

## TAPEFFECT

2.1 billion people worldwide don't have clean water at the household level, according to the World Health Organization. Many rural and semi-urban communities are not receiving piped water networks because of the high costs of building piped water systems. Without easily accessible clean water, these communities are stuck in the poverty trap – they cannot maintain good health and nutrition levels for work, education or play.

Across many communities in Cambodia, families pay \$50-100 per year just to access water trucked in from dirty and dangerous sources such as rivers and ponds. What if they could pay an affordable rate for water that is safe and clean—and tapped right to their homes?

That is exactly the solution posed through TapEffect, a World Hope social venture designed alongside these communities to provide a tailored, sustainable, and life-changing clean water solution.

TapEffect seeks to tackle the lack of safe water access in Cambodia by implementing and operating a portfolio of piped water systems in rural and semi-rural areas. These areas are typically prone to climate change impacts and are also where logistical, technological, and financial constraints make it challenging for communities to otherwise access clean water.

Leveraging advances in technology and finance, TapEffect provides a sustainable, community-driven solution to the cyclical poverty trap.

## COMMUNITY CAPACITY BUILDING

TapEffect will not only provide opportunities for employment with the need for local operators, but will also open up the possibility for community members to launch their own small businesses now that they have water tapped directly to their homes, offices, restaurants, or other enterprise locations. Trainings for local TapEffect employees will build the capacity of the staff and positively impact the community at large, empowering community members to lift themselves out of poverty.

## YOUTH EMPOWERMENT

By tapping water directly to schools, TapEffect helps children and youth stay in school and complete their education. Because the tapped water is clean and on-site, children and youth do not have to miss school to find dirty water for drinking and sanitation or as a result of menstruation. Because TapEffect also offers opportunities for local employment and uses technological innovation to improve their communities, children and youth also have access to more opportunities.

## HEALTH & SANITATION

Communities that have the TapEffect system will be able to connect their local hospitals and clinics, providing clean water on-site to improve the water, sanitation and hygiene conditions in their health facilities - one of the urgent, global health challenges cited by the World Health Organization as a priority for 2020 and the new decade. Having tapped water in schools and homes also enables sanitation best practices and education and reduces the risk of contamination, improving community health.



## CLIMATE RESILIENCE

According to the Governance of Climate Change Finance, Cambodia is highly vulnerable to climate change. By no longer having to rely on rainfall to fill water storage tanks or on the weather-dependent and often contaminated local streams, **community members whose houses, businesses, or communal service facilities (like healthcare centers or schools) are connected to the TapEffect system will be more resilient to climate impacts.** The water is pumped from a river and treated to meet the national drinking water standard.

## TECHNOLOGICAL INNOVATION

Advances in technology have led to improvements to and around smartphones, Internet coverage, and pumps and piping infrastructure worldwide. **TapEffect leverages these advances to innovate an affordable, basic “design-build-operate” piped water model** that can be installed in rural and semi-rural regions of Cambodia and Asia-Pacific. Building on the existing infrastructure (pipes, contractors) supply chain in Cambodia, TapEffect installs a water pump and water treatment facility, builds a piping grid with water-usage meters to connect houses and facilities, and uses smartphones and mobile technology for data collection, analysis, and water billing.

## FINANCIAL SUSTAINABILITY

The existing demand for water is already high enough that Cambodians are willing to pay \$50-100 per year for dirty water. **One TapEffect water system can connect 1,000 to 10,000 households, with each household paying an initial \$40-\$70 connection fee and an average annual water bill of \$50 for safe, clean, and reliable water.** The technological advances allow for remote monitoring innovations, easy and accurate water payments and bill tracking, as well as sales support and marketing to expand into new communities and, eventually, scale up to reach other Asia-Pacific country markets.



## HOW IT WORKS

The TapEffect process starts with a centralized piped water system that connects villages. Equipment is more durable and advanced than ever before, resulting in low startup costs. Source water is treated through a multi-stage process with steps including coagulation, flocculation, sedimentation, filtration, disinfectant, and storage. Chlorine levels and monthly water samples are tested at the lab and the water, treated to meet national standards, is pumped to households. Standard operations includes sales, operator, and technical support; water safety and network planning; and community engagement.

## PROJECT FUNDING

Initial capital is needed to install the TapEffect systems in rural and semi-rural communities. This investment can cost as little as \$540k to support a water system connecting 19 villages or 3,000 households. With 8 million Cambodians living in rural and semi-rural regions and households covering their own connection cost and water bill, the TapEffect market-based solution represents a \$100m per year revenue opportunity. The World Health Organization has noted that for every \$1 invested in water and sanitation, there is a \$4 return, and World Hope currently has a \$200K matching grant opportunity from AusAid for this project.

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## TAPEFFECT IN ACTION

### MONDULKIRI, CAMBODIA

TapEffect, in partnership with World Hope International and the Wildlife Conservation Society, piloted a piped water system in Andoung Kraloung, Mondulkiri. Households in the region previously had to use natural springs or wells or else purchase untreated water at a high price. Now, 97 households across the remote villages of the region are connected to clean water.

Having water tapped into schools in Mondulkiri has helped schoolchildren stay in school and increased the success of World Hope's Project Konsae - a school feeding program. With the increased sanitation education and clean water right in the school and the ability of community members to cook meals on-site for the children, the school dropout rate went from 22 percent to zero.

Mother of 6 and school feeding program cook, N. Dep, shared that prior to the feeding program, her children regularly suffered stomach problems and bouts of diarrhea and she lost her third-born. **Now, not only do the children get hot food, but they have learned to wash their hands routinely, wash their dishes and utensils, and have access to clean water for safe drinking and other sanitary needs.**



The Mondulkiri system is currently run by a water operator and a cashier, who receive technical support when needed, and more than 95 percent of the villages have opted in to the tapped water system.

### BANTEAY MEANCHEY, CAMBODIA

TapEffect is now in the final stages of project development for a new piped water system that covers 19 villages (3,000+ households) in Banteay Meanchey, Cambodia. It has already received a 20-year license to construct and operate a new piped water system. The system will be operated by an on-site team with ongoing technical support from TapEffect's technical teams when needed and monitoring by the head office.