

FLETCHER D-PRIZE COMPETITION

2023-24 Academic Year

Clean Water Challenges

Distribute Ceramic Pot Water Filters

Ceramic pot water filters can be used by households to clean otherwise unsafe water. We challenge you to start up a social enterprise that sells ceramic pot water filters to 100,000 households within 5 years to people lacking access to clean water. Fletcher D-Prize will award teams up to \$20,000 in cash and inventory to launch an initial three-month pilot that proves the local market's demand for this product.

The Water Problem

An estimated 771 million people lack access to clean water.¹ The negative impact is felt by local families every day.

For example, an estimated 489 million people drink daily from unimproved sources, such as an open well, or from surface water.² This puts families at risk for infectious disease like diarrhea, which ranks as the third-highest cause of mortality and morbidity.³ An additional 282 million people have access to improved water sources - but must spend more than 30 minutes daily to make the water collection trip.⁴ Walking for water keeps children out of school, and creates an economic opportunity cost for working parents.⁵

Basic mitigation strategies are expensive. Some families purchase clean water, which is costly. Others gather or buy firewood to boil unclean water, which has financial and time costs. Families who don't manage their water risk eventually must buy medicine to treat water-borne illnesses. There are sometimes other water filters on the market, but many (free and paid) don't provide satisfactory results, are expensive, and are often not culturally accepted.

¹ Charity Water. <https://www.charitywater.org/stories/the-numbers-are-improving>

² Ibid

³ 4 Clasen TF, Roberts IG, Rabie T, Schmidt WP, Cairncross S. Interventions to improve water quality for preventing diarrhea. Cochrane Database of Systematic Reviews 2006, Issue 3. Art. No.: CD004794. DOI: 10.1002/14651858.CD004794.pub2.

⁴ Charity Water. <https://www.charitywater.org/stories/the-numbers-are-improving>

⁵ Ibid

Access gaps are typically communities in isolated rural areas, where people may spend hours walking to collect water. Urban communities, particularly those in urban slums may also suffer from lack of water access- especially where there is no land tenure, which makes building infrastructure like piped water bureaucratically difficult. Geographically, access to clean water is especially limited for low-income countries and low-to-middle income countries that are landlocked. According to the WHO/UNICEF Joint Monitoring Programme for Water Supply, as of 2020 roughly a third of the population in these regions lacks access to clean water.⁶

The Proven Intervention

Fortunately, there is a proven intervention. Ceramic pot water filters are a household product that purifies water from almost any source (well, faucet, river, lake, pond, rain, etc.) with very rare exceptions, such as saltwater from the sea. The simple system removes nearly 100% of bacteria and parasites from water and can purify more than 20 liters a day.

When families have access to clean drinking water, there are reduced water purchase costs, less pollution due to burning wood to boil water, and an expected reduction in water-borne diseases such as diarrhea.

There are other interventions that deliver clean water - and we believe ceramic pot water filters are an important part of the toolbox. For example, handpumps and other point-of-source interventions are promising, yet it's estimated that between 20-70% of pumps in sub-Saharan Africa are not working.⁷ Piped water provides convenient access - but for many rural and urban communities without land tenure, it will likely take decades before the governments are able to deliver this infrastructure. Ceramic pot water filters are ready to be distributed now.

Your Distribution Challenge

Fletcher D-Prize will award support of up to \$20,000 to an entrepreneur or startup team that can create a new organization that distributes ceramic pot filters to families who do not otherwise have clean water access. You must have a vision to grow and serve at least 100,000 families within five years with a profitable, sustainable business.

Our award is meant to enable the first step toward this vision by funding a proof of concept that sells filters to 50-100 families.

⁶ Drinking water monitoring, WHO/UNICEF JM. <https://washdata.org/monitoring/drinking-water>

⁷ Water Supply Programs to Prevent Disease, GiveWell. 2009.

https://www.givewell.org/international/technical/programs/water-infrastructure#footnote20_0ssz7is

Designing Your Social Enterprise

Your initial pilot should seek to validate the market for ceramic pot water filters in your region. The best way to do this is to sell filters. Initially, this means sourcing 50-100 filters, then designing and testing a number of sales strategies.

There are 5 challenges that we think a successful organization must solve at this stage:

(1) Where is your market, who are you targeting for sales, and what gives you confidence that ceramic pot filters are the best product?

Entrepreneurs should target a market where ceramic water filters are clearly in high demand, and satisfy a clear need. Successful applicants for D-Prize will explain the following in their application:

- *Do water filters address an unmet community need?* For instance, you would not want to open your business in an area where piped water is planned to be installed in the near future.

Water filters are appropriate for many markets, and we generally recommend targeting rural areas where people drink from open-source water or open wells, or where access to improved water requires more than a 30 minute round trip. We also see value in targeting urban slum areas, especially where land tenure doesn't exist.

- *Who are your customers, and does this product fit with their individual demands?* A successful entrepreneur will know their customers. They should be able to explain how much consumers currently spend to provide clean drinking water for their families each month and prove that ceramic pot water filters are a more economical and higher quality alternative. You should have a clear understanding of how the money is spent on alternative methods (i.e., bottled water, firewood for boiling, current filtration process) and if there are other expenses—like medical care or lost wages due to waterborne illness.

(2) What is your plan to market and sell ceramic pot filters to your market?

Successful applicants will have a strong sales model. We especially recommend you highlight in your application any past experience you have selling in your market.

Part of a strong sales model includes building out the basic plan to enter the market. For instance:

- Can you explain the communication channels you would prioritize to pitch the product in your market? For example, presentations in schools, door to door, retail.

- Can you explain the messaging you will use to make the sale? You should consider the profile of your target decision-maker, and what motivates that person to buy from you.
- Who will you recruit as salespeople, and why are they the best option? How will you motivate them to perform well, and how will you monitor and manage their performance? What partnerships could you include in the sales effort? How would you quickly scale this salesforce?

A strong model should consider other barriers that might prevent customers from buying. For instance, existing research suggests that many households are price sensitive. You may consider including options such as a payment plan in your model if you think this is required.

(3) Once you have sold the filter, what continuous support do customers require of you?

Keeping in touch and supporting customers is critical, as long-term success includes repeat and referral business. The lifespan of the ceramic pot filter is roughly 2 years, and replacements could be required sooner, for instance, if the filter is broken before its end of life. Additionally, some research suggests that the presence of long-term monitoring increases usage rates.⁸

We recommend you consider: what barriers to usage and repurchase can you predict in your market? What would you do to overcome those barriers before they become problems?

(4) From where do you plan to source your filters? What logistical and storage barriers can you expect in your region?

Successful applicants must identify a supplier of high-quality ceramic filters.

Entrepreneurs sourcing from abroad need to be able to smoothly import filters through customs and regulations, safely store them, and predictably transport them to sale points. A few things to consider:

- You should understand what requirements you must meet to import products. For example, are there testing requirements, or permits required before you can import filters for sale? What taxes must be paid? How many different government bodies/agencies/localities must be considered? What can you tell us about the barriers you are likely to confront and what steps will you take to overcome these barriers? In our experience, every region has a formal governmental system for controlling the sale and distribution of products.

Receiving imported products and getting regulatory approval to sell has been the largest barrier for past start-ups. Before offering you an award, we will likely ask that you receive approval from any regulatory or import authorities. This can

⁸ <https://iwaponline.com/jwh/article/15/1/145/28442/Ceramic-pot-filters-lifetime-study-in-coastal>

often take a lot of time, and you may wish to begin thinking about this in the early stage of your application.

- Once imported, products must be safely stored. Where will you store products? What are the costs of this transportation and storage, and is that going to be a future problem as you grow?
- Filters are a fragile, large product that can be delicate to move. What is your plan to transport filters from your storage location to points of sale? Does your plan make space for a certain amount of breakage? What is the cost of transportation, and is it going to hinder future growth?

(5) What are the economics of your business in the long term? What capital do you require to build that business, and how will you get it?

Successful entrepreneurs will eventually build sustainable, profitable businesses. We think there are two areas an entrepreneur should monitor during the pilot:

- *Unit economics:* Generally the cheaper it is for you to sell one individual filter, the easier it will be to grow your business. Your goal at this stage is to (1) design a venture that you think can keep costs low as you grow, and (2) collect data during your pilot to validate your design.

Note that we are excited for entrepreneurs that test several marketing and selling ideas and find a model that can grow, even if it means reaching fewer people and spending more money at the pilot stage. The opposite of this is trying to maximize sales regardless of whether the path is sustainable (for instance, by subsidizing the cost of filters or overpaying salespeople to drive up short-term sales).

- *Fundraising:* We encourage you to start thinking now about fundraising for your next phase. For example, you may wish to double the size of your operation after your three-month pilot - where will you get additional capital to fund that? Typically entrepreneurs will find other grant funding, accept investments from family or friends, and/or self invest. Impact and other investors tend to support later-stage organizations.

Ready To Apply?

Download a First Round Application Packet and start creating your proposal at <https://sites.tufts.edu/dprize/>.

Questions? Email Ariane Theis at Ariane.Theis@tufts.edu.