Pure Home Water
(Ghana)
Final Report of Sloan Business School Global Entrepreneurship Lab (15.389) Ghana Project

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Executive Summary

Our team had the unique opportunity to spend over 3 weeks in the West African nation of Ghana working with a pair of energetic, local entrepreneurs on an initiative to bring clean drinking water to the people of Ghana's Northern Region. Our goal was to identify and implement tools which would aid the entrepreneurs with their desire to run a self-sustaining business focused on doing social good.

This project was unique in that it was not simply a matter of making the most profit. Rather, its purpose was two-fold — to create a sustainable and profitable business while meeting the social needs of a society that has limited access to clean water. As business students, the first goal is often on our minds. However, the moral and societal issues of providing something as simple as clean water, in an affordable manner, were challenging.

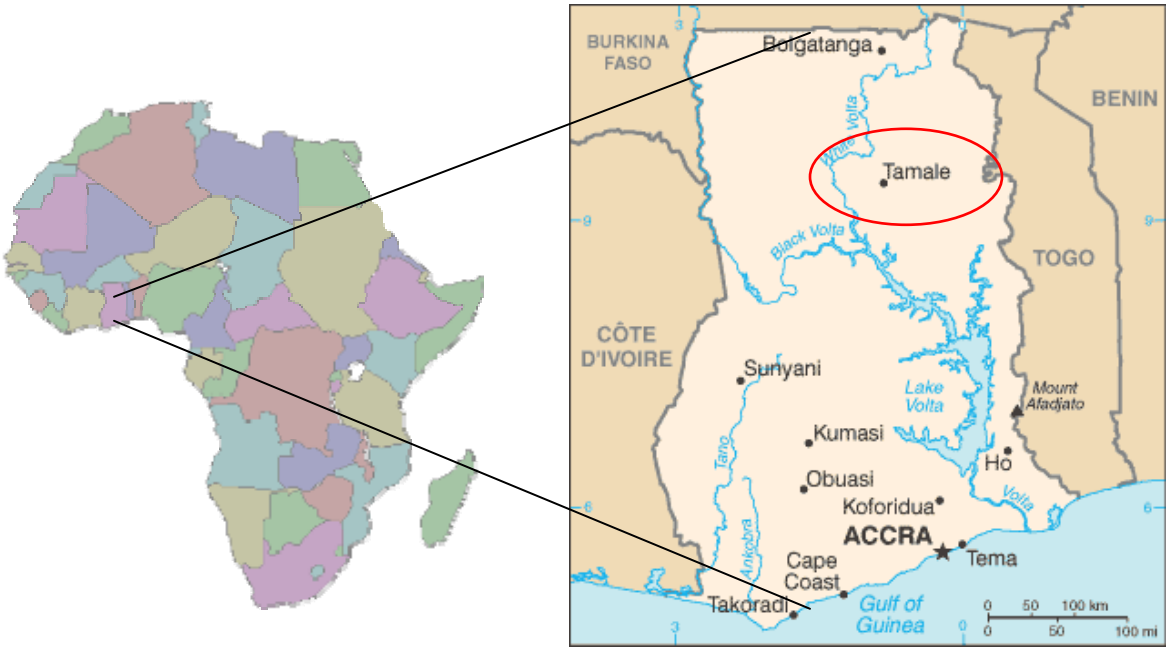
Our project forced us to translate common business frameworks into efficient tools, which could be used by two entrepreneurs with no business background in a country with limited purchasing power. To say this was a challenging task would be an underestimate. However, in the end we believe that we helped lay the ground work for a company and a country to provide the people of Northern Ghana with safe, clean drinking water.

Acknowledgments:

We would like to thank Pr. Locke, Pr. Loessberg, Pr. Murcott, Hamdiyah Alhassan, Wahabu Salifu, Claire Mattelet, Rachel Peletz, Jenny Vancalcar, for their constructive input. We would also like to thank World Vision and the Bergstrom Family Foundation for its support of this project.

A Glimpse of Ghana

Formed from the merger of the British colony of the Gold Coast and the Togoland trust territory, Ghana, in 1957, became the first sub-Saharan country in colonial Africa to gain its independence. Roughly the size of Oregon, Ghana is located on the West coast of Africa and is bordered by Ivory Coast, Burkina Faso and Togo.



The climate in the north, near Tamale (where our project was based), is predominately hot and dry with recurrent seasons of drought. This severely impacts the agricultural (and consequently the economic) activities throughout the winter and spring months.

Ghana's population is approximately 21 million people. Although English is the official language, local dialects are the dominant form of communication outside of Ghana's capital, Accra. In Tamale, Dogbane is the local dialect and is vital for communicating with the middle and lower classes that make up much of Tamale. Religion plays a significant part of Ghanaians' every day life. The country is approximately 63% Christian, 16% Muslim and 21% following indigenous beliefs.

The government of Ghana is a constitutional democracy led by President John Agyekum Kufuor. Ghana's Parliament is made up of 230 members elected by popular vote who serve 4 year terms.

Ghana is blessed with natural resources and as a result, has roughly twice the per capita output of the poorer countries in West Africa. The economy is largely dependent on subsistence agriculture, accounting for 34% of GDP and employs 60% of the work force. Nevertheless, Ghana remains heavily dependent on international financial and technical assistance.

Clean drinking water is a critical issue in many African nations. As research has shown, up to 80% of the diseases that kill children worldwide are caused by contaminated drinking water. In Ghana 84,000 people die of diarrhea–related causes each year, with 25% being children under the age of five. Some of the area's most prevalent sicknesses such as diarrhea, typhoid and guinea worm (a harmful worm which makes it way through the system exiting through the ankle over the course of a year) can result from unclean or contaminated drinking water. Even water that looks clean, such as tap water, can contain very small bacteria that can cause sickness.

Company Background: Pure Home Water

The purpose of the Pure Home Water (PHW) Project is to demonstrate the potential for selling a range of household drinking water treatment (i.e. filters) and safe storage products to low- and middle-income users in urban and rural areas of Ghana's Northern Region. The project's immediate goal is to be self-sustaining i.e. profitable to the point that it will not rely on its initial grant funding after 2 years.

The project is a full-time effort of two social entrepreneurs: Hamdiyah Alhassan, a civil and environmental engineer and Wahabu Salifu, a development planner, working in collaboration with MIT and World Vision-Ghana. The PHW project began in August 2005 and is based in Tamale (Ghana's Northern Region), one of Ghana's poorest cities. The start-up company is funded by a grant from the Conrad N. Hilton Foundation for two years from 2005 – 2007 (Total budget of $150,000). Susan Murcott, a Senior Lecturer in the Department of Civil and Environmental Engineering at MIT who specializes in drinking water quality and treatment in developing countries, is the Principal Investigator for the project and manages the entrepreneurs from the U.S. As the manager of the grant's assets she has been responsible for the hiring, general management and overall vision of the endeavor. She also provides valuable technical knowledge regarding the filters and their capabilities as she has worked on similar projects around the world in countries such as Kenya, Nepal and several Central & Latin American countries.

The Project

Due to the high cost involved in providing potable water through large-scale drinking water treatment plants, there is a great need for cheap and convenient water purification systems at the household level. Most people in the Northern Region acquire their water at a local watering hole, a damn and if possible a well. However, disease can be transmitted in a variety of ways— at the water's source, in transport to the home and in the home. It's for these reasons that water purification *and* covered storage is vital for disease prevention in the home.

Currently, PHW is acting as a distributor for two filter products and two storage containers that aid with the cleaning and storage of water in the home. PHW purchases the filters and storage products from suppliers and re-sells them to the public through three retailers — two with traditional stores and one door-to-door saleswoman.

The goal is to get these water purification systems into the hands of those who need it most — the urban and rural people of Ghana's Northern Region.

Products

Before our assignment, we determined that Household Water Treatment and Storage (HWTS) products available in Ghana today can be divided into 6 product types across 3 product categories as follows*:

1. Safe Drinking Water Storage
    - A. Modified "safe storage" clay pot
    - B. Plastic "safe storage" containers
2. Filters
    - A. Ceramic filters
        - i. Ceramic Tamakloe Filtron
        - ii. Nnsupa candle filters
    - B. Biosand Filters
3. Disinfection
    - A. Household chlorination
    - B. SODIS (Solar Disinfection)

**Please See Appendix for supporting detail*

Project Scope

Initial Project Scope

The initial scope of our project was based on interaction with Susan Murcott. Susan outlined the history of the project, the relationships and partnerships involved, and the progress made to date by the entrepreneurs. She also provided us with detailed research in the area of clean water and described a number of challenges confronting the Pure Home Water project in Ghana.

Our task at this point was to conduct preliminary research while still in the United States and provide Susan (and the Ghanaian entrepreneurs) with a descriptive plan of action. This plan included a list of deliverables to be provided upon conclusion of our work on-site in Ghana.

We defined our scope after securing the research and logistics for the trip to Ghana. Our research coupled with feedback and discussions with Susan helped us to focus specifically on the areas of sales, marketing, and microfinance. The resulting deliverables included:

- Updated business plan
- Marketing plan for the water purification systems
- Training program for system salespeople
- Development of microfinance options for the systems purchases
- Sourcing and logistical analysis for systems distribution

We determined that this was an aggressive list of deliverables, given our preference for depth over breadth and limited time in the country. However, significant progress could only be made with input from the local entrepreneurs, which had been problematic. We were unsuccessful in a number of attempts to make initial contact with them by phone. In this circumstance we felt it necessary to consider each of those initial options as our potential scope, maintaining the flexibility to adapt to the situation based on our findings upon reaching Ghana.

Revised Project Scope

After arriving in Ghana, we sought a clear understanding of the project. Initially, we pursued a series of interviews with the local entrepreneurs, product suppliers, customers, retailers, and project partners such as World Vision and WAWI (West Africa Water Initiative). From these discussions we were able to determine the state of the project and identify areas to which we could make the greatest contribution.

We were surprised to learn that, although 6 months had elapsed, very little progress had been made. Most importantly, little effort was being put forth in the areas of product education and marketing. If the company hoped to build awareness and sales, it was crucial that marketing their products become priority number one. At first, the entrepreneurs appeared reluctant to "roll up their sleeves" and spread the word about in-home water filter systems through activity-based marketing.

Based on the limited progress made to date and the importance of marketing these products to surrounding communities, we decided to develop a detailed marketing strategy predicated on the 4 Ps framework. We chose this approach based on the fundamental nature of the project, the local environment, and the limited business knowledge of the entrepreneurs. The 4 Ps would be easier to explain, coordinate, and implement than would a more complex marketing strategy.

Another key discovery at this stage was the lack of basic accounting procedures and record keeping for project activities. This was important as one of the main goals for the Pure Home Water Project was financial sustainability within two years of inception. The company would be challenged to meet its goal without a concrete understanding of its financial progress. This became the second part of the final project scope.

One last consideration was balancing the aims of profit and need. As a social entrepreneurship project, there existed a “double bottom line” to the work and objectives of Pure Home Water. We spent considerable time on the existential purpose of the project and determined that the focus should be more weighted towards sustainability rather than social good (although keeping in mind both are important) due to the funding conditions and time restraints of the project’s funding.

Stakeholders

A crucial ingredient to the success of the project was the interaction and support of a network of partners with the shared goal of bringing clean drinking water to the homes of the Ghanaian people. Pure Home Water had a number of significant and beneficial allies in this objective. Our G-Lab team wanted to maximize these relationships to extend the reach of the project as much as possible.

This started with our collaboration with the MIT engineering team and their work on water treatment, quality, and behavior. In addition to Susan, three environmental engineering students in the Masters of Engineering (M.Eng.) program focusing on water purification came to Ghana to complete work on their Master’s thesis. Their team proved to be an invaluable resource that complemented our work and enhanced our ability to grasp important characteristics of the local environment.

Equipped with their own lab equipment, they helped us to test the company’s products as well as those of competitors to determine which filters were most effective. They also helped us gain a better understanding of the behavior and knowledge of the local people with regards to clean water and personal hygiene through 50 surveys which they carried out in local villages. Finally, they helped us to understand where people were getting their water and what levels of contamination could be found in these sources. This last stage was crucial because some sources of water were less dirty than others. The “dirtiness” of the water had a significant impact on the flow rates and resulting purity of the

water when run through a filter. Understanding where a potential customer could get her water and how the filter would react to such water would be crucial in the sales process.

In addition to the MIT Engineering team, we were able to coordinate our efforts with a number of groups in Ghana, starting with the World Vision organization. World Vision is a global Christian organization, which, through the Ghana Rural Water Project focuses on water provision through borehole well-drilling throughout Ghana. With over 20 years in the country, World Vision maintains a strong reputation with the local people. As a friend and partner to the project, World Vision provides office space, computer access and lab equipment to the Pure Home Water team. For our project, World Vision representatives were a great source of information and assistance. They provided us with a detailed history of water initiatives in the country, background information specifically on the Northern Region, and transportation in the Tamale area. As mentioned, World Vision's credibility with the local people of the Northern Region is unparalleled. Therefore, having the ability to mention that our work was in collaboration with their organization opened many doors.

Other important stakeholders included local and regional government agencies, the Ghana School of Hygiene, and the main supplier of the ceramic filters. The social component of the project meant that our goals were closely aligned with the objectives of these other groups. By coordinating activities with the stakeholders, we were able to extend the reach of the Pure Home Water project far beyond the daily capabilities of our two entrepreneurs.

Final Product

The final product of our work in Ghana was a presentation at World Vision headquarters to representatives of that organization, the two local entrepreneurs, Susan Murcott and her MIT engineering team.

In the presentation we summarized our work and findings in Ghana, outlining the implementation plan from the points of the 4 Ps marketing strategy. We

presented our recommendations for Promotion, Place, Product, and Price with a focus on the ability to sustain and build upon the progress made in those areas.

Next we presented a monthly template of quantifiable metrics for the entrepreneurs to send to Susan regarding sales data and marketing activity. This served the purpose of assessing the project's monthly position relative to its main goal of financial sustainability and also as a monitoring tool for Susan to track the project activities and events in a structured format.

Findings and Recommendations

Promotion

From the onset we identified promotion as a key component to the success of the project. With regards to promotion, it was crucial to help the entrepreneurs develop the willingness to roll up their sleeves and "get out there." Visiting customers, making sales presentations, hearing "no" are not easy parts of the job, but they are all vital parts of the process if the company could hope to achieve sustainability.

Despite the project having been up and running for nearly 6 months, the entrepreneurs had hosted less than 5 sales meetings. This would clearly not be acceptable if the company had any hope of profitability much less sustainability. Therefore, we set one simple but clear goal — focus on promotional activity. Everything else must come second to this goal.

Activity is crucial for several reasons. Obviously, the entrepreneurs need to be in front of customers in order to sell their product. Additionally, in many cases, they need to educate potential customers. Many Ghanaians do not understand the variety of sicknesses caused by water-borne microbes. . As we'll discuss later, activity is also important for developing additional sales channels including retailers as well as individuals.

Therefore, we took several steps to help the entrepreneurs achieve their promotional goals:

Develop Marketing Materials: The appendix includes a brochure we helped them create, which highlights the various products (filters and storage containers) as well as information about the company.

Market Day: We worked with the entrepreneurs to show them how to stage a successful marketing event. One day per week the market has an influx of customers — this is the busiest day of the week in the marketplace. We brought out music and speakers, local students who spoke the regional dialect, sample products, current retailers and existing customers (endorsing the product). Additionally, the business and engineering students pitched in and "steered" customers to the product tables for a live demonstration. Sales were limited for the day. However, we estimate that we spoke to over 1,000 potential customers regarding the benefits of the products.

We also learned about grass roots marketing. We changed our approach from a poster with one ad per page to a page with 6 ads per page (both samples are included in the appendix). This saved significantly on cost and provided us with materials to hand out to prospective customers.

Prepare for Sales Presentations: We identified key steps for preparation depending on the type of audience the entrepreneurs would be engaging.

- For market days: contact partners to assist with presentation (e.g. school of hygiene students who speak local dialect), put up posters and other promotional materials, contact local retailers to encourage their participation
- For community presentations: contact local chiefs (one for each village), identify meeting place (multiple villages are presented to at once), send invitations to previous customers to encourage endorsement

Improving the Sales Pitch: We asked the entrepreneurs to show us their current presentation. We critiqued their presentation and encouraged them to incorporate the following going forward:

- Clearly delineate the products (Purifiers vs. Storage Containers)
- Educate customers on water-borne sicknesses and their causes:
    - Water source
    - Transportation
    - Storage
- Provide “value proposition” — filter cost vs. sickness costs (hospital bills, lost wages, etc.)
- Price and Payment Terms
- ***Ask for the Sale!!!***

Create Activity Goals: Developed reasonable, achievable goals with the entrepreneurs:

- 4 Organization Presentations per week: These are organizations like banks, government agencies that have multiple employees who can afford the products, non-governmental agencies, etc.
- 1 Market Day per week
- 1 Community Visit per week

Overall, the process was very enlightening for us as well as them. As time goes on and their activity increases, they will modify their approach to include the most effective promotional tactics. However, in the meantime, the most important step is for the entrepreneurs to be active and to engage their customers so that the opportunities to make sales increase.

Product

When we started our assignment, Pure Home Water was considering 6 different products. This had several disadvantages.

The first was the carrying cost of products that customers do not want. PHW had bought more than 100 safe storage containers, for example, and sold only 2 units in the first six months. Additionally, attempting to sell several products increases the education effort that each product requires. Having several products had the risk of confusion in the mind of customers. Finally, offering multiple products

generated greater complexity for supply-chain management. Suppliers are located in different areas – Kumasi (8-hour drive) for the Nnsupa filter and Accra (10-hour drive) for the CT Filter.

Our key recommendation was to reduce the number of available products. We benchmarked products against different criteria: ease of supply, cost, life time, effectiveness in purifying the water, sustainability for the entrepreneurs, in terms of sourcing effort required.

Therefore, we recommended that PHW focus on three main products instead of the six they initially considered:

Ceramica Tamakloe CT “Filtron” Filter: consists of a filter made from red clay and wood saw-dust which is mixed, pressed in a hydraulic press and fired at high temperatures. At these temperatures, the sawdust burns and leaves small holes through which the water flows and is purified. The purified water is stored in a 40 liter plastic receptacle and is retrieved through the plastic tap, which reduces germs spread from hands.

Biosand Filter: is a household-scale sand filter. The Biosand filter uses the natural capacity of sand to absorb bacteria and other contaminants, which purifies the water. The Biosand filter contains a diffuser plate, layers of sand and gravel and an exit tube all within a 50L plastic bucket. The diffuser basin spreads water evenly over the surface of the sand, minimizing disturbance to the top layer of sand, while the sand and gravel purifies the water in a natural way. The main issue with this product is that the tests results show that it is not yet ready for sale.

Safe storage: is the use of a dedicated storage container for household drinking water storage, which includes (1) a narrow or covered top to prevent dipping hands or cups into the vessel; (2) a lid to keep the container closed and (3) a tap to pour out the water. Both of the products pictured qualify as “safe storage” containers according to this definition.

Based on the work of the M.Eng. environmental engineers, the Nnsupa filter's tests showed results that left us concerned. The MIT environmental engineers used different tests to assess the quality of the water after it had been purified. All tests confirmed that water flowing through the Nnsupa filter still contained fecal bacteria. Conversely, the same water, when filtered by the Tamakloe filter was free of bacteria after the filtration. Based on the various tests performed, we recommended PHW to remove the Nnsupa filter from their product list.

Water Purification Products				
			Decision	Comments
Produts Offered by PHWP	CT Filter		✔	Negotiation on conditions with current supplier
	Nnsupa Filter		✖	Lower bacteria removal (98% bacteria removal versus 100% for CT Filter) User feedback
	Biosand Filter		✔	Not yet ready for sale
Other Products	Chlorination		✖	User acceptance issues Supply issues
	SODIS		✖	Uncertain business model

Figure 1 – Summary of recommendations on product selection

The second main recommendation regarding products was to renegotiate conditions with existing suppliers. The negotiations focused on three main areas: price, transportation and product.

Price: Having visited suppliers' plants in Accra and Kumasi, we soon noticed that PHW's buyer power was relatively low. We thus worked with the entrepreneurs to assess the main supplier, Peter Tamakloe's costs for a CT filter, and negotiate a price reduction based on this analysis.

Transportation: Up to 50% of CT Filters were broken during transportation. Causes included: faulty packaging, inappropriate transportation or employee

recklessness. While the supplier, Peter Tamakloe, was willing to replace the broken items, he expected PHW to pay for the transportation for the replacement products. This drove the cost per unit up considerably, which would greatly impact the break even point and pricing of the products. Our negotiation goal was to increase the burden on the supplier with the transportation issue.

Product: Based on clients' feedback, PHW realized that the product could be improved. PHW negotiated with their suppliers to improve the design of the product based on user feedback (flow rate, capacity, and cost).

Negotiations results

We were directly involved in the negotiations with the main supplier, Peter Tamakloe, since the entrepreneurs had encountered challenges in previous negotiations and felt that a "new voice" would be more successful. Our negotiations were successful. We managed to achieve the expected results on all of targeted areas:

- Purchase price
    - 37% price reduction on ceramic filter verbally mentioned
    - Final agreement still in progress
    - Increase volume per order to 500 units
- Transportation
    - Improvement of packaging at no additional cost. However, we've recently learned that although the breakage rate decreased, it was still high at more than 25%.
- Product
    - Enlarge the lip of the filter
    - Reduction of irregularities

Price

Upon our arrival, we learned that the products' prices were determined without calculating the breakeven point. With input from Susan, the entrepreneurs and our team, we collectively decided that the project should aim to breakeven i.e. the project should try selling above the cost so that the project would be sustainable as a business beyond the initial 2 year funding period. As a result, we worked with the entrepreneurs to perform a breakeven analysis in order to appropriately price the product.

Prior to our visit, the price was determined based on an arbitrarily chosen margin of 15% of the purchase price. For example, the following is the pricing for the Tamakloe Filter:

#	VARIABLE COST	Cedis Unit Price
V1	Purchase price	111,000
V2	Transportation (Accra-Tamale)	15,000
V3	Brush, washers	7,350
V4	Manual	
V5	Tap Fixing	2,000
V6	Sales Commission	
M	Margin	16,650
	Retail price	152,000

Figure 2 — Tamakloe filter pricing prior to breakeven analysis

The original pricing method had 2 problems. First, it was not clear whether the margin was enough for the business to be "sustainable." Similarly, since the margin was not based on the breakeven point, it was not clear how many units needed to be sold in order to be breakeven. Second, some of the cost items in the original pricing method had to be modified due to changes in circumstances. For example, during transportation, up to 50% of the filters were broken, which significantly impacted the actual margin (since PHW was responsible for paying the transportation costs for replacement filters). Furthermore, in the original pricing method, the commission to the retailers was not considered.

In order to address the above problems, we worked with the entrepreneurs to develop a breakeven analysis:

#	VARIABLE COST	Cedis Unit Price
V1	Purchase price	110,000
V2	Transportation (Accra-Tamale)	16,316
V3	Brush	2,500
V4	Manual	1,000
V5	Tap Fixing	500
V6	Sales Commission	7,000
M	Margin	14,684
	Retail price	152,000
#	FIXED COST (PER MONTH)	Cedis
F1	Average fixed cost per month	22,872,874

F1/V6	**Breakeven sales volume**	1,558

Figure 3 — Tamakloe filter breakeven analysis on a per month basis (volume)

This analysis shows that, if sold at the current price of 152,000 cedis, 1,558 units needed to be sold per month in order to breakeven (i.e. in order to cover fixed cost or 22.8 million cedis).

This was a shocking result for the entrepreneurs, since they had only sold 150 units in the previous five months. As a result, we identified the following steps:

(1) Price the Tamakloe filter at 180,000 cedis for the immediate future
(2) Negotiate with the supplier (Peter Tamakloe) for the lower price and better transportation

The following graph depicts the breakeven analysis based on the new price. This analysis shows that we will be able to breakeven at the sales of 500 units.

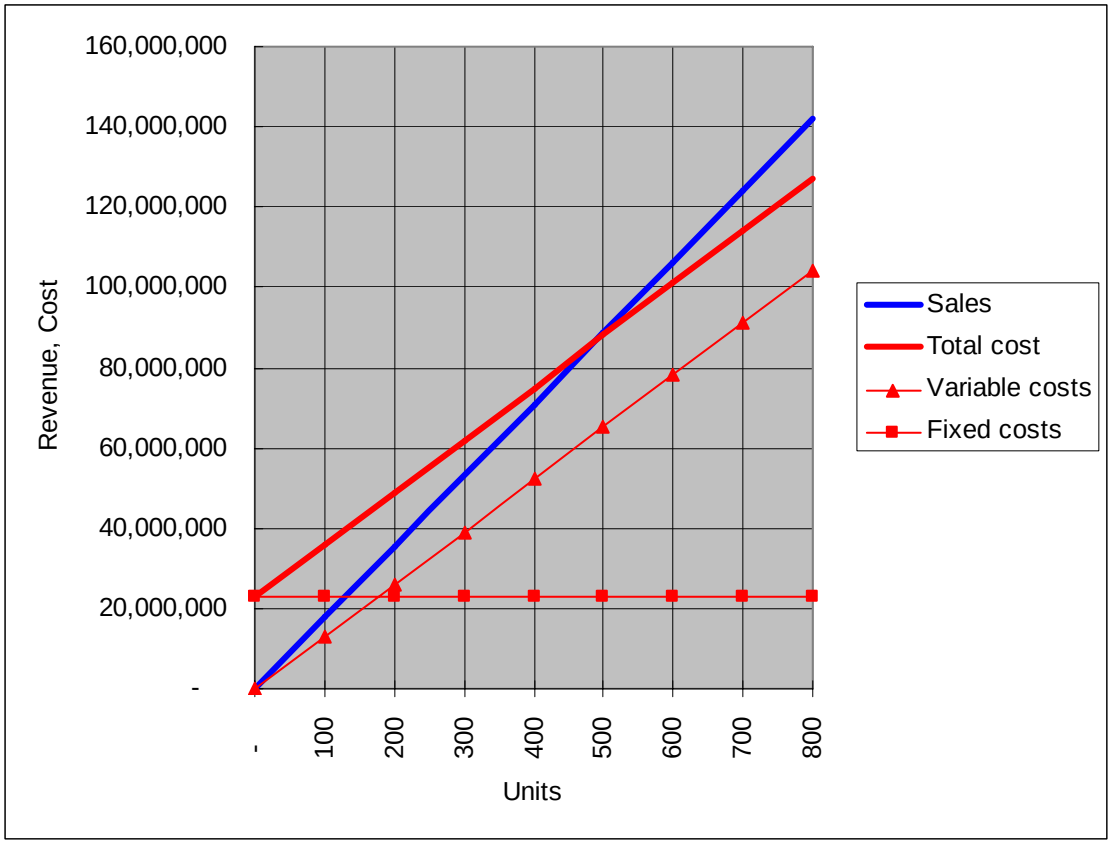


Chart 1 — Tamakloe filter breakeven analysis with revised pricing

Place

After the first week of interviews in Ghana, many points became clear about what was necessary to improve the marketing plan regarding issues of place. Our plan involved having the entrepreneurs work mainly as distributors of the household water treatment and storage products to retailers and independent salespeople. This method would maximize the reach of the entrepreneurs and provide an effective means for scalability as the project grew beyond its initial hub in Tamale. The independent salesperson model (the “Avon” approach) had successfully been employed in Ghana in other areas such as herbal health care products, so could be easily extended to our purposes.

We discovered some notable problems with the sales channel from our interviews with the three existing retailers in the network. First, they had limited understanding of how the products actually worked, so they could not

comfortably explain the important points of product function and maintenance to potential customers. They also demonstrated little consideration for the product display in the shops/market stalls. There was no signage, the products were often left on the ground, and the spigots were not in view. These factors meant there was little to distinguish the water filter products from regular plastic buckets.

The retailers had no training in customer service and follow-on issues (and how to report them to the entrepreneurs) as well as how to promote the “value proposition” of the filters to customers. The filters were a relatively expensive purchase for Ghanaians and therefore it was essential for the retailers and salespeople to explain not only the positive health implications, but also the long-term financial savings the filters could provide due to lower medical costs and less missed work time from illness.

We determined two main priorities for “Place” and built an implementation plan around them:

1. Plan of action for retailer communication and acquisition
2. Schedule for “Training Day” events and work plan

The first priority was building stronger and more frequent communication between retailers and the entrepreneurs. This goal would be particularly applicable to the entrepreneurs need for expanding the retailer base beyond the initial three sellers in Tamale. To grow their distribution channel through a network of shops, market stalls, filling stations, and pharmacies in the Northern Region more frequent interaction and communication would be critical. Moreover, the entrepreneurs needed regular communication with the retailers in order to educate them about the products and maintenance, to gain valuable feedback from the them about customer concerns and issues, and to develop the pitch or “value proposition” that the retailers could use to make sales.

As a G-Lab team, we discussed these issues with the entrepreneurs and learned their perspectives on how to best implement this process. Our approach was to

be as collaborative as possible in order to gain the entrepreneurs' input and ownership once we left the country. They were very receptive to this idea and presented unique proposals for improving the channel relationships and communication. Once the plan was established, we then set out to implement the steps outlined. We began by demonstrating effective retailer communication and acquisition pitches with a few live examples and then turned those tasks over to the entrepreneurs. They picked up on the essentials of this strategy quickly, securing another two highly attractive retailers in Tamale and developing more effective communication with the existing ones.

The second priority served the purpose of building the salesperson network through monthly "Training Days". People interested in acting as sales agents for the water filter products would be invited to a half day seminar to learn about the product line, maintenance, the value proposition, and contract terms for sales. These sales agents will become particularly helpful in reaching customers outside of the more concentrated areas.

Conclusion

In conclusion, working with the entrepreneurs of the Pure Home Water was incredibly rewarding. It challenged us to think about adapting our ideas and assumptions to a market in which $20 can be a month's pay.

Working with entrepreneurs who had limited formal business education forced us to strip away the jargon, the strategies and theory and get down to practical solutions, which could make an immediate impact. Through goals focused on activity (developing promotional ideas and distribution relationships) and sustainability (improving the product and managing its profitability) we have provided the company with tools that we believe can help improve their results.

While we believe that we made an impact, there is still a lot to be done. However, our hope is that we have provided the entrepreneurs a foundation from which to build.

Appendix

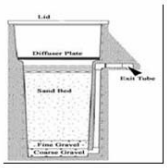
References

CIA The World Factbook – Ghana

http://www.cia.gov/cia/publications/factbook/geos/gh.html

(18 Oct. 2005).

Water Purification Methods

		Description	Advantages	Disadvantages
Produts Offered by PHWP	CT Filter	Ceramica Tamakloe CT "Filtron" Filter: consists of a filter made from red clay and wood saw-dust which is mixed, pressed in a hydraulic press and fired at extreme temperatures. At these temperatures, the sawdust burns and leaves small holes through which the water flows and is purified. The purified water is stored in a 50 liter plastic receptacle, and is ready to be poured through the plastic faucet 	Better taste of water Size Relatively cheaper cost compared with Nnsupa Filter Clear plastic bucket Flow rate	Delicate filter Difficult to maintain and wash High transportation cost High breakage rate during transportation Aesthetics of ceramic filter
	Nnsupa Filter	Household product that uses ceramic (or candle) filters to purify drinking water. In addition to the filter, the product comes with two plastic buckets. The first holds the candles and the unclean water. The second contains the clean water, after it has moved through the candle filter 	Aesthetics Portability	Lower bacteria removal (98% bacteria removal versus 100% for CT Filter) Regular maintenance required Size (20 liters) Cost Flow rate Formation of white residue Shorter life time
	Biosand Filter	Household-scale sand filter. The model uses a 50L plastic bucket to filter water. The Biosand filter contains a diffuser plate and layers of sand and gravel. The diffuser basin spreads water evenly over the surface of the sand, minimizing disturbance to the top layer of sand. The Biosand filter uses the natural capacity of sand to absorb bacteria, which purifies the water 	High flow rate Cost	Complexity of manufacturing and installation Due to red color of local sand, need to source sand from the Coast Customers' perception that sand cannot be used to clean water
Other Products	Chlorination	Products such as Procter and Gamble's Water Guard 	Cost	Workload for housewife – need to wait for 30' User acceptability Distribution problem
	SODIS	Solar disinfection 	Cost => affordable for the poorest	Customers' negative perception: reusing empty bottles believed to cause cancer => Risk of low credibility Uncertain business model - should PHWP buy empty bottles? Several bottles needed (maybe 20 for the whole household) => important workload for the housewife Does not work for excessively dirty water
Competition	"Indian" candle	Imported candle available at Melcom, the local supermarket chain 	Price: 12,000 Cedis for the candle (need to add bucket price to get total price) versus 90,000 Cedis for the Nnsupa Filter	Low flow rate Low bacteria removal

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PURE HOME WATER PROJECT
"CLEAN WATER IS BETTER LIFE"

Who We Are: Pure Home Water is a social enterprise initiative led by two local business people (Hamdiyah Alhassan, Wahabu Salifu). Pure Home Water has partnered with World Vision-Ghana, to bring safe, home drinking water to the Northern Territory of Ghana.

Background: Some of the area's most prevalent sicknesses such as *diarrhea*, *typhoid* and *guinea worm* can result from unclean or contaminated drinking water. Even water that looks clean can contain very small bacteria which can cause sicknesses. These sicknesses can lead to increased medical bills, lost wages and serious medical conditions for your family.

The Solution: Pure Home Water's products will make your family's water safer for drinking. These products will help reduce or eliminate the bacteria and other contaminants found in drinking water.

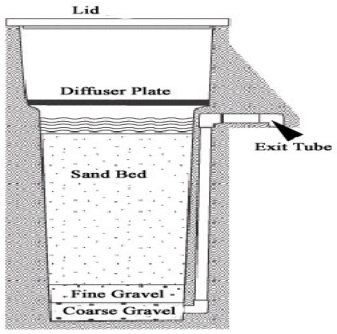
Our Products

Ceramica Tamakloe (CT) Filter

Ceramica Tamakloe CT "Filtron" Filter: consists of a filter made from red clay and wood saw-dust which is mixed, pressed in a hydraulic press and fired at high temperatures. At these temperatures, the sawdust burns and leaves small holes through which the water flows and is purified. The purified water is stored in a 40 liter plastic receptacle and is retrieved through the plastic tap, which reduces germs spread from hands.

Biosand Filter

Biosand Filter: is a household-scale sand filter. The Biosand filter uses the natural capacity of sand to absorb bacteria and other contaminants, which purifies the water. The Biosand filter contains a diffuser plate, layers of sand and gravel and an exit tube all within a 50L plastic bucket. The diffuser basin spreads water evenly over the surface of the sand, minimizing disturbance to the top layer of sand, while the sand and gravel purifies the water in a natural way.



Modified Clay Pot Safe Storage

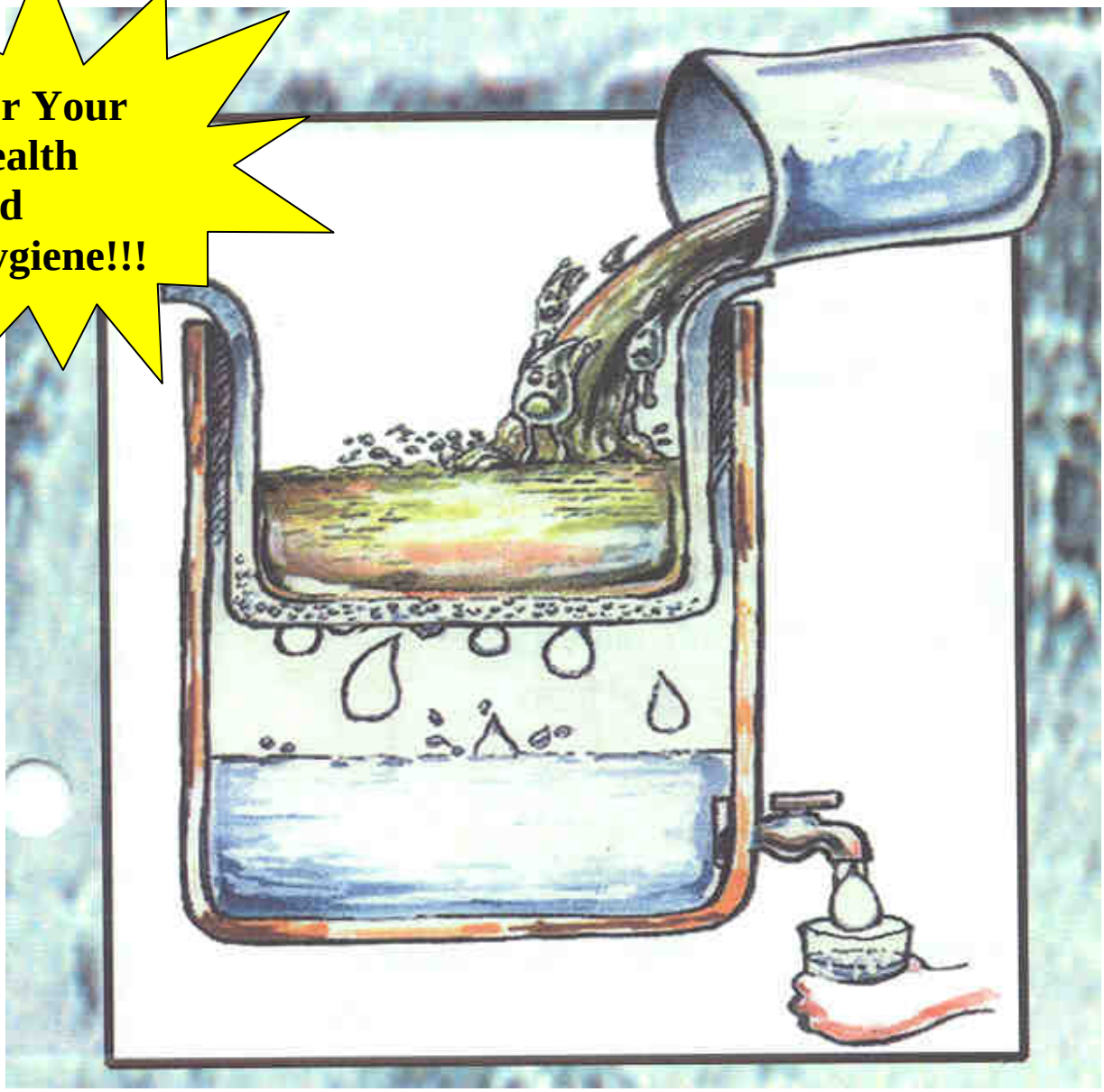
Safe storage: is the use of a dedicated storage container for household drinking water storage, which includes (1) a narrow or covered top to prevent dipping hands or cups into the vessel; (2) a lid to keep the container closed and (3) a tap to pour out the water. Both of the products pictured qualify as "safe storage" containers according to this definition.

Plastic Safe Storage

Want to be a **Salesperson** or **Retailer** for these products and earn a commission with each sale??
Contact Hamdiyah or Wahabu to sign up for the next **'Training Day'** to learn how!!!!

Safe Water Demonstration!

For Your Health and Hygiene!!!



When: Market Day (17/1/06)
Presentations at 10:00 & 13:00

Where: Taxi Run (Tamale)

Sponsored by: Pure Home Water in partnership with World Vision

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