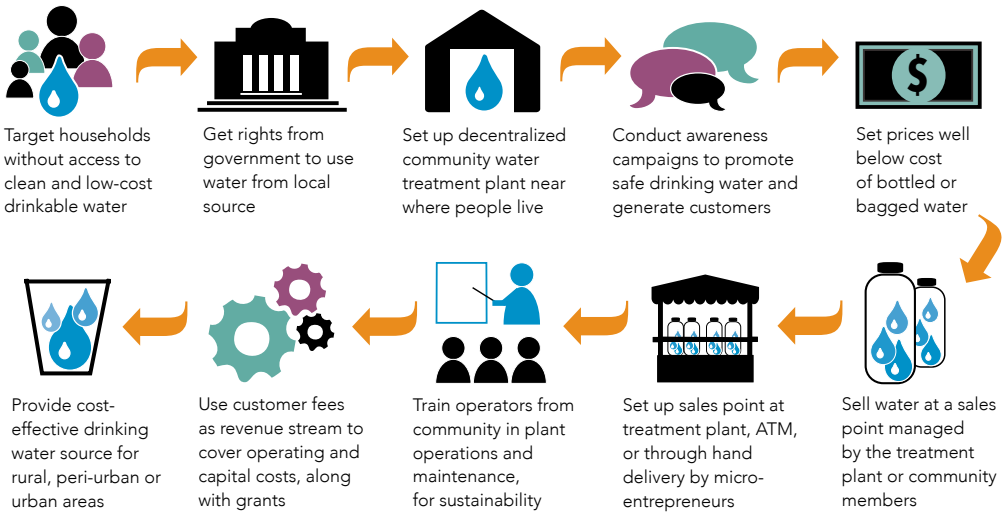
Business Model

Decentralized water treatment is used where local water sources are contaminated and a piped distribution system that provides clean water is not in place. Contamination may include severe microbial pollution and high levels of arsenic, fluoride, iron, or nitrate, which may render simple, low-cost solutions (such as pumping, water harvesting, filtering through individual filters, or using chlorine tablets) ineffective.

In this model, a treatment plant is constructed near ground or surface water, the water is then extracted, purified, packaged, and distributed to local customers. The location of the plant and acquisition of the land required is often determined in collaboration with the local government.

Water treatment facilities are often designed to be can be run on solar, reverse osmosis, or the power of gravity as often they are in areas where electricity is not available.

Features of decentralized water treatment units business model



Implementation: Delivering Value to the Poor

Awareness

Many enterprises create and raise awareness about the health and other benefits of drinking clean and safe water, sometimes in partnerships with local institutions. Activities include information campaigns in collaboration with local authorities and NGOs and lectures at local schools. Awareness-building is particularly important in regions where the harmful consequences of consuming contaminated water are not immediate. Where NGOs once provided water for free, the new requirement to pay may need to be explained.

Acceptance

Water providers win acceptance among customers by engaging local leaders, partnering with the community, employing local people, and keeping prices affordable. People at the 'bottom of the pyramid' often spurn goods and services designed, branded, and marketed "for the poor." In rural communities expensive national and international brands of bottled water are often considered signs of high social and economic status. Accordingly, decentralized water treatment enterprises strive to be perceived as providers of a better and healthier life and higher social status, sometimes selling water in attractive, clean, and reusable containers in order to compete with products sold by the bottled water industry.

Accessibility

Decentralized water treatment centers are located close to the communities they serve. Customers pick up their water at the plant, at an ATM, or at a local retail store, or they can have it delivered it to their home. Water sales points must be located in areas with a sufficiently large customer base and/or traffic. By generating employment within poor communities, water treatment enterprises can provide access to other goods and services that may not previously have been available to some community members.

Affordability

Decentralized water treatment solutions are much more affordable than extension of piped water infrastructure. They are therefore a good solution in many developing countries. Treated water is priced based on many factors. The price has to be lower than that of expensive bottled water and low enough to be affordable to a critical mass of poor customers so that revenues earned are sufficient to cover operational and other costs.

Most customers of decentralized water treatment models are households. Local schools, offices, and other institutions also use the systems.

Some companies provide customers with containers (the design of which plays an important role in product marketing), disinfecting them at every visit to the store or plant for water refilling. Others regularly disinfect customers' own containers.

Many organizations involve local communities and entrepreneurs in creating distribution networks and sales forces, generating local employment and contributing to economic growth. Customers who live near the plans usually pick up their water themselves. Customers farther away often have their water delivered, by bicycle or moped. Some customers purchase water through automatic teller machines (ATMs)—cloud-managed, solar-powered, cashless, vending machines that provide clean water 24 hours a day to customers using prepaid cards.

Results and Effectiveness

Decentralized water treatment systems serve millions around the world. India had an estimated 7,000–12,000 people served by water treatment systems in 2014.

In 2012, WaterHealth, a social enterprise with operations in South Asia and Sub-Saharan Africa, had 500 sites reaching more than 5 million customers. In India, the company's customer base rapidly rose from 15,000 in 2009 to more than 1.4 million in 2011.

Virtually all of Waterlife's customers in rural areas have seen improvement in their overall health, leading to lower expenditure on medicine and healthcare. Data from a public health center in Maharashtra indicate a 65 percent decrease in diarrhea, a 57 percent decline in urinary stones, and a 57 percent drop in skin diseases in the district where Waterlife operates. Average monthly savings were $28 for rural and $15 for urban households. The provision of clean water also cuts down on the need to boil water, reducing indoor pollution and fuel costs.

In the Waterlife model, the cost is USD 0.005 per liter (to the customer) and USD 60,000–65,000 for construction of the treatment plant. By comparison, a public piped system often costs in the order of millions. Moreover, because of the costs, in many countries it may take years to expand water pipelines to remote areas. In contrast, a decentralized water treatment system can take as little as 45 days to set up and access to clean water is almost immediate.

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This series on Inclusive Innovations explores business models that improve the lives of those living in extreme poverty. Editors are Elaine Tinsley and Natalia Agapitova. Researched and developed by Intellecap. June 2017