

THE SLUM WATER PROGRAM BUSINESS PLAN

A SUSTAINABLE WATER SOLUTION FOR
MARGINALIZED SLUM COMMUNITIES



REACHOUT
WATER 2 SOLUTIONS

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TABLE OF CONTENTS

- 1 Executive Summary
- 3 Background
- 5 Market Description
- 6 Slum Water Program
- 8 Organizational Structure
- 9 Implementation Strategy
- 10 Competition
- 11 Risks
- 12 Conclusion and Recommendations
- 13 **Appendix A**
- 14 **Appendix B**

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EXECUTIVE SUMMARY

The Slum Water Program will provide 20 liters of treated municipal water and 30 liters of non-potable treated water per person per day.

IN MUMBAI, INDIA, INADEQUATE WATER SUPPLY is a daily reality for 10 million slum residents. The Brihanmumbai Municipal Corporation (BMC) simply does not have the capacity to meet the water quantity, quality, access, and management needs of the residents. To address the water needs of Mumbai slum residents, a sustainable and complete water solution is required. But, how can the Mumbai's slum water dilemma be effectively solved and who has the capability to solve this complex problem? This business proposal outlines the Slum Water Program (SWP); the comprehensive, community driven, de-centralized water program ReachOut Water Solutions (ROWS) has developed to answer the water needs of Mumbai slum residents.

The 10 million slum residents of Mumbai, India make up a large consumer market in need of enhanced water supply for both potable and non-potable uses. ReachOut Water Solutions, a non-profit development consultant, has created a solution for de-centralized, managed water services based on a proven business model already in place in Mumbai. To date 800,000 paying slum customers utilize sustainable infrastructure service nodes located throughout the slums of Mumbai for sanitation. This successful demand-driven program, the Slum Sanitation Program (SSP), has begun to fill the sanitation gap for the nearly 9 million people who lack basic sanitation services in Mumbai. Initiated with cooperation between the BMC and enterprising community-based organizations (CBOs), the Slum Sanitation Program has built 550 toilet blocks. With 4.4 million Mumbai slum residents still in need of water services, including nearly all the 800,000

sanitation customers, the customer base of the Slum Sanitation Program offers an existing and reliable market for provision of water infrastructure services. ReachOut Water Solutions will meet the needs of Mumbai's slum residents by expanding the de-centralized water infrastructure services. The need, and the solution, consist of four primary components.

The first identified need of slum dwellers is the need from increased quantity of water. The water supply provided by the municipality in Mumbai, at 30 liters per capita per day, is not adequate to meet daily needs. The World Health Organization (WHO) recommends 20 liters of potable water and 30 liters of non-potable treated water per person per day. The Slum Water Program will provide 20 liters of treated municipal water and 30 liters of treated groundwater to SWP members, as well as a 10 liter pay-per-use potable option for non-SWP members. The second need of slum dwellers is a need for improved quality of water. Of the total municipal water supply reaching Mumbai slums, 13 percent of the piped water is contaminated with illness-causing bacteria which leads to over 6 million instances of water borne illness each year, nearly 6,000 deaths per year, and thus hundreds of millions of hours of lost productivity. The Slum Water Program will serve the market needs by removing 99.99 percent of bacteriological contamination utilizing a small ultraviolet (UV) treatment device which is already in use throughout rural India. The third identified need of slum dwellers is the need to improve access to water. The water that does reach the slums is not readily accessible to the slum residents. The municipality does not have



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resources to pipe water to the slum homes and bottled pay-per-use water is often too expensive for the average slum resident at \$0.25 per liter. The Slum Water Program will have two customer types, SWP members and pay-per-use customers. We will use a delivery system, with sealed and compressible plastic containers, to provide water to both types of customers by allowing them to either collect the water from the SWP, or to have water delivered directly to their home for a small fee. Finally, the BMC is simply not capable of providing water services to all the residents of Mumbai, especially to the slum residents. By partnering with the BMC and established community based organizations, the Slum Water Program will provide a water services solution managed by the community utilizing an existing customer base that already pays for improved infrastructure services.

We realize that starting small is important before building up a full-scale water solution for the slums. Thus, we have developed a dynamic business model that allows for phased implementation and investment in our solution through pilot, franchise, and services expansion phases. For the pilot phase, ReachOut Water Solutions will establish a single SWP for 1,500 daily community users and 200 Slum Water Program pay-per-use customers. We expect a total capital cost of \$37,000, a monthly operational cost of \$1,300, and a monthly income of \$2,600, returning a monthly profit of \$1,300. The pilot phase will require an initial investment of \$37,000 to cover the capital costs. The profits from the initial SWP installation will pay for operating costs and provide the investor with a 30 percent return on the initial investment within 3.0 years.

After proving the business success of the initial SWP and learning from the experience of running a single water services center, the franchising phase will begin. This phase will require an additional capital investment of \$2.0 million to build 25 SWPs and of operating costs for the first 5 years of large-scale operation. We predict being able to return this investment with a 30 percent return within six years. ReachOut Water Solutions will reach a final goal of establishing 1,500 Slum Water Program locations within 13 years of full-scale operation, providing water to 2.2 million slum residents of Mumbai. The final phase is the expansion of infrastructure services to install electricity, waste collection and disposal, recycling, communications, and other de-centralized, community-based services for Mumbai's slum residents. This business solution will promote community-based infrastructure services that are locally owned and maintained, and that will empower the community and create jobs. We believe the Slum Water Program can be implemented quickly within the current system of de-centralized service delivery in Mumbai, be adaptable to future changes of slum settlements, provide an adequate supply of safe and accessible water at an affordable price, and be a model of self-sustainability and cost recovery principals for future business developments in slum markets throughout India and the world.

BACKGROUND

We have identified four key areas where the current water supply fails slum residents. A sustainable, effective water solution must address all four issues of quantity, quality, access, and management.

THE CITY OF MUMBAI HAS A POPULATION OF 19 million people and is the world's fifth largest metropolis. Mumbai is India's economic and financial capital at a time when the nation is becoming a major player in the world market. With rapidly expanding industry, an influx of India's rural population is relocating to Mumbai to find work and support the expanding economy. This influx of labor, in combination with high housing costs, has led to a major housing crisis in Mumbai and the expansion of semi-permanent slum settlements. The slums of Mumbai have been in existence for many decades. Considered a necessary evil, this populace provides for a large work force, skilled and unskilled, which powers the formal and informal industry in Mumbai. This intense urbanization places extreme stresses on an already overstretched municipal water supply infrastructure. Institutionally, Mumbai fails to provide sufficient urban water supplies to its inhabitants due to aging water infrastructure, poor cost recovery practices, poor operation and maintenance of existing systems, and insufficient controls on water quality. The city receives 5 hours of water per day, forcing its citizens to turn to household level water supply alternatives. The poor do not have the financial resources for costly alternatives and are forced to share overcrowded communal taps and store water haphazardly.

■ Current water and sanitation coverage

In the city as a whole, 5.5 million people or 30 percent of the population are without access to in-home piped water. Of that 5.5 million, 4.5 million of those live in the slums. The sanitation picture for the city is much worse. In Greater Mumbai, 12 million people or 63 percent of residents do not have access to in-home sanitation. Within the slums, this figure is lower. Only 15 percent of slum residents have in-home sanitation. This leaves some 8.7 million people without formal sanitation.

■ Current sources of water

Currently, 56 percent of Mumbai slum residents have piped in-home water. Of the 4.4 million without in-home water, 3 million or 30 percent get water from communal or public taps. Much of the remainder of the population buys water from vendors and neighbors, or steals water from municipal supply lines.

■ The issues with water

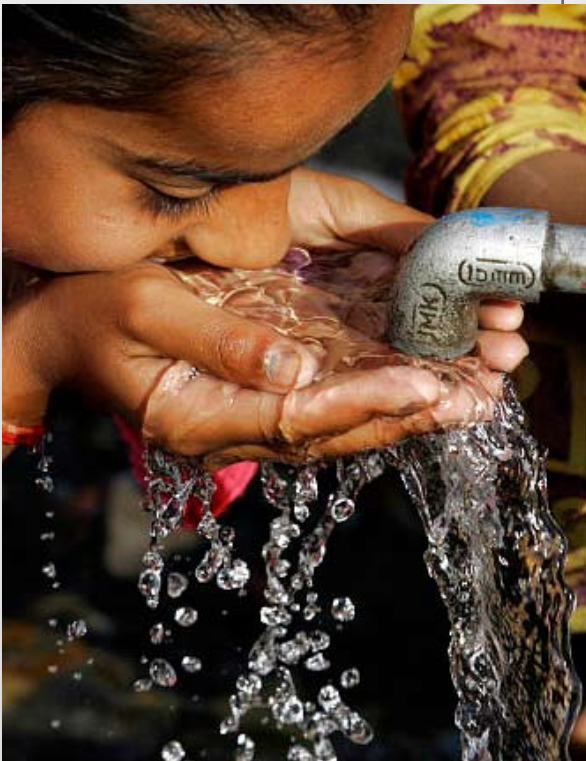
This coverage data highlights the failure of traditional, municipal services to meet the needs of slum residents. To understand how to best fulfill these unmet needs, it is important to frame the issues surrounding water supply. We have identified four key areas where the current water supply fails slum residents. A sustainable, effective water solution must address all four issues of quantity, quality, access, and management.

1. QUANTITY OF WATER Currently, the average slum resident gets 30 liters per capita per day. The World Health Organization (WHO) has set 50 liters as the guideline for human water needs, including 20 liters for drinking and cooking, and 30 liters for bathing, laundry, and household cleaning. The water supply of an average Mumbai slum resident falls well below the standard of 50 liters per capita per day.

2. QUALITY OF WATER The second major issue with water supply in Mumbai is quality. The Brihanmumbai Municipal Corporation (BMC), the organization responsible for provision of infrastructure services, estimates that 13 percent of slum taps are contaminated with disease vectors like viruses and bacteria. Every year, water borne disease causes 6,300,000 cases of illness which leads to 5,600 deaths. Put in economic terms, Mumbai loses 220 million dollars every year through lost economic productivity due to water related illness and death.

3. ACCESS The responsibility for collecting water falls on the women and children in the slums of Mumbai. Since the BMC is only able to provide 5 hours of water service per day, women and children are forced to wait up to three hours in line to collect water from communal or public taps. This results in lost work time for women and missed education for children. In addition, pay-per-use water is too expensive for the average slum dweller at \$0.25 per liter of water.

4. MANAGEMENT The BMC currently fails to provide in-home water access to 4.4 million slum residents for a number of reasons. First, it is innately difficult to provide services to the slums due to the high population density and organic nature of slum settlements. Second, it is a failure in cost recovery practices. Currently the BMC only recovers 47 percent of what it spends on water. This is due to high levels of lost and stolen water (16 percent or 86 million gallons per day), low tariff levels, and overstaffing. This leads to little will to pay and minimal revenue to improve water services to the slums. Finally, within the slums, there are illegal water middle men who sell BMC water to slum residents at increased rates, siphoning profits that would normally go to the BMC or a legitimate water service provider.





ReachOut Water Solutions wants to expand on the success of the Slum Sanitation Program by providing de-centralized, community-run water services from these existing infrastructure centers.

■ Slum Sanitation Program (SSP)

Understanding the four primary issues with water service provision raises the question of how do you make services work for Mumbai slum residents in the face of these obstacles?

One model that has been effectively addressing the issues for sanitation service provision in the slums is the Slum Sanitation Program (SSP). The SSP was started in 1995 by a loan from the World Bank and has proven an effective and sustainable model for serving the sanitation needs of slum residents. To date, the SSP has built 550 community toilet blocks in the Mumbai slums which serve 800,000 customers. The SSP is a community-based demand driven approach for serving the needs of slum residents.

■ SSP Process

To have a SSP toilet block installed in a slum, a community must express demand for a community toilet and willingness to pay. Once demand is established, the community toilet is constructed with help from the BMC and an NGO who organizes the contractor and helps with paperwork. The BMC establishes a community based organization (CBO) which is responsible for management of the system. The CBO hires staff to service and maintain the toilets and collect payment from the community. This system has proven cost effective and sustainable. The SSP has been so effective in providing toilets, it is now looking to provide additional services to residents. ReachOut Water Solutions wants to expand on the success of the Slum Sanitation Program by providing de-centralized, community-run water services from these existing infrastructure centers.

■ Benefits of using the SSP

We see a number of distinct benefits from providing water services through the SSP.

1. SSP HAS EXPRESSED A DEMAND FOR A WATER SYSTEM This means that we have expressed institutional support from the BMC, the World Bank, and the community based organizations for a water program.

2. EXISTING INFRASTRUCTURE The SSP toilet blocks, which serve as an infrastructure services center, have already been built, reducing our up-front capital costs. Many of the SSP blocks already include bore holes.

3. EXISTING CUSTOMER BASE The SSP toilets already have 800,000 people who are currently paying monthly fees for improved services and make at least one trip a day to slum sanitation facilities. We hope to tap into these people as our initial target market.

4. PROVEN BUSINESS MODEL ReachOut Water Solutions can make use of the reliable and proven management system and business model in place at SSP toilet blocks.



MARKET DESCRIPTION

ReachOut Water Solutions will provide Mumbai slum residents with enhanced access to increased quantity and quality of water through an improved management system while maintaining an affordable cost of water.

OUR INITIAL TARGET MARKET FOR THE SALE OF water will be the 800,000 current SSP customers. Our ultimate goal is to meet the water needs of the at least half of the 4.4 million people in the slums who do not have in home piped water, or approximately 2.2 million people, by 2025.

■ Market demographics

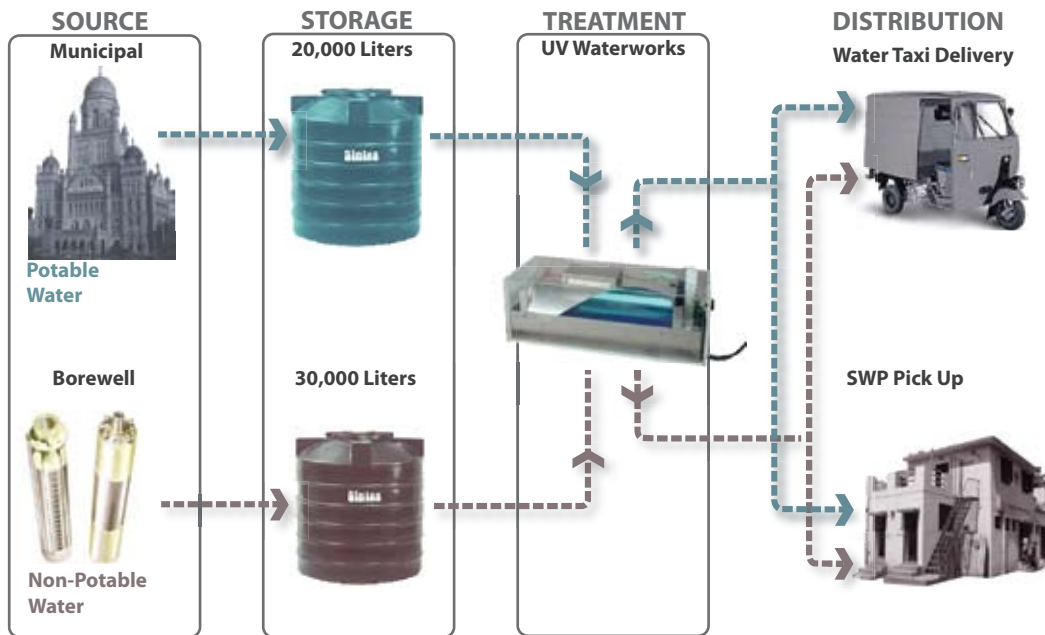
The average Mumbai slum household consists of a family of 4.2 people. This household makes a combined average of \$100 per month or roughly \$3.32 per day. They are largely uneducated (78.4 percent without any formal education), but not unskilled (72.6 percent of slum residents are considered skilled laborers). 48.7 percent of families live in squatter settlements. These are the informal huts and shacks that characterize the slums. Despite the poor housing, many slum residents are permanent residents of the slums. 40.7 percent of slum residents have lived in the slums since birth and an additional 34.9 percent of slum residents have lived in their current residence for more than 10 years. This suggests that while the housing quality may be poor, ROWS is looking at a stable, skilled base of customers for our water market, if we can develop a solution that fits within their modest income while creating an attractive product that sells based on more than just price.

■ The market for water

Based on the issues related to water supply and the demographics of the slum community, ROWS has identified a viable market for a water solution. Of the \$100 a Mumbai slum household currently makes in income,

they spend on average \$1.5 per household per month on water. Our goal at ROWS is to address the four major issues of water supply while keeping the cost of water at least the same level as slum residents are currently paying. By doing so, ROWS will add significant value to water provision without increasing the cost of water. This is the core approach to our water supply solution.

Specifically, we claim that the Slum Water Program will provide 50 L of water per capita per day, increasing the amount of water slum residents receive and improving their quality of life. This water will achieve 100 percent disinfection and lead directly to health benefits for the user. The SWP completely eliminates the time spent by women and children waiting for water which leads to increased opportunity for economic productivity by women and better school attendance rates from children. Finally, it will do so using 100 percent cost recovery principals and good management practices leading to long-term program sustainability. This approach directly addresses the needs of potential water customers, creating a product that saves the user time, improves the health of the user, and provides a greater quantity of water to the user, all while maintaining the amount of money the user is currently spending on water.



SLUM WATER PROGRAM

FIGURE 1
The Slum Water Program includes two water supplies, storage for 50,000 L of water, UV Treatment, and two methods of distribution.

■ Slum water program description

The Slum Water Program is ROWS's program to provide sustainable, low-cost water supply to the slum residents of Mumbai. There will be two types of customers. On a daily basis, we are targeting to serve 1500 community residents and 200 pay-per-use customers. The Slum Water Program combines source water storage with UV water treatment and a novel distribution system to supply 50 L of clean, low-cost water to SWP community participants and 10 L of potable water to pay-per-use customers at a reasonable rate. The SWP accomplishes this utilizing a proven management system. The SWP will be housed in the SSP building, utilizing its preexisting customer base and infrastructure.

■ Source water

The SWP will receive water from two different sources. The first source is the BMC. We have received confirmation that the BMC is interested and willing to install higher quality lines to our SWP locations. The supply would be sufficient to provide the SWP community with 20 L of drinking water per person per day. The second source of water will come from a bore well. The bore well utilizes the groundwater that is readily available from the high groundwater table of Mumbai. This groundwater is brackish due to the influence of the sea and is not for drinking, but can be used for bathing and cleaning purposes, as poor and wealthy Mumbai residents already do regularly. We will provide 30 L per person per day of brackish water for non-potable uses to community water users, which will

allow us to meet our stated program goal of 50 L per person per day. Additionally, we will provide 10 L of potable water to 200 pay-per-use customers each day.

■ Storage

Once the water enters our system, we will store it in large tanks located at the SSP building. These tanks will each hold enough water to supply the daily demand for water. The municipal and bore well storage will be separate. The municipal storage will include three 10,000 liter water tanks to store 30,000 liters of water at one time, which will allow us to store all of the 5 hours of municipal supply each day to meet our total need for 32,000 liters of municipal water daily. In addition, the bore well storage will include three 10,000 liter water tanks to allow distribution of 45,000 liters of non-potable water each day. It is important to note that the bore well water will be available on demand, so the storage will only provide for 2/3 of the quantity, while storage for municipal water will need to store nearly the entire quantity since the flow period is relatively short for a large quantity. The quantity of and ability to pipe the water from the municipal line has been verified by our contact at the BMC, Mr. Anan Jagtap.

■ Treatment

Once stored, both sources of water (the municipal and the bore well water) will be treated using UV water works units. These units use Ultra-Violet (UV) radiation to safely and effectively eliminate disease causing organisms. Each unit kills 99.99 percent of disease causing

The various components of the Slum Water Program require efficient management to ensure consistent, quality service for our customers.

organisms and can treat 15 liters of water per minute, or 10,000 liters of water per day. Not only are these treatment units effective, they are very low cost. One unit has a capital cost of around \$300 and an ongoing electricity cost of \$14 per year. This treatment step will allow us to meet our stated project goal of providing 100 percent disease free water, as opposed to the BMC's water of which 13 percent is contaminated. We will use 4 UV devices for the municipal water and 6 UV devices for the bore well water. Note that 10 devices will be used to treat the total 77,000 liters of daily water supply to avoid overuse of the treatment units and to provide backup units in case of a unit failure. Because the systems are simple, several of the staff members will be trained to maintain the devices and fix any technical malfunction.

■ Distribution

The final step in the process is the distribution of water. Users will have a variety of distribution options to choose from to meet their budget and delivery demands. One group of core users, the community customers, will sign up for a monthly water plan and can choose to have water delivered to their home via water taxi or they can pick water up at the SWP in 10 or 20 liter bottles, depending on how much they want that day. The community customers will have the opportunity to receive the 50 liters of water per day either by delivery or pick up from the SWP. The water taxis will be the three-wheel auto rickshaw, but equipped for water container transport. The monthly subscribers will make up the core of our business and pay a lower monthly fee. A surcharge will be added for delivery. The other option for purchasing our water will be a pay-per-use method. Customers can buy water from a street vendor in 10 liter bottles or they can come to SWP locations and purchase the water in 10 or 20 liter bottles. The pay-per-use fee will be higher than the monthly fees with a surcharge added to the vendor water. Having a pay-per-use option is important for slum residents that may not be able to cover the monthly fee, but can afford to buy daily water. The containers used for distribution are sealed, plastic containers that are compressible and easy to carry and transport. They will be available in 10 and 20 liter sizes. The community customers will trade bottles every day, so we can then clean the used bottles at the Slum Water Program. The pay-per-use customers will be required to place a \$.40 deposit on each bottle, which they will receive back upon returning the container. A payment summary can be found in Appendix A.

■ SWP management and staff

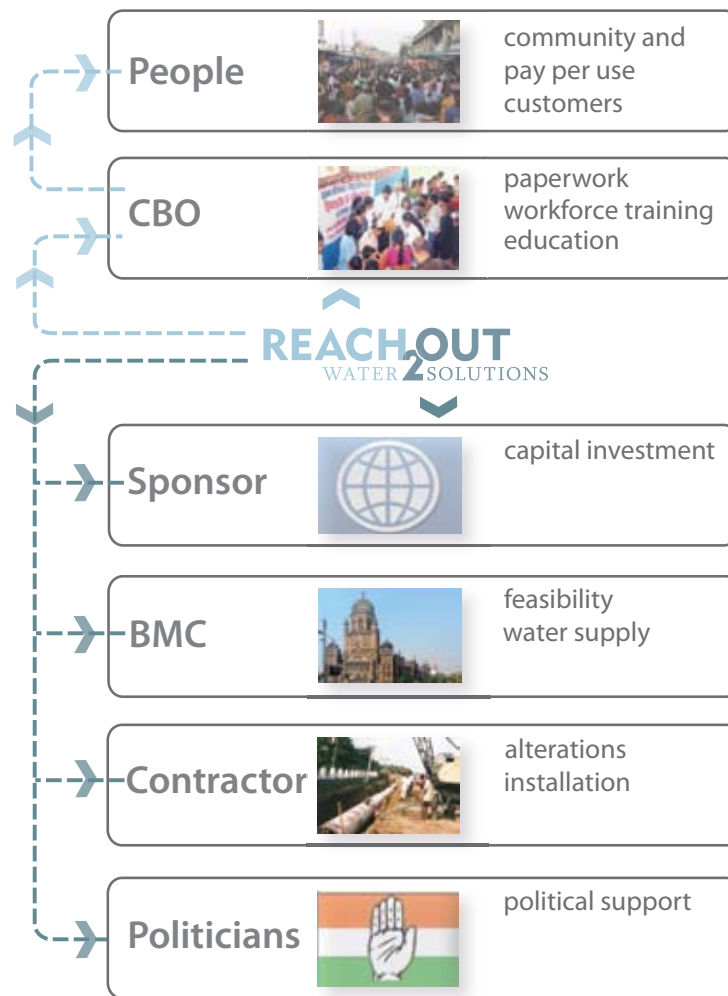
The various components of the Slum Water Program require efficient management to ensure consistent, quality service for our customers. Able individuals within the community will be appointed in consultation with the CBO, and trained by ROWS to perform the various tasks involved. The employees include:

1. THE MANAGER The manager is in charge of overall management of the technical system, operations, finances, and staff. The manager is a main point of contact for the community-based organization and ReachOut Water Solutions. The manager will work 10-12 hours per day.

2. SALES STAFF The sales staff is trained in customer service and the technical system. They are in charge of the customers that opt to pick up their water. They will also share responsibilities of day to day billing and accounts for all customers, as well as filling and cleaning the water containers. The sales staff will work 8-10 hours per day.

3. DELIVERY STAFF The delivery staff will be organized in four teams of two people. They will be in charge of the delivery of water to the customer's homes for community users and pay-per-use users. They will be trained to operate and maintain the water taxis, will assist with filling storage containers, and will be in charge of regularly sanitizing the water containers. The delivery staff will deliver water for 4 hours each day, and will work in the slum water program facility 4-6 hours each day, for a total of 8-10 hours per day.

4. MAINTENANCE AND SECURITY A full time on site staff person is currently employed by the Slum Sanitation Program for maintenance and security. Since he resides in quarters above the toilet facility, we propose to extend his duties of security and general maintenance to include the SWP facilities. While the SWP time requirements would be just 2-3 hours per day for this employee, he would provide an adequate salary to ensure the duties are performed.



ORGANIZATIONAL STRUCTURE

FIGURE 2
The Slum Water Program is a simple solution that requires involvement of multiple parties, including the people in the community, the CBO, ROWS, the sponsor, the BMC, the Contractor, and Politicians, to solve a complex problem.

THE SWP PLUGS INTO THE EXISTING

organizational structure of the SSP. ROWS will work to adapt the SWP structure for the SSP, while taking over the role of the BMC and NGO to manage the multiple agencies and processes involved through a single well-formed organization.

■ People

The slum residents must demand water services before ROWS can step in to help.

■ CBO

The paperwork required for establishment of the SWP will be handled by ROWS. In consultation with the CBO, capable individuals will be hired to operate and maintain the facilities of the SWP.

■ Sponsor

ROWS will be responsible for procuring a capital investment for the pilot project and ensuring a return on investment in a predefined time range.

■ BMC

ROWS will work with the BMC to establish water supply lines to the community toilets and ongoing municipal support.

■ Contractor

ROWS will find contractors to construct the necessary improvements to the SSP facilities to house the SWP- pumps, storage tanks, internal piping, UV waterworks devices and the dispensing system.

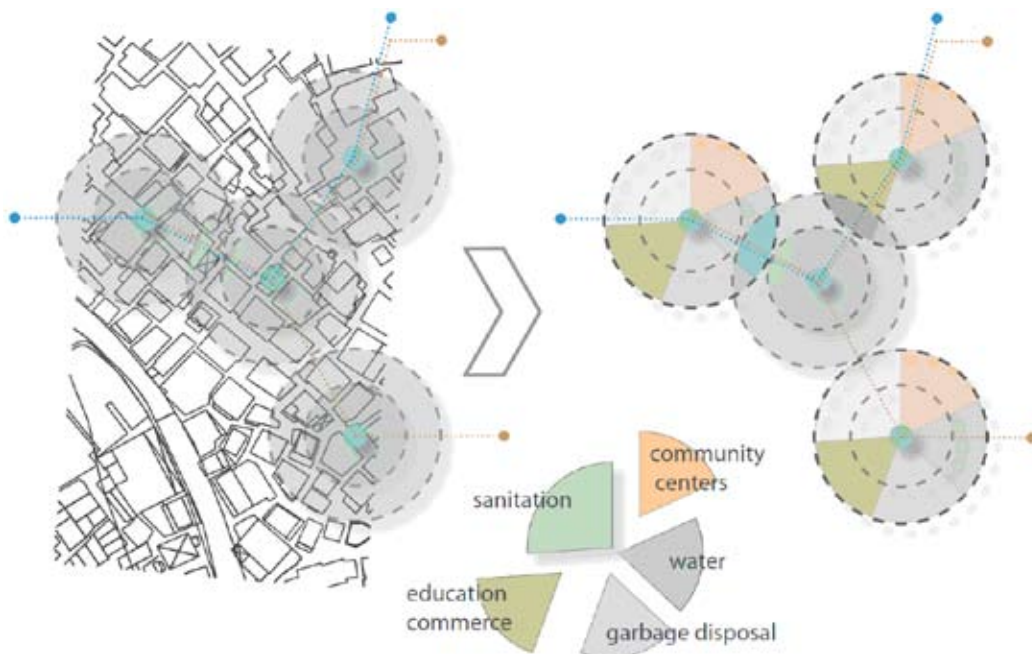
■ Politicians

Recognizing the importance of political support for the smooth implementation and operation of our solution, ROWS will work with local politicians to secure their approval and support.

FIGURE 3

**Water Program
Expansion of
Decentralized
Infrastructure Services**

Following full-scale implementation of the Slum Water Program, we hope to expand services to include utilities such as electricity, communications, and garbage disposal.



IMPLEMENTATION STRATEGY

THE REACHOUT WATER SOLUTIONS BUSINESS

plan builds off the success of the SSP in providing community-based de-centralized services to slum residents. The Slum Water Program will be implemented in three phases:

■ The Pilot Program

The Pilot Phase of the SWP implements one Slum Water Program facility. In consultation with the BMC a suitable SSP toilet block will be chosen as the site for the pilot project. This first facility will serve as a proof of concept for the SWP. It will identify areas of concern in the system and allow ROWS to refine its concepts and SWP strategy. Furthermore, the pilot project will serve as a demonstration of the efficiency of the SWP and as a prototype business model to be adapted to other SWP installations in the franchising phase. The success of the pilot project will be used as leverage to generate the capital investment necessary for following phases. The total pilot operating costs will be \$1,300 per month. The total income will be \$2,600 per month. Thus the total profit will be \$1,300 per month. We are looking at a time frame of 3.0 years for return on the capital investment plus 30 percent at an initial cost of \$37,000. This initial investment will cover the capital cost of the first pilot installation. In addition to paying back the investor with interest, the profits of the first phase will cover the operational expenses for ROWS. Detailed cost analysis of the pilot phase of the project is included in Appendix A.

■ Franchising

When the first SWP installation has proven to be successful and sustainable, ROWS will

move into the franchising phase of the business plan. The franchising phase aims to build 1,500 SWP units in 13 years. During the franchising phase, ROWS will extend the SWP to all SSP buildings (projected at 1500 units for 2025 based on current growth of SSP toilet blocks). This would mean that the SWP would be serving 2.2 million slum residents through its water supply system by 2025. To accomplish this expansion after the initial pilot phase, ROWS will require a one time capital investment of \$2.0 million. This will cover 5 years of ROWS operating expenses and the installation of 25 SWP installations. Once these initial 25 installations are generating income, ROWS projects will be self-sustainable and capable of covering the capital costs for the remaining 1475 SWP installations. This one time capital infusion will be acquired from venture capitalists and paid back through the course of the expansion plus a 30 percent return on investment. ROWS projects that this can be completed in 13 years after pilot study closure.

To generate this income ROWS will require an ongoing franchise fee from SWP units. This franchise fee will start once a SWP unit has successfully paid back the initial capital costs of the loan. This fee will be used to cover the institutional costs to maintain ROWS as a central financial, support, and institutional organization. The fee will cover the capital costs of financing new SWP installations and will be lower than the capital cost repayment fee. The savings will be passed on to monthly SWP users (average decrease in user fees of 20 percent). Detailed franchising income, expense and expansion projections are detailed in Appendix B.

■ Expansion and Diversification of Services

In the third phase of the program, the SWP will expand its community driven, de-centralized approach to service provision to other services such as garbage disposal, electricity, communication, and others. This will build off the success of the SWP and increase the quality of life for all slum residents.

SOCIAL VALUE OF THE SLUM WATER PROGRAM

In addition to the financial profit that the Slum Water Program will produce, the social return that will result from this clean, managed water supply is also of significant value. While estimating the true cost savings due to the Slum Water Program is challenging, it is simple to recognize the benefits and potential returns in health and time. For instance, with reduction of water borne disease to zero for the users of the Slum Water Program, less time will be spent sick. This means more time for adults to work and make money. In addition, women and children, who are often required to spend one to three hours per day waiting in line for and transporting water, would no longer need to do so. Collectively the women and children of Mumbai would save millions of hours each year in time spent collecting water.



COMPETITION

IN ORDER TO BETTER UNDERSTAND HOW THE SWP will fit into the water market, a competition analysis was undertaken. The five main competitors included in this section are the Brihanmumbai Municipal Corporation, Bottled Water, the Water Mafia, Point of Use Treatments, and Rainwater Harvesting.

up to several hundred percent inflated. While ROWS will never completely drive these sellers out of the market, we will certainly be out pricing them on a per unit basis. Additionally, once the ROWS brand becomes established and trusted as a clean water source, few slum residents will be interested in using these vendors.

■ Brihanmumbai Municipal Corporation

The BMC is able to provide water to slum residents at unit rates that are lower than the SWP can offer. However, the high cost of extension of in-home piping poses a significant financial barrier to slum residents. This barrier is what currently stops the 4.4 million slum residents in our target market from having in-home piped water. Thus we do not see the BMC as a significant competitor unless they are able to offer a lower cost of entry for service.

■ Bottled Water

Bottled water companies are a strong competitor to the municipal supply because their products are treated and sold at a reasonably low cost. There are currently at least 15 bottled water companies in Mumbai. Throughout Mumbai, these companies distribute the supply and one liter of water costs approximately 12 Rs, or about \$0.25 per liter. ROWS will overcome bottled water companies through our pay-per-use option by charging \$0.25 per 10 liters.

■ Water Mafia

The Water Mafia is a class of merchants who buy water from the BMC illegally and sell it informally to slum residents at increased prices

■ Point of Use Treatment

Point-of-use treatment options improve the quality of water. These are not in direct competition with ReachOut Water Solutions because we will provide a multifaceted treatment and quantity solution. However, these may compete indirectly. Because we treat our water for such a low cost using UV water works, we do not believe that point of use treatment will interfere with our business model.

■ Rainwater Harvesting

Rainwater harvesting systems essentially provide free water to the users. The main drawback to rainwater harvesting is the lack of rain during the majority of the year and the difficulties with safe storage of the water after the monsoons. Rainwater harvesting may affect ROWS during the monsoon, but cannot match the year round stability in safe supply that the SWP can provide.





RISKS OF THE SLUM WATER PROGRAM

SSP customers have exhibited willingness to pay for infrastructure services and have expressed interest in paying for de-centralized water services provided through these infrastructure nodes.

IMPLEMENTATION OF THE SWP IS NOT without risks. ROWS sees 4 major risks involved with our system and has taken care to mitigate these risks.

■ Government Cooperation

Working with government of Mumbai presents a potential challenge. The BMC is a large organization with a history of slow response to needs of customers. However, we have already established support of the BMC for our project and they have been working in support of the Slum Sanitation Program already for over 10 years. One of our most important resources has been the main BMC point of contact for the SSP, Mr. Anan Jagtap, who is in support of the SWP as well.

■ Variable Water Supply Rate

Since we are relying on the BMC to provide our drinking water supply, the SWP is subject to the same daily variation in supply as the rest of Mumbai. To address this, we will provide sufficient water storage to collect all water available to us. By maintaining a managed system, supply will be controlled and we will always obtain an adequate reserve supply. In the case adequate supply was not possible for the entire community, we would decrease the total number of customers and still maintain quality services to all of the slum dwellers we could serve.

■ Unknown willingness to pay for this specific service

SSP customers have exhibited willingness to pay for infrastructure services and have

expressed interest paying for de-centralized water services provided through these infrastructure nodes. Through the use of the pilot phase of our program, ROWS will be able to clearly demonstrate user willingness to pay.

■ Drinking water vs. multi-use water

One possible area for concern is that the SWP provides two sources of water: one that is safe to drink and one that is not. To mitigate possible risks associated with this, it is critical to clearly label the containers and provide community-based hygiene education.



CONCLUSION AND RECOMMENDATIONS

Investing in ReachOut Water Solutions will provide the sustainable, low-cost water solution the slums of Mumbai need.

AS CLEARLY DETAILED IN THE REPORT, THE slums of Mumbai deal with four critical issues of water supply: quantity, quality, access, and poor water management. ReachOut Water Solutions sees these four issues as areas of unmet need. This need, in-turn, is our entry point into the market as a water service provider. By mitigating the negative impacts of these issues while maintaining accepted payment amounts slum dwellers currently spend on water, ReachOut Water Solutions positions itself to become a major player in the Mumbai water market.

Investing in ReachOut Water Solutions will provide the sustainable, low-cost water solution the slums of Mumbai need. The careful planning and establishment of our business will not only repay the initial investment, but will allow our program to self-perpetuate into the future. The expansion of our programs will enable us to serve millions of slum dwellers in the greater Mumbai area by 2025, improving the overall quality of life for generations to come. Through our passion for this project and our confidence in this proposal, we look forward to bringing this solution to reality in partnership with investors who share our vision for the future of improved services and quality of life for Mumbai slum residents.

APPENDIX A: PILOT PHASE COST BREAKDOWN

TABLE A.1:

Pilot Phase Capital Cost Summary

Items	Units	Cost/unit	Cost
UV Waterworks	10	\$300.00	\$3,000.00
In Building Piping	1	\$500.00	\$500.00
Borehole Pump Upgrade	1	\$1,000.00	\$1,000.00
Building Modification	1	\$500.00	\$500.00
Municipal Piping Construction	1	\$15,000.00	\$15,000.00
Storage (10,000L Tanks)	6	\$1,000.00	\$6,000.00
Transport Containers*	7500	\$0.80	\$6,000.00
Auto Rickshaw	4	\$1,300.00	\$5,200.00
Total Pilot Capital Cost			\$37,200.00

*3750 containers required per day, need 100% extra for 24/7 container availability

TABLE A.2:

Pilot Pilot Phase Operational Cost Summary

Items	Units/day	Cost/unit	Cost/day	Cost/month
Staff				
Sales Staff	2	\$3.50	\$7.00	\$210.00
Delivery Staff	8	\$3.00	\$24.00	\$720.00
Manager Staff	1	\$4.50	\$4.50	\$135.00
Maintenance Staff/day	1	\$1.50	\$1.50	\$45.00
Operating				
Municipal Fee/1,000L	32	\$0.04	\$1.28	\$38.40
Electricity (UV)	4	\$0.25	\$1.00	\$30.00
Electricity (Borehole Pump)	1	\$0.25	\$0.25	\$7.50
Electricity (Building)	1	\$0.50	\$0.50	\$15.00
Repairs/Miscellaneous	1	\$1.00	\$1.00	\$30.00
Individual SWP Accrual	1	\$2.00	\$2.00	\$60.00
Total				\$1,290.90

TABLE A.2:

Pilot Phase Income Summary

Delivery	Payment	Liters per day	Number Customers *	Cost per customer per day	Income per day	Income per month
Collection from SWP	Monthly	250	150	\$0.05	\$7.50	\$225.00
Collection from SWP	Per Use	10	100	\$0.25	\$25.00	\$750.00
Community Delivery	Monthly	250	150	\$0.10	\$15.00	\$450.00
Community Delivery	Per Use	10	100	\$0.40	\$40.00	\$1,200.00
Total						\$2,625.00

*COMMUNITY CUSTOMER = 1 FAMILY FOR MONTHLY PLAN

MONTHLY PROFIT = \$1334.10

TIME TO RETURN INVESTMENT + 30% ON PILOT PHASE = 3 YEARS

APPENDIX B: FRANCHISING PLAN DETAILS

To model the expansion the SWP from the initial pilot phase through the 13 year plan, a detailed calculation was performed. First, it was assumed that each SWP would pay back the capital cost at a higher rate for the first two years following its creation. After two years, the SWP would pay a franchising fee that was 50 percent less than the capital cost fee to ROWS. This represents the ongoing income to ROWS. The start up fees are assumed. The first covers the installation of 1 SWP. The second comes after the installation of the first SWP and covers the installation of 25 SWPs and ROWS operating costs for 5 years. Base operating costs are detailed below in Table B.2. To these base operating costs, 5 percent of the total ROWS income was added to operating costs to cover the increased amount of responsibility ROWS would have as the number of SWP installations increased over time. At the end of every year, the total income left after operating costs was used to create more SWP installations. From this model it is predicted that in 15 years, our goal of 1500 installations would be met.

TABLE B.1:

Franchising Business Summary

Year	Operating Costs	Total Income	Total Installations
1	-	\$18,414.00	1*
2	-	\$18,966.42	1*
3	\$0	\$498,153.02	26
4	\$0	\$800,101.85	40
5	\$0	\$1,026,008.95	63
6	\$0	\$1,283,386.24	90
7	\$0	\$1,802,441.30	124
8	\$252,491.15	\$2,568,888.52	170
9	\$280,632.48	\$3,713,201.67	233
10	\$323,831.22	\$5,378,282.52	322
11	\$385,427.02	\$7,801,293.63	447
12	\$473,412.89	\$11,318,723.01	624
13	\$598,866.06	\$16,424,499.46	872
14	\$778,522.01	\$23,834,134.63	1222
15	\$1,036,598.85	\$34,587,022.75	1715

*Pilot Phase not included in franchise investment

TABLE B.2:

Franchising Operational Summary

SWP Base Operating Costs	Yearly Expense
Chief Executive Officer	\$30,000.00
Executive Assistant	\$15,000.00
Chief Financial Officer	\$25,000.00
Financial Assistant	\$15,000.00
Maintenance worker	\$10,000.00
Maintenance worker	\$10,000.00
Office Staff	\$10,000.00
Office Staff	\$10,000.00
Operational Budget	\$30,000.00
Total Operating Costs	\$155,000.00