



Final Proposal

Project Proposal for iDE's Engagement in Water Filter Market in Vietnam

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Section I. Introduction

Problem context

Vietnam has made great strides in solving issues related to access to improved water and sanitation.¹ However, even as access to improved water rose from 50% in 1990 to 94% by 2011, only 9% of rural Vietnamese have piped water in their households.² Many rural households continue to utilize untreated water from dug wells, rivers, ponds, streams or irrigation canals, as existing rural water supply and sanitation infrastructure tends to be inappropriately designed and poorly constructed and maintained. Access to improved water is correlated with income level, ethnicity, and location. 99% of the richest quintile have access to an improved source of drinking water, with 63% having piped water into the household. Meanwhile, although 75% of the lowest quintile use an improved water supply, only 3% have piped water.³

Water quality

Vietnamese households, particularly in rural areas, use water from wells and rivers as drinking water sources (SAIS Trip Report, 2018). Studies have shown that this water contains high levels of pollutants and heavy metals such as manganese, arsenic and iron⁴. There also exist regional differences in water quality issues across the country. While northern Vietnam has high concentrations of calcium and magnesium (NCERWASS), arsenic levels were found to be dangerously high in the Red River Delta and Mekong Delta regions⁵. In central Vietnam, elevated fluoride levels is an area of concern, with previously reported incidents of fluorosis⁶. In a study undertaken by Takanashi et al. in 2010⁷, it was found that the concentrations of ammonia, arsenic, iron, total coliform, E.coli and *Cl. perfringens* in treated water were higher than the Vietnamese Drinking Water Hygienic Standards.

Impact of drinking untreated groundwater

- *Health impact:* In rural areas, the prevalence of water-borne diseases and recorded child malnutrition rates are higher relative to neighboring countries. The underlying cause of these health issues are related to the availability and use of safe water,

¹ <https://www.wsp.org/sites/wsp.org/files/publications/WSP-Vietnam-WSS-Turning-Finance-into-Service-for-the-Future.pdf>

² ibid

³ ibid

⁴ <https://link.springer.com/article/10.1007/s11356-017-9631-z>

⁵ <https://news.stanford.edu/news/2013/august/arsenic-water-vietnam-080913.html>

⁶ <http://fluoridealert.org/news/distribution-and-genesis-of-high-fluoride-groundwater-in-ninh-hoa-vietnam-implications-for-domestic-water-supply-and-community-health/>

⁷ <http://www.oxfordjournals.org/cdj/wp-content/uploads/2014/10/Kumiko-Takanashi.pdf>

- sanitation, and personal hygiene.⁸ Even today, diarrhea is one of the leading causes of morbidity nationwide, with around 250,000 hospitalizations a year. As many as 44 percent of Vietnamese children are infected with whipworms, hookworms or roundworms.⁹ Long term exposure to heavy metals such as arsenic in drinking water is reported to increase risks of ‘cancer in the skin, lungs, bladder, and kidney’¹⁰. In addition, excessive exposure to fluoride in drinking water can cause ‘mild dental fluorosis to crippling skeletal fluorosis as the level and period of exposure increases’¹¹. In northern Vietnam, hardness of water caused by the presence of calcium and magnesium was widely reported by households (SAIS Trip Report, 2018). While calcium causes scaling and is regarded as an aesthetic health indicator. High levels of magnesium are associated with the increased risk of cardiovascular diseases¹². The latest UNICEF data on diarrheal deaths reports that¹³:
- 13% post-natal deaths occur due to diarrhea in Vietnam
 - 6% of children under five deaths occur due to diarrhea in Vietnam
- *Quality Concerns:* The depression of the earth in urban areas resulting from the overexploitation of the underground water has led to deteriorating quality and quantity of water. But what is more concerning is that only 64% of the population boil their water correctly i.e. boil it for a long enough to kill pathogens. One study reported that 60% of stored drinking water that had been boiled were re-contaminated by fecal bacteria¹⁴.
 - *Socio-economic impact:* Vietnam suffers approximately \$63M in economic losses annually resulting from poor drinking water.¹⁵ Drinking unclean water causes diarrhea and dysentery that can take away from a person’s daily wages due to work days skipped. In turn, children suffer the most as they miss days at school and also because diarrhea can lead to death if not treated.

Need for clean drinking water

Despite Vietnam’s significant economic growth in recent years, there continues to be a gap between urban and rural areas when it comes to access to clean water and hygienic sanitation facilities.¹⁶ Many parts of the country – especially areas heavily populated with ethnic

⁸ <http://documents.worldbank.org/curated/en/236791468127488746/pdf/ICR27520P0772800disclosed0120240130.pdf>

⁹ <https://www.UNICEF.org/vietnam/wes.html>

¹⁰ http://www.who.int/water_sanitation_health/dwq/chemicals/arsenic.pdf

¹¹ http://www.who.int/water_sanitation_health/publications/fluoride_drinking_water_full.pdf

¹² <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3775162/>

¹³ <https://data.unicef.org/topic/child-health/diarrhoeal-disease/>

¹⁴ https://www.path.org/publications/files/CP_vietnam_hwts_mkt_br.pdf

¹⁵ http://www.wsp.org/sites/wsp.org/files/publications/529200894722_ESI_Long_Report_Vietnam.pdf

¹⁶ <https://blogs.worldbank.org/eastasiapacific/how-provide-clean-water-rural-areas-example-vietnam>

minority groups, rural remote communities, and often the poorest communities – have been left behind.¹⁷ The UNICEF report confirms a disparity between the Kinh population and ethnic minorities with regard to access to improved water sources in Vietnam¹⁸.

Water filter market

The market for water filtration systems in the country can be divided into three segments – media-based (sand filters), membrane-based (RO systems), and UV-based. Among these, membrane-based water filters capture the largest market share due to their ability to ‘significantly reduce the content of total dissolved impurities in drinking water’¹⁹. The water filters market in Vietnam is very competitive, with a multitude of global and domestic brands such as Kangaroo, Sunhouse etc. This was also reflected in the research study conducted by Johns Hopkins SAIS (SAIS Trip Report, 2018).

Rationale for iDE’s involvement

Ensuring clean and safe drinking water through low-cost water filters in Vietnam strongly aligns with iDE’s mission to create livelihood opportunities for poor and rural households.²⁰ iDE has extensive experience in designing and implementing projects in Vietnam’s WASH sector, and has developed relevant expertise that would be useful for market creation for low-cost water filters. iDE’s strength in community relationships and last-mile delivery can be a strong asset to manufacturers trying to establish a new product for the rural poor. With the recent initiative by UNICEF in providing new ceramic filter technology in the country, this is an opportune time for iDE to support the building of this new market.

UNICEF product

In January 2018, UNICEF, in collaboration with NCERWASS, held a workshop on “PPP for Ceramic Filter Production Pilot - Experience Sharing and Production Introduction” in Vietnam. At the workshop, they launched an affordable ceramic water filtration system targeted towards low-income households, particularly those in the rural areas. The product can filter 99.9 percent of the bacteria contaminants in the water. Prior to this, Vietnamese consumers did not have access to affordable filtration systems, other than sand filters that were used in a few households. Sand filters are now redundant in Tuyen Quang province, due to maintenance issues and extremely simple technology (SAIS Trip Report, 2018).

¹⁷ <https://www.UNICEF.org/vietnam/wes.html>

¹⁸ https://mics-surveys-prod.s3.amazonaws.com/MICS5/East%20Asia%20and%20the%20Pacific/Viet%20Nam/2013-2014/Final/Viet%20Nam%202013-14%20MICS_English.pdf

¹⁹ <https://www.prnewswire.com/news-releases/vietnam-water-purifiers-market-to-witness-cagr-of-124-during-2016-2021-finds-techsci-research-584709921.html>

²⁰ iDE mission statement: <https://www.ideglobal.org/about>

Recognizing the market gap for affordable filters, UNICEF introduced a partnership model to distribute their ceramic water filters in Vietnam. In this model, UNICEF will transfer the technology to private manufacturers free of cost, and be engaged in marketing and promotion of the filters for five years. Private manufacturers, on the other hand, will be responsible for supply chain development, from production and marketing to distribution of the product to poor households. The details of the partnership model and product are as follows:

- An MoU has been signed between a private manufacturer and UNICEF (as of April 2018) where it is stated that UNICEF will support the private manufacturer for 5 years, from 2017 to 2021, with a focus on quality control and product distribution. The manufacturer can re-price the product after consultations with UNICEF and NCERWASS
- Due to concerns about low demand for the UNICEF product, the private manufacturer has considered re-designing of the product. The re-designed product will use the UNICEF technology, but the exterior of the ceramic water filter will be replaced. The use of UNICEF logo and brand on the re-designed product is to be determined.
- The manufacturer will be selling the low-cost UNICEF product for 500k VND, and plans on pricing the re-designed filter at 1.25 million VND.

Research study background

Between October 2017 and April 2018, iDE conducted a study into the ceramic water filter market in Vietnam. The study was performed by Graduate Consultants at the Johns Hopkins School of Advanced International Studies in Washington D.C. and included research, case study evaluation, and field-work components. The goals of the research was to evaluate the current market for low-cost water filters in Vietnam. In addition, the Graduate Consultants were to meet with various stakeholders to best understand the issues related to clean water, water filter use, and market demands. The Graduate Consultants met with governmental players, community leaders, citizens, private sector players, and a public private partnership to collect key data. The research was conducted in Tuyen Quang province, located \cong 100 km north of Hanoi across two districts.

Research study key findings

The fieldwork yielded key findings that offer insights for navigating the low-cost water filter market in Vietnam. A complete field research report and research methodology report are available for a more in-depth review of the findings.²¹

Water Quality Findings

- Vietnam spans several latitudes and is home to several geographies. As a result, water quality varies greatly by region.
- Several regions are affected by heavy metals, arsenic, and calcium carbonate. These are serious health concerns, or in the case of calcium carbonate a serious consumer demand, which a filter must deal with.
 - As the low-cost ceramic filter is made to treat microbes and pathogens, the South of Vietnam represents the biggest opportunity for a low-cost filter

²²



Figure 1 Water Quality Concerns Across Vietnam (source: NCERWASS meeting)

Market Findings

- There is a clear market gap for low-cost water filters in Tuyen Quang Vietnam. All the water filters shops visited only sold expensive RO machines.

²¹ A full fieldwork report is available in *Field Research Report: Assessing the market demand for ceramic water filters in Vietnam* by Das, Lopez, Schaus, & Trivedi 2018. *Note, fieldwork took place in Tuyen Quang (Northern Vietnam). Research showed that many factors vary across provinces and regions of Vietnam. Additional studies across the country may yield important data for other region

- The study revealed a market demand with consumers expressing a willingness to pay for a quality low-cost filter
- Low-cost water filters are growing in the market with Unilever's Pureit and the UNICEF filter recently entering the market.
- The water filter market suffers from the prevalence of “fake” products from both brands that do not actually filter, and imposter products made to look like reputable filters. This creates distrust in the market, and places importance on brand and marketing.
- The market size is limited by the functionality and limitations of low-cost filters. There is not a one-size fits all filter solution to address the variety of regional concerns.

Consumer Findings

- Vietnamese consumers are sophisticated and demand quality.
- Consumers understand the importance of filtering water.
- Consumers express a price-quality tradeoff, and are willing to pay more for quality—either in function or design. When shown both the Original Tunsai and Super Tunsai, consumers were nearly all willing to pay more for the better design.



UNICEF Filter



Original Tunsai

Super Tunsai

Figure 2 Different types of ceramic filters

Section II. Options

iDE faces several options to engage in the drinking water sector in Vietnam:

- iDE could decide to start a social enterprise based of the model of Hydrologic or iDE Vietnam could choose to open a subsidiary of Hydrologic in Vietnam.
- iDE could partner with UNICEF and consult them on market research and supply chain development.
- iDE could work directly with private manufacturer selling water filters and provide them with technical support in market assessment, marketing, supply chain development and product design.
- iDE could work together with private companies who are selling filters as CSR partner and last-mile distribution partner. For a description of the different options refer to **Appendix 1**.

After considering factors such as financial feasibility, ease of obtaining permissions, and iDE's expertise, the option to partner with private manufacturer was chosen. Given the low demand and the high upfront costs of starting a business, starting a social enterprise or even expanding Hydrologic was quickly disregarded as an option. The option of partnering with larger private companies currently developing solutions for low-income consumers – such as Unilever- was rejected because iDE's added value to the project would be limited and there would be a potential misalignment of interest.

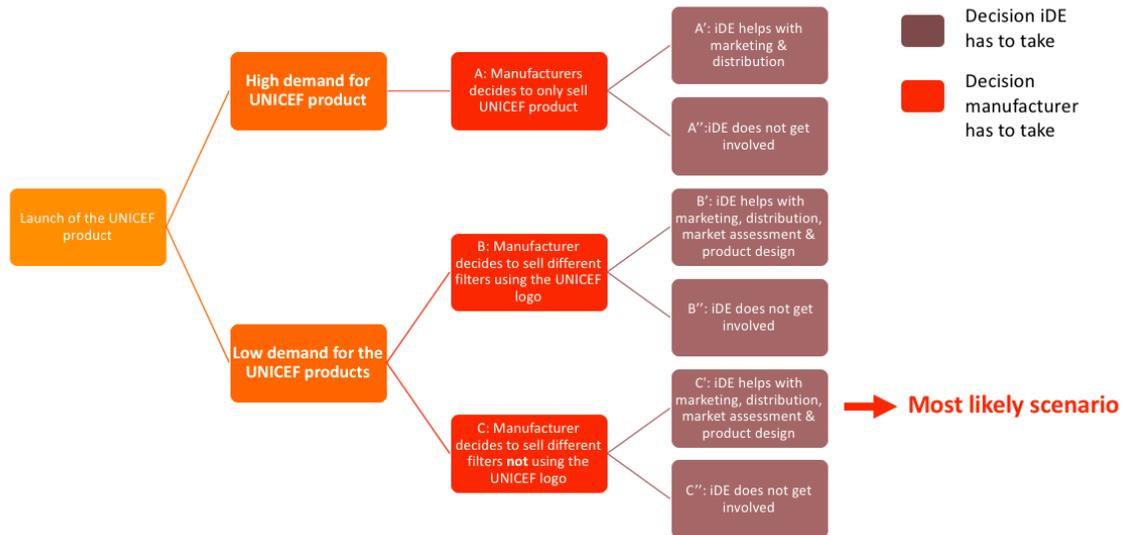
Given iDE's deep expertise in building markets, iDE will be able to add the most value by partnering directly with private manufacturer and supporting them to serve low-income customers.

However, the capacity in which iDE would provide assistance would depend on the following factors:

- Will the manufacturers be able to sell the UNICEF product at a reasonable profit? This assumes that there is market demand for the UNICEF product.
- If the manufacturer decides to sell other products instead of the UNICEF product, will the manufacturer be able to sell it under the UNICEF brand or not? This will depends on whether UNICEF permits manufacturer to use the logo.

There are two possible scenarios. The first one is that the UNICEF product sells very well – the volume sold is sufficient to sustain the manufacturer - because of high market demand for the product. In this case the manufacturers will most likely only sell the UNICEF product. In the second case, the UNICEF product does not sell well, and the manufacturer chooses to launch other products with more aspirational designs to address customer demand. In that case, the manufacturer can either sell the product under the UNICEF brand or sell the product under another brand.

The most likely scenario will be that the manufacturer will sell the UNICEF product, and other products not using the UNICEF brand on them. The decision-tree below lays out the different possible scenarios. The next section describes each of the possibilities in further detail.



Assumptions

The table below explains the different scenarios presented in the decision-tree above, and the assumptions associated with each scenario.

Case A: Manufacturers decides to sell only the UNICEF product.
Assumptions
<ul style="list-style-type: none"> ● Product-market fit: The design, functionality and price of the filter satisfy market demand, and hence there is a demand for the filter. ● Profitable business: The price at which the filter is sold leaves a high enough margin for the manufacturer to sell the product.
Case B: Manufacturers decide to sell different products using the UNICEF logo.
Assumptions

- **UNICEF permits the manufacturer to use its logo on the re-designed products:** Since the manufacturer is planning to use UNICEF's technology on its other products (referred to as 're-designed products' hereafter), UNICEF could be willing to grant permission to the manufacturer to use its logo on the product for marketing and branding purposes. This could be either conditional or unconditional, but for the purpose of this proposal, we assume that this permission is unconditional.

Case C: Manufacturers decide to sell different products not using the UNICEF logo

Assumptions

- **UNICEF does not permit the manufacturer to use its logo on the re-designed products:** Even though the design and technology used in the re-designed products are quite similar, UNICEF may not approve of the product or may not be able to grant permission to the manufacturer to use its logo on it, as there is no significant improvement in value proposition for the re-designed product to justify the relatively higher cost.
- **Even though UNICEF does not allow the manufacturer to use its logo on the different products, it allows it to use its technology.** The technology in this case is the ceramic water filter.
- **The manufacturer has the relevant licenses and approvals to sell the re-designed products:** UNICEF had to undergo certification processes to get approval by state authorities before it could launch its filtration technology into the market. Thus, it is assumed that since the manufacturer is using the same technology as UNICEF in the re-designed products too, he would not have to undergo the same approval processes or face the risk of non-approval by authorities.

iDE's Role

In the case of option A, iDE can perform the following activities: (1) rural marketing to generate demand for the UNICEF and re-designed products among rural and urban households; (2) supply chain development to establish a distribution network, particularly for last-mile customers, to meet the newly generated demand; (3) market assessment to help develop the marketing strategies and to evaluate the performance of the UNICEF products.

In the case of option B & C, iDE can in addition to the activities undertaken in option A assist with (4) product development, using human-centered design, using the results from the market assessment.

More details about the activities can be found in section 2.

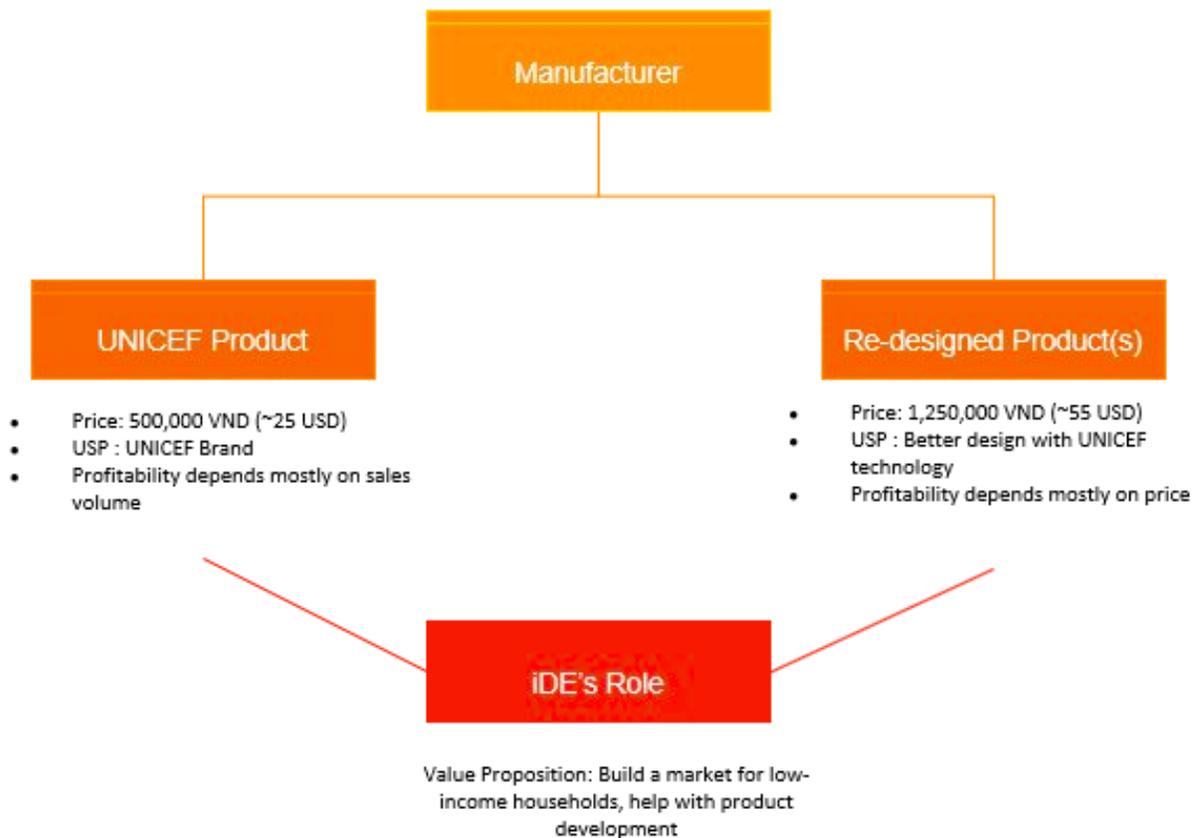
Section III: The Proposed Approach

Case C was chosen as the most likely scenario, given that currently, the manufacturers are willing to sell UNICEF products and have developed a new ceramic filter using the UNICEF technology but with a different design and price point.

Rationale

This project is an opportunity for iDE to promote low-cost ceramic water filters in the country, a technology that has been widely successful in Cambodia but remains relatively absent from the Vietnam markets. The project involves the manufacturer selling two types of products – the UNICEF filter and the re-designed filter. UNICEF has provided the manufacturer with its filter technology for free, and will support the manufacturer by organizing high-level promotional events, buying the products for distribution to poor people, and introducing him to potential distributors for its product. The manufacturer has developed a new ceramic filter using the UNICEF technology but with a different design and price point. This redesigned product is priced by the manufacturer at 1.2 million VND, and is not particularly catered to the low-income consumers. While the UNICEF product enjoys a high brand value, it is priced at only 500k VND, which implies that the manufacturer will only be able to make profits from high sales volume for this product.

Using its expertise in market building, iDE can play a critical role in helping the manufacturer reach the low-income households. Additionally, with its experience in market assessment and product design, iDE can help the manufacturer design a product that is better suited to its consumers' needs.



Project Goal

The goal of this project is to extend access to safe and affordable drinking water to poor, rural and ethnic minority households in Vietnam.

Project Objectives

The overall objective of the project is to develop a market for affordable ceramic water filters that can be afforded by households who lack access to safe drinking water. To facilitate this, the project will

- Strengthen the market demand for low-cost ceramic water filters
- Spread awareness and education on the importance of safe drinking water
- Support the distribution of ceramic filters across Vietnam, with a focus on minority communities, rural, and poor households.

Project Geography

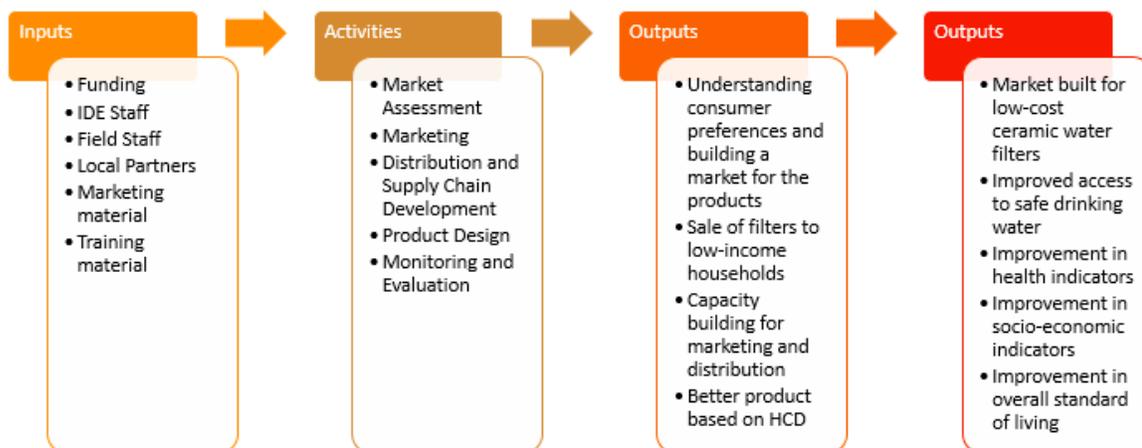
From studies done by the National Centre for Biotechnology Information (NCBI)²³, and after discussions with Dr. Danielle (Water Expert), it is suggested that iDE intervene in the South of Vietnam. The main areas of interest would be the Mekong River Delta, South East and Central Highlands regions. The reasons are twofold:

- These households are underserved populations who lack access to even improved water sources.
- From a product functionality perspective, North Vietnam may pose challenges due to logging.

Target Population

The project will target hard to reach, rural households in Vietnam in the low-income category. These are primarily households who cannot afford reverse-osmosis filters.

Theory Of Change



Project activities

Given iDE's past experience and expertise, the following project activities can be undertaken for this project-

²³ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4780076/>

Market Assessment

(a) Pre-sales

- **Consumer understanding research.** iDE will carry out a comprehensive consumer understanding research to develop a commercial quality marketing campaign. The purpose of the research is to collect insights regarding perception, motivational factors, and local beliefs. Developing a systematic consumer understanding research study is critical to develop a marketing campaign that appeals to the emotional benefits of purchasers. This will be conducted to understand the consumers' needs, suitability of the products to the local conditions, potential adoption of the technology, and its impacts. This may be undertaken as a replication of the field study using the SAIS Field Trip Methodology (2018) submitted to iDE.
- **Market segmentation and sizing.** iDE will study market segmentation and sizing, by identifying potential consumers for the different products sold by the manufacturer, based on geographic, demographic, psychographic, and behavioral characteristics of the market. This will in turn inform the marketing and branding strategies.

(b) Post-sales

- **Consumer response to products.** iDE will evaluate consumer response to the two products that will be introduced to the market. Based on this, the other project activities can be revised and undertaken in the next phase.

Marketing and promotion

The role of rural marketing is to introduce consumers to low-cost ceramic filters, to encourage families to change their behavior to adopt the filters, and thereby stimulate consumer demand for the technology. iDE will conduct marketing activities together with its local partners in project areas. iDE will employ both “push strategies” - activities directly targeting consumers to create their demand for ceramic water filters, and “pull strategies” – activities directly targeting the manufacturers and retailers of the ceramic water filters so that they are aware of the business potential, and effective ways to promote and market the products to the consumers.

Key marketing activities to be implemented include:

- **Marketing campaign development.** Using information from the consumer understanding research, iDE will design appropriate marketing campaign taking into consideration demographic and psychographic characteristics, existing filtration practices, filter usage patterns, ethnicity, and ability to pay. In addition, the communication campaign to convey the benefits of the ceramic water filter will be

- pre-tested and validated through focus group interviews to ensure that the messages are clearly understood and conveyed effectively. iDE will also develop materials such as promotional videos and leaflets, as well as undertaking a range of marketing activities with high visibility in rural communities such as demonstrations, meetings, sponsorship of local events, and other activities. Local partners such as the Women's Unions will be engaged to effectively reach the target population through these activities.
- **Identification of early-adopters for promotion of ceramic water filters.** Early-adopters are expected to adopt the ceramic water filters much earlier than the others. They are more knowledgeable relative to others, open to new things and less averse to risk. Using the information from *consumer understanding research* and *market segmentation*, the project will identify these early-adopters to target first in marketing campaigns.
 - **Promotion of the products through demonstrations (demos).** Through prior experience, iDE has found that demos and hands-on experience are the best ways to promote products among low-income households. Together with local partners like the Women's Unions and early adopters, iDE will conduct demos of the water filter.
 - **iDE will also conduct various promotion activities through the local partners' network.** The purposes of the activities are to raise awareness about ceramic water filters and encourage consumers to adopt them. Activities to be implemented include meetings, visits to demo plots, organization of events, short-term sales promotion campaigns, distribution of promotion materials, mobile demonstration of the filters in public places, etc. Other mass marketing activities (dissemination of information on loud-speaking systems, distribution of promotion materials) would also be used for awareness-building in the local areas. These promotional activities will be done in partnership with the Women's Union. While marketing activities targeting the poor will be in principle similar to those targeting the non-poor and early adopters, one-to-one interactive promotion methods will be employed to convince poorer households to invest in the products.

Distribution/ supply chain development

From our field-based research, it was revealed that the consumers prefer local partners like the Women's Union to be the last-mile suppliers of products. This is not only because it may be more convenient for the consumers to access the products, but also because they can trust the product's quality if it is supplied through a government channel. Hence, iDE's role could be to connect the consumers to reliable last mile suppliers like the Women's Unions and other local partners.

Supply chain development activities will include:

- **Identification of last-mile suppliers.** This activity will be carried out using findings from the survey mentioned above. The recruitment of local partners will be an ongoing process. It is expected that iDE will work with the current manufacturer in south Vietnam to identify the others actors in the supply chain, and hence work with them to connect them to last-mile suppliers according to the identified consumer base and growing demand.
- **Capacity building for supply chain members.** Based on the needs identified, the project will also provide necessary technical training to the last-mile suppliers such as on sales and after-sales services so that they can in turn provide advice to their clients. Where necessary, training on business knowledge and skills will also be provided.

Product Development

iDE can help the manufacturer re-design its products based on the results of the market assessment undertaken. The new product can be designed specifically to cater to the needs of the people and to address their concerns with the filters being sold to them, using human-centered design (HCD) methods. HCD is a systematic method for acquiring a deep understanding of customers, their environments, and their routines in order to create innovative solutions to the problems that they face.²⁴ The iDE team can use HCD principles to gather feedback about what people desire and then design an aspirational yet affordable water filter that fills a market gap.

Monitoring and Evaluation

The success of the proposed project will be evaluated against the set objectives and based on the monitoring of the specific outputs and outcomes leading to the objectives. At the beginning of the project, an Monitoring and Evaluation (M&E) framework will be developed that details the project indicators, M&E methods and tools, data analysis and implementation plan. iDE staff and the local partner will continuously monitor and collect data on the project's progress vis-à-vis these objectives and outputs/outcomes. Based on proposed outputs, detailed indicators and data requirements will be revised. iDE will train the field staff and provide the relevant M&E materials to them.

- **Monitoring:** For monitoring, iDE field staff and the local partner will conduct frequent, often bi-weekly monitoring activities. These activities include observation visits, interviews and focus group discussions. The monitoring activities will be aimed at the consumers (buyers of the filters), the last-mile distributors, and the manufacturer to

²⁴ <https://www.ideglobal.org/story/human-centered-design>

gather information from both, the demand and the supply sides. Some of the demand side indicators that will be measured will include consumers' usage of the filter, feedback on the design, functionality and price of the filter, and any suggested changes to the design they want to see. From the supply side, the distributors and the manufacturer will be asked questions on topics like the sales volume, profit margins, and any feedback they receive from the consumers.

- **Evaluation:** For evaluating the overall impacts of the project, iDE staff will carry out a baseline and an end-line evaluation, through observation visits, interviews and focus group discussions. The evaluation study will be a quasi-experimental study with a before-and-after analysis approach. The baseline data collection will be done during the project planning phase, and the end-line data collection will be done 1 year after the launch of the filters in the market. The project evaluation seeks to assess if the outputs and outcomes of the project are achieved or are close to being achieved. These include specific indicators on the success of the business model, but also indicators on health, economic and social impacts. The latter will be difficult to measure in this short time-frame, but some marginal improvement may be measured. Other evaluation questions will include asking the consumers about their preference for the product, and asking the manufacturer about the overall success of his business.

The results of the M&E will be disseminated to the manufacturers and the local partners, so that they can better understand the successes and failures of the business model. The results will also be used to recommend changes in their business model and activities, or in the product design itself.

Budget

The proposed project includes a budget associated with iDE's activities. Costs can be broken down into four main categories. For a flexible budget please refer to the Flexible Budget 2018 document.

1. **Additional Field Studies & Market Assessment**
 - a. Additional field work will be needed to evaluate the Southern market, consumer interest in original and newly designed filter, and study consumer use of the product
 - b. It is assumed that three additional field studies will need to be conducted within the first year.
2. **Product Design and Evaluation**
 - a. IDE will also need to conduct additional research into HCD and consumer design demands.
 - b. It is assumed that this can be done with one research study in the first year.
3. **Marketing**

- a. Marketing is a critical role of IDE in this proposed plan. For marketing to be effective it is assumed that marketing campaigns must be a constant activity
 - b. Promotional activities, community visits, and relationship development are also key functions and assumed to take significant IDE labor commitments.
4. **Distribution**
- a. IDE staff will have to spend time and visit with provincial partners to establish sales networks. This is also assumed to take significant time and travel for staff.
5. **General**
- a. The annual operational growth of the manufacturer is assumed to be 15% and thus IDE's resource commitment to the project is also assumed to grow at 15% annually.

Outputs and Outcomes

Based on the activities that will be undertaken in this business model, the outputs to be measured are-

Project Activities	Project Outputs
Market Assessment	<ul style="list-style-type: none"> ● Successfully understand the preferences of the consumers towards ceramic water filters ● Successfully analyze the data collected to design a marketing and distribution strategy that caters to the needs of the consumers
Marketing	<ul style="list-style-type: none"> ● Successfully reaching consumers with marketing and promotional activities ● Sale of water filters to early adopters ● Training and capacity building of early adopters and the local partners for marketing and promotion
Distribution and Supply Chain Development	<ul style="list-style-type: none"> ● Successfully building a last-mile distribution channel ● Sale of xxx units of the low-cost water filters in the low-income market segment through last-mile distribution
Product Development	<ul style="list-style-type: none"> ● Successfully understand the preferences of the consumers towards the sold ceramic water filters ● Successfully analyze the data collected to design a product that caters to the needs of the consumers

Project Outcomes

The overall long-term outcomes that this project seeks to achieve are building a market for low-cost ceramic water filters in Vietnam, thereby helping expand access to safe drinking water in the country.

Risks and Mitigation Strategies

	Risks	Mitigation Strategies
Market Demand	Low market demand for ceramic water filters in regions, other than Tuyen Quang Province	<ol style="list-style-type: none"> 1) Replicate SAIS Research Guide to assess market size 2) Redesign product using HCD 3) Advise manufacturers to reduce price of redesigned product by locally sourcing material and using iDEs last mile distribution services in order to cut down costs
Project Activity 1: Marketing	Marketing methods fail to capture trust and interest of consumers	Identify early adopters, and utilize their testimony to spread the word. This can be done by conducting demonstrations where consumers/early adopters can speak about the product experience and demonstrate to others on how it functions.
	Marketing material unable to convince consumers to buy water filter instead of boiling	Multi-channel marketing methods that target a range of consumers and provide evidence on the effectiveness of the product. Stress on time-saved and convenience factor
Project Activity 2: Supply Chain Development	Women's network unable to distribute products	Provide a 10-15% commission for the distribution of products.
	Retailers do not extend service to rural areas	Establish an order based approach, where products are distributed once every two weeks to those who have pre-paid/ placed an order. iDE's role would not be to distribute, but to

		establish the network and approach.
	Retailers do not promote low-cost filters in their shops	Establish the main channel of distribution through door-to-door sales and reduce dependence on retail network, as was in the case with Hydrologic in Cambodia.
Project Activity 3: Market Research	Opinions of very poor households not considered	Market research should be conducted among very poor households who may form potential customers
Project Activity 4: Product Development	Product design does not attract consumers	Conduct quick survey to identify problems and needs, and use HCD to help manufacturers redesign the product - instruction labels on product, coloured plastic, sophisticated design , height of product, stand for mounting etc.
After-Sales Process	Low customer turnover a result of poor customer service and unknown retailers	Currently, the manufacturers have no plan in place for after-sales services. Given that there will be multiple distribution channels i.e. retailers and WU, a customer service channel needs to be set up immediately where consumers can report damaged products, replace spare-parts or clarify questions on functionality.
	Low customer retention	Once customer buy the product, robust customer engagement is required to dispel misunderstandings, and build trust for the product. A hotline can be set up for the initial months to ensure retention and generate more demand.
	Retailers do not prioritize complaints by consumers from ethnic minority or poor	For poor households, WU or a local village head can act as a liaison between the retailer and the customer, in order to make the process convenient and efficient.

	households due to cost-ineffectiveness or small profits.	
	The high rate of breakage of the filters without the availability of replacement parts or the access and awareness and distribution points may severely limit the sustainability of intervention. (UNICEF) ²⁵	Ensure that the customer service is established and consumers are well aware of whom to and how to reach out to the manufacturers in case of breakage of pots.
Licensing and Approvals	Manufacture is not permitted to use UNICEF logo in new product	IDE ensured the product technology is the same and helps promote both UNICEF and new product by marketing them as having the same benefits, design being the only difference
Product Details: Design, Price and Functionality	The re-designed product may not sell because of product design	Effective market research, branding and marketing strategies by iDE targeted towards the relevant market segment.
	The product may not sell because of the high cost.	1) Effective branding and marketing strategies that highlight the better design, and are targeted towards the relevant consumer base 2) Make the low-cost filter marketable to price sensitive customers

²⁵ https://www.wsp.org/sites/wsp.org/files/publications/926200724252_eap_cambodia_filter.pdf

	Product functionality might be affected due to clogging, especially in areas high on calcium and magnesium	<ol style="list-style-type: none"> 1) Spread awareness about pre-filtration of water through these promotional activities, so that the filter functionality remains unquestioned 2) Establish customer redressal mechanism in case consumers want advice on pre-filtering 3) Filters and receptacles must be cleaned regularly, especially after filtering turbid water²⁶
Business Model	The margins are too low for the manufacturer to distribute the product to more remote locations.	<ol style="list-style-type: none"> 1) Through field research iDE can help the manufacturer to identify if and where there is market demand for water filters. 2) iDE can provide the necessary support to sell products in more remote locations
Misalignment of Interests	Private manufacturers divert from the commitment of selling water filters to poor households.	<ol style="list-style-type: none"> 1) iDE informs UNICEF of mission drift. 2) iDE provides conditional support to manufacturers, based on the fact that low-income consumers are being served.

Assumptions

- **Even though UNICEF does not allow the manufacturer to use its logo on the different products, it allows it to use its technology:** The only design-related differences between the UNICEF and re-designed products are the outer covering, which has been imported from China for the latter. However, technology-wise, the two types of products are the same, i.e., the re-designed product does not have better functions, but a better design.

²⁶ <https://www.cdc.gov/safewater/ceramic-filtration.html>

- **The manufacturer has the relevant state-related approvals and certifications to sell the products.** Through our interviews with key stakeholders, we are aware that the UNICEF product had to undergo certification processes to get approval by state authorities before it could launch its filtration technology into the market. Thus, we assume that since the manufacturer is using the same technology as UNICEF in the re-designed products too, he won't have to undergo the same approval processes or face the risk of non-approval by authorities.
- The manufacturer is willing to work closely together with iDE to develop a marketing and supply chain strategy, and use human-centered design to develop new products.
- iDE can add value to the activities undertaken by the manufacturer and has the capability to execute the activities described under the activity section.

Information gaps

- **Relationship between manufacturers and UNICEF:** Details about the contractual relationship between the manufacturer and UNICEF are still not fully disclosed. The manufacturers receive support from UNICEF to disseminate the low-cost UNICEF product (i) through marketing activities such as promotional events organized jointly with governmental organizations or by introducing the manufacturer on the national television channel, (ii) by connecting manufacturer with potential distributors, (iii) by buying products and giving them to the poor. According to the manufacturer, in the case the UNICEF product is not accepted by the market, the manufacturer has the right to stop selling that product and design a new one. It is, however, uncertain how much freedom the manufacturer will have in redesigning a new product or selling the product at a different price.
- **Intention of the manufacturer:** It is hard to assess the intention of the manufacturer -- whether the manufacturer will work closely with UNICEF and focus on low-income customers in rural areas, or focus more on better-off customers in the urban areas with the higher-priced re-designed product.
- **Market demand for the UNICEF product:** No market research has been done with regard to market demand for the UNICEF product.
- **Manufacturer's willingness to work with iDE:** As of now, uncertainties remain about the manufacturer's willingness to work with iDE and in what capacity iDE can add the most value to the manufacturer.
- **Current supply chain:** Information gaps persist about how the current supply-chain looks like. According to the manufacturer, they are currently selling their products to distributors and retailers. No customer service process has been set up. It is unclear which regions or areas the manufacturer is going to enter.

