



The Sustainable Village Water Systems Program (SVWSP) for Tanzania

The Franchise Model

About the Sustainable Village Water Systems Program (SVWSP) Program

The Sustainable Village Water Systems Program (SVWSP) is a multi-faceted initiative aimed at making measurable, far-reaching progress toward water and food security in Tanzania. It is led by The Ohio State University (OSU) and the University of Dodoma in Tanzania (UDOM) and executed with government, industry and NGO partners. The program consists of a group of interrelated efforts designed to both nurture sustainable development in the energy and water sectors in Tanzania and to develop the workforce that will be able to turn water and energy into business, prosperity, health and wellness.

The centerpiece of the SVWSP is a national water point rehabilitation effort that focuses on providing sustainable access to water, sanitation, and renewable energy for rural villages identified by the Tanzanian Ministry of Water. Given that one of the main factors in rural water system failure is lack of capacity for maintenance and repair, a key element to ensure the sustainability of the water system will be a franchise-based for-profit business model. The newly established franchise system will create mechanisms and incentives to independently maintain water points and create new economic activity tied to the continued functioning of the water system. Once a rehabilitated water system is in place, a community's assets, institutions, and training networks can be utilized to create new jobs, support additional infrastructure development in the community, and establish alternate revenue streams. Designed into each system will be the capabilities to support one pilot economic activity for the community, such as brick-making, mobile charging stations, aquaponics, livestock, or other forms of high-value agriculture. The goal is not simply to provide clean water, but also spur economic development that creates significant and sustainable change in each community.

A priority focus of the SVWSP is to strongly engage women in their communities. Women will be encouraged to become franchise-owners or operators, trainers and engage in the economic activity that results from the program. Since women bear the primary responsibility of gathering water and will reap the greatest benefit from the Village Water System, they are the biggest stakeholders in the success of

the project. Encouraging participation from women has been key to the success of other water projects in Africa.

“The [HESAWA] water projects are reducing women's workloads, distance travelled and liberate time for women who now can participate in other activities. Women have made a sustainable contribution to the program, mainly taking up roles based on the social division of labor. However, this is changing as both men and women have equal access to training to become village health workers and water pump caretakers on a basis of equal participation.”

- UNESCO report on HESAWA program, Tanzania (UNESCO, n.d.)

The initial phase of the SVWSP will target 125 villages and towns across Tanzania, primarily in the northwest and central regions of the country. Upon successful completion of the pilot, the Tanzanian government has committed to fund an additional 5,000 water points. In addition, this initial 125-site pilot will allow for on-the-ground lessons learned to be applied to subsequent sites.

A Village Water System – A Systems Approach

Each Village Water System will consist of a well, a solar-powered pump, water tank(s), water taps, and piping to distributed tap stands, as dictated by the population dispersion and the needs of the model economic activity chosen by that community. For larger communities and under certain aquifer conditions, additional wells and pumps will be constructed as needed. The goal is to have a source of water within 400 meters of all households, where feasible, and capacity to provide 25 liters per person per day for domestic needs, as stated in the Tanzania National Water Sector Development Strategy (2008). A core set of engineering designs will serve as the template for each Village Water System. This design will be modified as necessary to account for local characteristics such as water table depth, aquifer yield and recharge rate, topography, population concentration, presence of livestock, and other factors impacting the water point such as existing infrastructure or sources of contamination. Where possible, non-functioning water points will be rehabilitated. On a case-by-case basis, a new well may be installed when it represents the most cost-effective and sustainable approach.

“Improve affordability by right sizing: design and build assets that are appropriate for small-scale networks, so that cost-recovery prices can be kept as low as possible. Realistically assess demand and adopt design, construction standards and procurement rules to align network design with it.”

– World Bank case study review (Sy and Warner, 2014).

The Village Water Systems will use a standardized set of core parts in order to decrease the complexity of the design, the supply chain, and the repair /maintenance network. Preferred vendors will be identified that can reliably provide spare parts in country, with part warranties.

The objectives of the preferred vendor system are:

- to develop a reliable, long-term supply chain that can support a large, multi-year water point rehabilitation project in Tanzania involving up to 5,000 solar pump systems;
- to support standardization of water system design, implementation, operations and maintenance with in-country repair capacity, spare parts warehousing and logistics;
- to secure the lowest possible prices for water system components and construction materials; and
- to secure Master Ordering Agreements to lock-in long-term prices, standard ordering and delivery arrangements, warranty provisions, repair times, and other commitments.

Tanzanian manufacturers and suppliers will be prioritized whenever possible. MajiTech Engineering has been selected as the SVWSP in-country construction vendor and will procure construction materials and equipment from the preferred vendors. The current list of proposed vendors is:

Materials List	Preferred Vendors
Solar Water Pumping Systems <ul style="list-style-type: none"> • Electric motors • Controllers • Sensors and data communication 	<ul style="list-style-type: none"> • Lorentz • Grondfos • PEnA
Solar Panels	<ul style="list-style-type: none"> • Tata • PEnA • ReneSola • STG International
PVC Casing	<ul style="list-style-type: none"> • Plasco • Kibico
Cement	<ul style="list-style-type: none"> • Ndola Engineering Works • Cement Distributors Co. • Mbeya Cement Co. • Tanga Cement Co
Water Storage Tanks	<ul style="list-style-type: none"> • Kiboko • Silafrica • TriTank • PolyTank

The Village Water System will be designed to also support the pilot economic activity that is chosen by each community, e.g. brick-making, aquaponics, cell-phone charging stations, enhanced agriculture.

For instance, if the community decides to grow fruit trees, then the water system will be sited and sized to provide water for this activity. The economic activity chosen will need to fit within the constraints of the soil conditions, climate, the yield and quality of the aquifer, and the community needs and capabilities.

Sanitation facilities will also be constructed or rehabilitated in each village and supported by activities to promote healthy hygiene practices.

“Good sanitation and hygiene practices are essential to prevent contamination of water resources. Therefore, water supply and sanitation projects and hygiene promotion should be viewed as interdependent activities. Implementing them together leads to the greatest health benefit and is considered a best practice in the sector.”

- USAID Water Supply and Sanitation Sector Guidelines (The Cadmus Group Inc, 2015).

Sanitation efforts will focus on providing improved sanitation to schools and health clinics, and developing a supply chain for construction materials and spare parts.

The Need for a Franchise Model

Water points in rural Africa currently face a high failure rate (40% according to a 2015 Tanzania Water Point Mapping exercise), in part because communities are not always able to manage them on their own. To accomplish the goal of developing a sustainable system, we are proposing the implementation of a franchise model. The core philosophy behind the establishment of a franchise-based system for water delivery and maintenance is that a water point is more likely to be sustainable if individuals have a vested economic interest in the continual flow of water.

“A vibrant and diverse **local private sector is critical** to the delivery of [water] services, as a large body of research conducted over the past decade shows.”

- World Bank report, (Sy and Warner, 2014).

As pointed out in a Water for People literature review (Foster, 2012, p. 20), a market-based approach aligns commercial incentives with sustainability objectives. The SVWSP model creates incentives and controls to unlock these free market advantages while protecting the basic right of a community to clean water access. We believe this model can effectively address several existing problems that can prevent long-term sustainability of water projects:

- **Lack of financial resources:** the proposed franchise system establishes controls, metrics, and incentives that address the underlying issues that lead to a lack of sustainability.

“[This study] did not find any evidence at the village level that finding parts was a major problem; the **bottleneck is finding the funds to pay for them.**”

–WaterAid Tanzania report, (Moon, 2006).

“The clearest result from the study is that it is **poor financial management that is undermining sustainability** in the area studied.”

- WaterAid Tanzania report, (Haysom, 2006).

- **Lack of knowledge and institutional capacity:** pre-installation and ongoing training as well as written service contracts will equip the community and franchise partners with the necessary skills and structure to independently manage Village Water Systems.

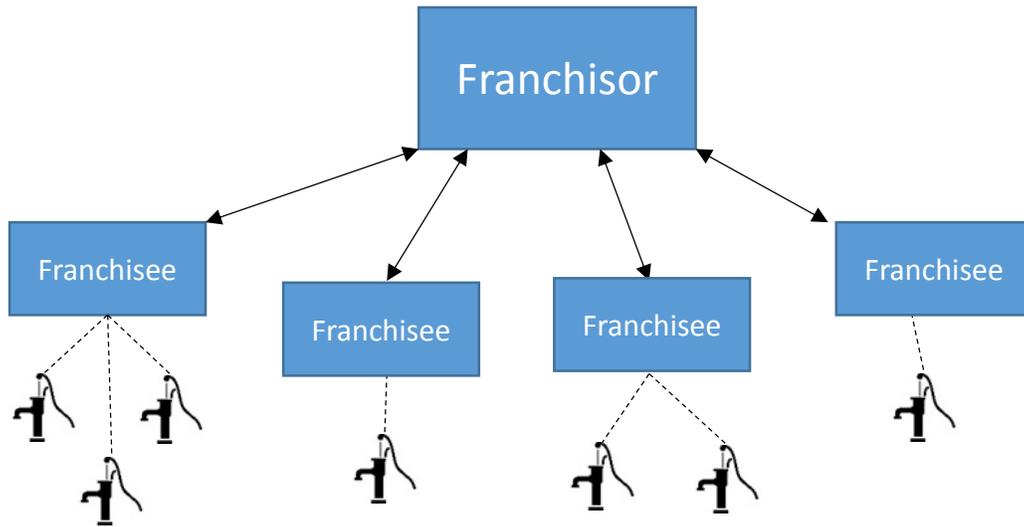
“[An] important aspect is the **need for capacity building and institutional strengthening...** capacity of institutions must be considered if they are to be able **to fulfill the necessary support role effectively**, and appropriate institutional strengthening may be required at various stages.”

- *Rural Water Supply in Africa*, (Harvey and Reed, 2004).

- **Lack of access to service and parts:** the components of the Village Water Systems will be standardized and the franchisees will maintain a supply of commonly needed parts and be professionally trained to do preventative maintenance and minor repairs. The franchisor will commit to training mechanics, maintaining a supply chain for parts distribution, and performing major repairs. The burden on the community therefore will be reduced by having service delivery provided by professionally staffed organizations with qualified and certified technicians (Carter, 2012).

“*Standardization of Technologies.* The wide dispersion of technologies poses costs in terms of availability of spare parts and the local knowledge to deal with the different technologies. **Standardizing technologies and setting minimum standards**, such as hand pumps **may reduce the cost of spare parts** whereas **economies of scale** may also have a positive impact on the price of such technologies.”

Figure 1: Franchise System Design



- World Bank Public Expenditure Review of the Water Sector, Tanzania, (van den Berg, et al., 2009).

The SVWSP Franchise Model

A franchise system is one in which a party (the franchisee) pays another party (the franchisor) a fee to license the right to proprietary knowledge, products, processes, or trademarks in order to sell a product or service under the franchisor's name. A franchise system provides benefits of scale and consistent branding at the franchisor level, while enabling local entrepreneurs to implement the business model at the community level. A franchise system helps implement a brand promise and standard of quality throughout the system, which consumers can rely on. The franchisor establishes the franchise system and brand standards, provides the necessary intellectual property, systems, logistics, and training and development while the franchisee manages day-to-day operations. Franchised-based models in the WASH (water, sanitation and hygiene) sector are not new to the developing world. For example, Sarvajal runs a franchised water kiosk system in mid-sized villages in India. Sanergy has developed a franchised brand of fee-for-use toilets in urban Kenya. Jibu sells bottled purified water through franchisee kiosks in urban areas of Rwanda and Uganda. Water Health International (WHI) builds and operates branded clean water centers in India, Bangladesh, Philippines, and Ghana that exhibit some aspects of a franchise model.

In our model, there will likely be one or two franchisors responsible for all Village Water Systems installed in Tanzania. As shown in Figure 1, the franchisor will partner with many franchisees, each of whom will manage either one Village Water System or a cluster of them. Several parties are involved in the proposed franchise model, which creates checks and balances within the system. This helps mitigate the risk of fraudulent behavior and decreases the need for outside intervention to ensure ongoing sustainability.

“The service provider, regulator, user and asset holder have importantly different interests with respect to a water supply. Where these roles are each performed by different members of the village, stakeholders, in their respective capacity, can pursue the interests of their position free of internal conflict, thereby better fulfilling the requirements of that role.”

- WaterAid Tanzania, (Haysom, 2006)

The detailed roles and responsibilities of each party in the model and the reporting structure are provided in the Appendices, but in short, the responsibilities of the key roles are as follows:

- **Franchisor:** a newly created entity, backed by an in-country management team with extensive business experience. The franchisor is primarily in the business of supporting the franchisees and their number one priority is the success of the local franchisees. The franchisor is responsible for identifying and recruiting franchisees as well as providing the training, marketing, and field support necessary for the franchisees to be successful. They will also maintain a supply chain by working with the preferred vendors to order replacement parts and distribute them to the franchisees. This will likely be implemented with several parts depots strategically located throughout the country which stock the higher cost, longer lead time parts. The franchisor will also employ a network of local area mechanics to conduct major repairs on the water points and a cadre of field support consultants who will provide business support to the franchisees.
- **Franchisee:** a newly created small business who is primarily in the business of delivering the end product to consumers. They are responsible for the day-to-day management of the water points. Tasks required to fulfill this role include collection of user fees, employing and managing attendants and security personnel, keeping financial records, conducting local marketing efforts, completing minor repair work, maintaining the equipment and site in clean working order, and

cultivating relationships with the local COWSO. The franchisee will also have a supply of lower-cost/high-use parts and supplies on-hand.

- **Community Owned Water Supply Organization (COWSO):** a community-based organization that represents ownership of the physical assets and whose main purpose is to represent the community's interests and perform a local oversight role over the performance of the franchisor and franchisee. In many communities a form of COWSO already exists at the village level, so these new responsibilities can be included with those of the existing organization.

A standard Franchise Agreement will be developed which is a contract between the franchisee and franchisor and governs the relationship between them. This document will provide the guardrails to the franchisee for running the operation and highlight the support provided by the franchisor. In addition, a Water Services Agreement (WSA), developed for each Village Water System, will codify the SVWSP franchise system. The WSA will be the legal basis for operating the water point and will provide a transparent relationship between the community and the franchise partners. In this way, the community's right to water will be respected and financial incentives to provide this water will be created for the franchise partners.

Pre-Installation Activity

Before a Village Water System is installed, a site assessment will be conducted to learn more about the existing hardware (infrastructure and water assets) and software (human and institutional capacity). The site assessments will review in-place infrastructure, engineering constraints, existence and capabilities of community organizations (COWSOs), current water management structures, and existing sources / uses of water. In addition, the local presence of NGOs will be surveyed with the intent of leveraging their knowledge of the community, particularly with regard to areas of greatest opportunity for economic development, and to develop a partnership through which the community can receive support and training as described below. The community will also be consulted to determine which model economic activity will be supported by the proposed water system. These assessments will help determine the level of investment needed to rehabilitate the existing water point and whether additional boreholes will be needed to adequately provide the community with enough water for both domestic and enhanced economic uses. The assessments will also help start the process of building community support and buy-in for the Village Water System and the accompanying franchise model that

will help assure the sustainability of the water and the economic development. To date, 45 sites have already been assessed.

After the assessment, but still prior to installing a Village Water System, training will be conducted in order to increase the human and institutional capacity within the community. This approach follows best practices in the development field as noted in USAID Water Supply and Sanitation Sector Guidelines: “Also important are educational and participatory efforts to encourage sustainable behavioral practices” (The Cadmus Group Inc., 2015).

It will be important to conduct a transparent process in developing the Water Services Agreement so that the community fully understands the costs and benefits that the franchise system will create. A respected party who the community views as independent or impartial should be involved, since aspects of waterpoint management and fee collection will be taken out of the community’s control and given over to a private operator. This role may be filled by a local NGO that is active in the area or a community leader. The goal of this process is to involve the community in order to gain their buy-in and create a sense of ownership over the process and subsequent outcomes.

Another important pre-installation activity will be improving the community’s knowledge of clean water, sanitation, and associated health outcomes. A case study review by Hystra found that social marketing to the economically disadvantaged should be a growing emphasis of social entrepreneurship in order to increase penetration and create lasting change (de Carvalho, *et al.*, 2011). These initial efforts will likely be NGO-led, though contracted by the franchisor, and will focus on general health, hygiene, and sanitation training for the community at large, with an emphasis on involving local women as trainers. The core idea is to create a network effect through involvement of the women in the local community, thereby changing the perceptions and practices for the next generation. Community members will learn best practices for hygiene and sanitation. Subsequent social marketing efforts emphasizing the health and economic benefits of clean water will be carried out by the franchisee (in conjunction with the franchisor) to stimulate demand for the service.

Members of the COWSO will need to be trained to fulfill their financial management, reporting, and oversight roles specific to the franchise system. Even in communities where COWSOs already exist, training will be provided to ensure sufficient capabilities exist and to enable a smooth management transition to the new franchise system. This will likely need to be led by an independent party, such as a

local NGO, in order to avoid any perceptions of a conflict of interest between the franchise partners and this oversight role.

Selection and Training of Franchisees

Recruitment and selection of franchisees will be crucial to the success of the franchise system. A list of qualifications will be developed based on the requirements of the franchisee role. Identifying local women capable of fulfilling this role will be a priority of the recruitment and selection process. In some locations it might be difficult to find someone who meets all qualifications. This will likely require a higher level of involvement from the franchisor to ensure success of the local franchise. At a minimum, local franchisees will need to be highly motivated, well-respected in the community, and have the desire and capacity to learn how to run a small business as opposed to simply being an employee of the franchisor.

While recruitment efforts of local franchisees will focus on identifying people capable of filling the role, on-board training will still need to be conducted to ensure they are equipped with the necessary skills to run the franchise. This training will help develop general business skills, including accounting and financial management, as well as skills specific to operating and maintaining the Village Water System. Additionally, responsibility for ongoing social marketing of clean water will fall in-part to the local franchisee. Upfront training for franchisees will be provided by the franchisor. However, this training will not be sufficient for most franchisees to reach their full potential. Ongoing operational support will also need to be provided to help the franchisees learn from best practices and continue to improve their profitability. Therefore the franchisor will employ Field Support Consultants who will help the franchisees on an ongoing basis (their role is described in the next section).

Franchisor Workforce Development

The franchisor will train and employ a network of full-time local area mechanics. Each mechanic will be responsible for a cluster of villages, with the number based on required maintenance schedules and route optimization. The franchisor will be responsible for training and certifying the mechanics through an education program conducted by UDOM or the franchisor. This training program will provide a standardized certificate that lends credibility to the skills of the mechanics and acts as a guarantee to the quality of the support system for the water pumps. In addition to knowledge transfer and the creation of jobs, this will also address the need for skilled labor that prevents many pumps from being repaired.

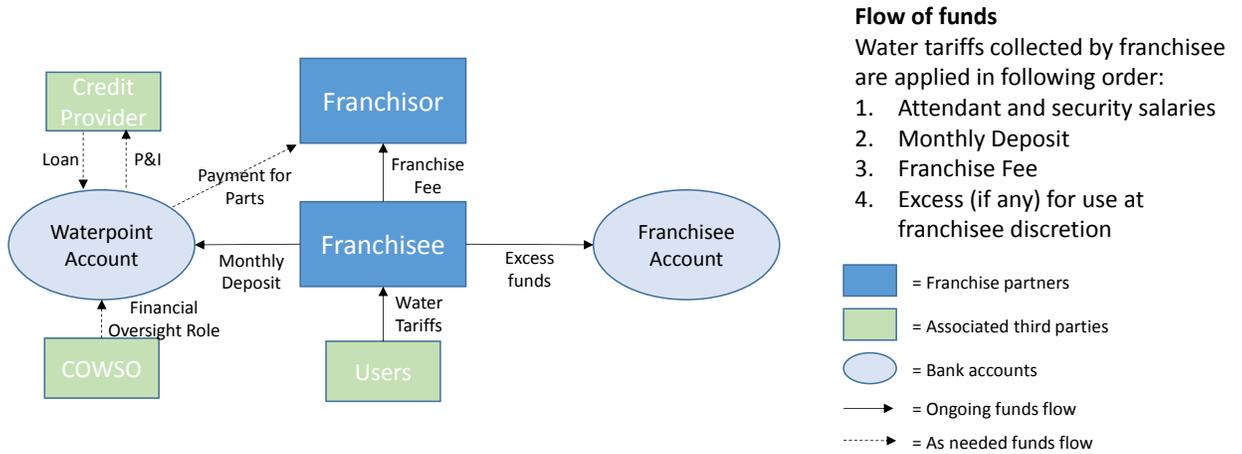
The franchisor will also train and employ a network of field support consultants. This field staff will act as the direct communication line between the franchisor and the franchisees. Their primary goal is to help the franchisee be as profitable as possible, while operating within the terms of the Water Services Agreement and the franchise agreement. It is important to note that this role is not intended to be the franchisee's supervisor or boss, but rather a consultant who is an employee of the franchisor and able to provide support to the franchisees. The field support consultant will provide business consulting on costs, staffing, marketing, and record keeping with the end goal of improving the profitability of the franchisee. They will also ensure that brand standards are maintained at the local level and identify problems at a franchisee level before they lead to non-performance or default. Field support consultants will need to be highly educated individuals who have great interpersonal skills and are willing to travel throughout their region to visit each site on a regular basis.

Franchise System Financial Flows

Figure 2 shows the financial flows in the Franchise Model. The flow of funds need to be designed with 3 key ideas in mind:

- Incentives need to be designed to encourage all parties to keep the Village Water System up and running and for maintenance issues to be addressed quickly.
- Checks and balances need to be in place so that the community is confident that each party is acting in their best interest.
- Financial resources have to be available when major repairs are required so that downtime is minimized.

Figure 2: Flow of Funds



Prior to the commencement of operations, the franchisor and franchisee will each submit a refundable deposit into a Waterpoint Account for each Village Water System for which they have entered into a WSA (the Franchisor Bond and Franchisee Bond, respectively). These bonds will serve as a guarantee for the performance of the franchisee and franchisor, and will be used to cover expenses or loss of revenue caused by the non-performance of certain obligations by either party.

In the normal course of operations, funds from user tariffs will be collected by the franchisee and distributed to the franchisor and the community’s water fund, as follows:

- On a daily basis, an employee of the franchisee collects user tariffs at the point of sale.
- On a monthly basis, the franchisee will deposit a fixed amount (the Monthly Deposit) into the community water point’s bank account (the Waterpoint Account). The Monthly Deposit amount will be set in the WSA and will be sized in order to cover anticipated major repairs. Additionally, over the long run, the cumulative amount could be useful for absorbing fluctuating revenue flows and other seasonality in the system.
- On a monthly basis, the franchisee will also remit the Franchise Fee to the franchisor (TBD fixed / % / mix).
- Revenues collected in excess of the Monthly Deposit and the Franchise Fee are for the use of the franchisee to pay expenses and retain as profit.

User Water Tariff

This tariff will be based on a per liter rate, as agreed upon with the community in the Water Services Agreement. A WaterAid Tanzania report found this approach to work in the field: “One practice that seemed to improve revenue collection in Dodoma was payment per bucket, as opposed to ad hoc, annual or monthly contributions. This is due to the fact that the payment method is inescapable, simple and transparent” (Haysom, 2006). Appendix 3 outlines alternative tariff structures and identifies some of the advantages and disadvantages of each.

Payment forms under consideration are cash, mobile payment services, prepaid water cards / tokens, or bartering in pastoral areas. Cash has the benefit of universal access and ease of use but is easy to misappropriate. Mobile payment services are more secure and transparent but require the user to own a mobile phone and have cellular service at the time of payment. Prepaid cards / tokens also reduce the likelihood of theft but add a layer of complexity and expense to the system. Mobile money services such as M-Pesa also incur fees for the user and the franchise partners, and only 35% of Tanzanian households have an account (Economides and Jeziorski, 2015). To the extent that a low burden / cost prepaid card system can be implemented, this is likely the best form of payment to ensure universal access as well as transparency and financial control. Sarvajal uses a prepaid card as a cashless point of sale payment system utilizing cloud-based RFID (radio frequency identification)-enabled water vending machines in each of the villages. A realistic approach will likely combine a prepaid card or mobile technology while retaining the ability for consumers to pay cash on site in the short term while migrating to a technology-based transfer for long term sustainability. The payment will also need to accommodate options for non-cash payment, for instance paying with livestock, crops or bartering other services.

Once the system is in-place, the model can be adjusted to create tiered pricing based on service and consumption needs. For instance, a delivery system can be set up to deliver water to a household for an added fee, thereby freeing time for the woman of the household to pursue alternate employment opportunities or engage in educational activities. Additionally, depending on the purchase pattern during the day, differentiated pricing models can be used as a way to spread the demand evenly across the day for better utilization and to suit the convenience needs of the customer. For example, water can be charged at a premium during the rush hours such as morning or evening time while a lower rate can be applied during the afternoon. In addition to increasing the profitability of the model, this opportunity also provides an option for low-income households to have access to clean water by leveraging the differentiated pricing with slight modifications in their needs.

Repairs and Maintenance

Repair and maintenance responsibilities for the Village Water Systems will be split between the franchisee and the franchisor. The franchisee will be responsible for minor repairs and maintenance, which includes keeping all above-ground infrastructure in good working order. They will be supported in this role by training provided by the franchisor, as well as operational handbooks in English, Swahili, and pictorial format. The franchisee will keep a stock of routine parts (list TBD) so that there is no delay in addressing routine maintenance issues. The franchisee will also have a technical support number to call (staffed by the franchisor) if they have any questions.

The franchisor will be responsible for conducting site inspections on a regular basis, completing more significant repairs to the electrical systems or in-ground pumping systems, and maintaining a parts supply chain. As noted above, there should be regional parts/supply depots to facilitate rapid access. The franchisor will employ a network of local area mechanics who will visit each Village Water System on a regular schedule in order to inspect the condition of the infrastructure and perform scheduled preventative maintenance. These routine maintenance visits will keep the warranty agreements with the preferred vendors in good standing and will help to reduce the overall repair and maintenance costs associated with the equipment. The mechanics will also visit villages, as needed at the request of the franchisee, to complete repairs beyond the expertise of the franchisee.

The franchisor will also manage a supply chain of parts and components. To standardize all the maintenance/repair parts in the system, the franchisor will order parts from a list of vetted preferred vendors, as described above. The supply chain will be designed so that major components can be delivered to the community and the mechanic can make any necessary repairs within 96 hours (note: this number might be modified as the on-the-ground details of the supply chain and transportation network are determined). An inventory of minor parts such as gaskets, tap spouts, and piping will be kept on hand by the franchisee and re-ordered in batches from the franchisor.

All parts will be purchased by the franchisee through the franchisor in order to take advantages of purchasing economies with preferred vendors and to maintain an acceptable standard of quality with replacement parts. The labor of the local area mechanics will be provided to the franchisee by the franchisor as part of the Franchise Fee. No additional payment will be required for their routine inspections or one-off maintenance visits. It is important to create a fee structure that does not discourage a franchisee from soliciting the services of the trained mechanics when necessary. However,

there may need to be limits placed on the number of free on-demand mechanic visits so that they do not become overburdened with unnecessary requests by the franchisees.

Financing for Water Village System Repairs

When major repairs are necessary, funds will be withdrawn from the Water Point Account and paid to the franchisor for necessary parts and labor. The COWSO, franchisee, and franchisor must all approve disbursements from the Water Point Account. This multi-party sign-off adds accountability and will help prevent siphoning of funds for purposes other than repairing the infrastructure. If funds in the Water Point Account are insufficient to cover the cost of necessary parts, a third party credit provider will guarantee to arrange financing to cover the cost of the replacement parts. The terms of credit extended to the Water Point Account will be established as part of the WSA in order to avoid repair delays as a result of arranging or negotiating financing terms. The third party credit provider will be able to pool water point loans across the entire franchise system in order to mitigate risk from any single site. Loan repayments will be made from monthly disbursements from the Water Point Account, not to exceed 50% of the Monthly Deposit (to ensure funds in the Water Point Account continue to build while loans are outstanding).

An alternative source of financing could be derived through charging a per-well license fee from the franchisees, which would be pooled across water points. These funds would be used to provide financing to repair water points if funds from the Water Point Account are insufficient (concept derived from Foster, 2012).

Branding and Marketing

The franchise system will be presented as a single brand across the entire system. Utilizing a single branding image will aid in marketing efforts that tout the quality of the water and the benefits of paying for clean water from the franchise as opposed to using free unimproved water sources.

The branding will stand for quality, reliability, and affordability. Quality is delivered to the consumer by having high standards for cleanliness, clarity, and taste. Reliability will be delivered by water flowing every day of the week with minimal downtimes for repairs. Affordability does not mean free, but a reasonable rate enabled by the efficient delivery of water created by the SVWSP franchise system.

Performance Incentives

“The introduction of a private operator (PO) also served to **dramatically improve revenue collection...Flat-rate contributions and a punitive bond** are highlighted as important elements of the private operator’s contract.”

- WaterAid Tanzania report, (Haysom, 2006).

Payments to the franchisee and franchisor within the franchise system are designed to incentivize all parties to keep the Village Water Systems in good working order. By requiring a fixed payment to the Water Point Account regardless of collections, profit for the franchise partners is dependent on a high level of performance. In addition, non-performance can lead to a deduction from the franchisee and Franchisor Bonds and a loss of investment for the franchise partners.

Both the franchisee and franchisor will have additional performance incentives and penalties built into the WSA, based on important performance metrics. Harvey and Reed cite these types of clauses as important for private operator arrangements: “Contracts with private contractors should be devised to ensure service quality standards and to permit the enforcement of fines or penalties for failure to meet standards” (Harvey and Reed, 2004).

Incentive 1: A key to water system sustainability is a high level of service. In order to further incentivize the franchisor to act swiftly and comprehensively in the case of an outage, a penalty mechanism will be put in place as follows:

- After a reported outage, the franchisor will have a 96 hour grace period to restore service (may vary depending on the severity of the issue). After this grace period, the franchisor will be required to deposit, into the Water Point Account, the daily-prorated portion of the Monthly Deposit until service is restored.
- The franchisor and franchisee will be held accountable for the number of operational days per month. Additional penalties will be put in place if water is not available to the end-consumers for more than 6 days per month (the 6-day buffer period is contingent on the feedback from the pilot study pertaining to the water point locations and realistic responsiveness of the in-country supply chain).

These penalties will both incentivize the franchisor to restore service in a timely manner and will help maintain long-term financial sustainability of the Village Water System by depositing additional funds into the Water Point Account.

Incentive 2: Two necessary contributors to financial sustainability of each Village Water System are (i) consistent collection of tariffs and (ii) deposit of these collections into a secure account.

- A benchmark tariff collection percentage (actual revenue divided by revenue based on metered flow) will be set for the franchisee to achieve. If franchisee revenue is below this benchmark, the franchisee will be required to fund the deficit from their share of excess proceeds to make whole the Monthly Deposit and Franchise Fee payments.

While there is a concern that a private operator would siphon off funds for themselves, a 2006 WaterAid Tanzania study found that private operators are much more likely to provide greater efficiency in fund collections than autonomous water-committee managed sites (WaterAid TZ, Moon).

Mitigating the Risks to the Sustainability of the System

As with any large-scale and innovative project, there are several risks to the long-term sustainability of this business model. We have tried to predict the potential issues and build mechanisms to mitigate these risks.

Inadequate yield from the water point to meet demand – The water flow might not be sufficient to meet demand, decrease over time, and/or the water quality may become unacceptable.

- Pre-construction site assessments will be conducted to determine population, demand and aquifer yield estimates in order to properly size and locate the water systems. Water quality testing will also be conducted to verify that the water meets acceptable standards for consumption.
- Monitoring systems will be put in place to regularly assess the flow of water in and out of the borehole, so that the franchisee and franchisor can get regular information on the performance of the well and can proactively foresee issues, for example the aquifer drying-up or the borehole silting up. In addition, a technician hired by the franchisor will regularly visit each water point to assess the flow and quality of the water. This will help proactively address any issues with the site and anticipate the need for new drilling before it arises.

Insufficient demand from the community at the given price - Some communities may be reluctant to pay for water, particularly if they have received it for free in the past. In addition, not all community members will be able to pay or feel that the water is worth spending precious resources on.

- Several activities will help stimulate demand:
 - During the pre-installation phase of the project, NGO partners will be contracted to conduct community education and awareness programs around the benefits of clean water (as opposed to previously accessed “free” but illness-causing water sources).
 - On an ongoing basis, NGO partners will provide sanitation and hygiene training to ensure that good practices reinforce the health benefits of clean water. Alternately, after the initial training by the NGOs, local women in the community can be employed to become the champion in their circles, spearheading ongoing awareness efforts and motivating the local community for change.
 - The tariff rate will be agreed upon in advance in the WSA so that all parties are aware and issues of inequity can be addressed prior to installation.
 - Consistent branding across the franchise system will build trust in the quality and reliability of the water services provided.
 - The systems approach to SVWSP includes creating economic opportunities for people in the community by creating new business activities. The goal is for these opportunities to improve household incomes, making it easier to spend money on water.
- A tiered-pricing model can be used so that the price is lowest at the water point location, but consumers can choose to pay more to have the water delivered. Water required for economic activities will also be charged at a higher price. This model takes into account a form of price subsidization to create low-cost options for consumers.

Misappropriation of revenue, either via uncollected fees or theft of fees

- Sensors will be installed in each system to monitor the amount of water pumped, which can then be compared to the revenue collected in order to enforce the franchisee’s benchmark collections percentage requirement.
- Monthly reports from the COWSO, franchisee, and franchisor are submitted to the district water engineer. Multiple levels of reporting from parties with varied interests will help to discourage dishonesty as this would be evident in irreconcilable reports, which could be audited by a third party (e.g. -district water ministry or NGO).

- Only employees of the franchisee will have access to the pump and water tap, so community members should not be able to obtain water without first paying for it. The employees of the franchisee would be responsible for operating the pump on a day-to-day basis, thereby limiting the scope for unauthorized water consumption.
- Mechanisms will be created within the community to provide an allocation of water for the extremely poor and disadvantaged. This will reduce the social pressure to provide water free of charge to those unable to pay and will be accounted for in the financial viability of the system.

Frequent equipment breakdowns

- The franchise system establishes the franchisor as a capable party responsible for all major repairs.
- Delays due to routine repair and maintenance issues will be minimized as the franchisees will be trained to conduct the work and will have an inventory of parts on hand.
- The franchisor is required to conduct regularly scheduled inspections and routine maintenance to prevent avoidable equipment breakdowns.
- The franchisee is incentivized to complete minor repairs and report major repairs in a timely manner as downtime directly affects their revenues.
- The franchisor is incentivized to complete repairs in a timely manner due to the operational days penalty mechanism.
- On-site pump operators are trained on appropriate use of the system to avoid over-pumping (e.g. by manually turning on the solar-powered pump for prolonged periods of time) or other inappropriate use
- NGO partners provide training on the health and economic benefits of the entire Village Water System to discourage theft, repurposing of parts or other misconduct.

Lack of third party service providers - Harvey and Reed note that “Private sector provision of spares is not, in general, a viable option on the basis of profit alone. Where spares supply is linked to other private sector activities such as technical services for construction, operation and maintenance, and the provision of pumps and equipment, it is much more likely to be sustained” (Harvey and Reed, 2004).

- Multiple responsibilities and sources of cash flow have been bundled into the franchisor role. This approach ensures that the franchisor will have consistent revenue streams and that vital,

but less profitable, functions will still be undertaken, since failure to perform one duty puts at risk the franchisor's rights to the other sources of cash.

Seasonality - Franchisees are likely to experience seasonality in demand for water due to variations in rainfall during the rainy and dry seasons. During periods of high rainfall, alternative sources of water are available and present a compelling cost-benefit trade-off for the rural poor. A World Bank case study report on private operators notes that consumers "are savvy about making trade-offs between price and value in choosing their water source" (Sy and Warner, 2014). Grundfos LIFELINK installations have seen a 65% decrease in demand during the six wettest months, while Vergnet-managed water sales in Burkina Faso were 28% lower during the rainy season.

- The required amount of the Franchisee's Monthly Deposit can be structured to be variable to account for these revenue fluctuations. However, some expenses will not be seasonal, like an attendant's salary, scheduled maintenance, and repairs, so franchisees will need to prepare for this.
- Tariffs can be varied throughout the year to try and smooth revenues for the franchisee, potentially encouraging a different mix of domestic and commercial consumption during the year.

Unanticipated delays to franchisor breakeven – The franchisor business model requires a minimum level of services regardless of the number of franchisees. This could result in an initially high level of fixed costs relative to the number of positive cash flow water points. A wide geographic dispersion of the initial 125 pilot sites might require that field consultants and mechanics are employed in areas that do not have enough sites to support their salaries. If site development does not proceed as quickly as planned, these fixed costs may result in operating losses for the franchisor for longer than anticipated. For this reason, the franchisor will need to be well capitalized and run by management with a long-term view and commitment to making the system viable. Without sufficient support from the franchisor, the franchisees will fail as well.

Inability to find qualified people to fill necessary roles – the franchise system depends on having highly capable individuals to fill several key roles – franchisor management, franchisee management, and field support consultants. To the extent that these people are difficult to find in all regions of the country, training costs will need to be higher or salaries may need to be higher than anticipated in order to attract a highly in demand workforce.

Issues Requiring Further Exploration

While the Franchising Concept Team has put a lot of time into developing these ideas and getting initial input from experts, we continue to collect feedback and refine the concept and the details. We will not integrate the Franchising Concept into the SVWSP model until we are confident in every aspect of its design. The Team welcomes all feedback, critiques and ideas, but some of the issues that we know we need to address are the following:

- We do not want to deny anyone the right to water, so we would like to have a mechanism in place so that individuals who cannot afford water are still able to acquire some.
- We know that it is critical that the program has support from the community, so we need to identify the best process for building and sustaining community buy-in.
- We need to think through how the relationships between all the involved parties will be managed - in particular the relationships between the NGOs, the COWSOs, the franchisors and the franchisees.
- We need to determine many of the financial details, such as the amount of the monthly deposit to the Water Point Account and to the franchisor. We are working on building the detailed business case that will demonstrate profitability for all parties under varying assumptions.
- Not all franchisees will be successful, so we need to specify default and termination conditions for franchisees and how to manage these terminations and find replacements.
- Identifying and selecting the right people to run local franchises will be critical to the financial sustainability of the system. Developing the right criteria and approach for recruitment needs to be completed.
- We need to determine who is going to provide the training to the COWSOs and the communities. We have suggested that will be done by NGOs, but we need to determine which NGOs and how that process will be managed.
- We need to determine what the appropriate time-window is for getting repairs done. We have stated 96 hours but is that the right number, and in what circumstances can that be extended without penalty to the franchisor?
- We want to be able to measure community outcomes that result from putting a Village Water System in place in a community. For example, we want to know the impact the Village Water

System has on health, education and incomes of community members. We need to design a process for obtaining baseline data as well as collecting relevant data on a periodic basis.

- We want to be sure that the University of Dodoma and our local NGOs are able to support the day-to-day training and educational requirements, and to provide the required technical and agricultural extension-like services to the local entrepreneurs and villagers to ensure sustainability.
- We want to be sure we have buy-in from the key Government Ministries for the concept and for its proposed implementation timeline.
- We want to be able to ensure the long term supply of water and to execute the required research to develop mapping of sustainable yields from groundwater and surface water sources for the regions in which we will be deploying systems.
- We want to be sure we provide the villages and the towns with the technology they need to succeed – so we are exploring innovative cell phone applications including billing/payment, operational data, market info, tech support, etc.

Providing Water and Economic Activities to Grow the Local Economy

The SVWSP is a multi-faceted initiative aimed at making measureable, far-reaching progress toward water and food security in Tanzania. The role that the national water point rehabilitation effort plays in that goal is to provide economic opportunities for local community members. It starts with convenient access to clean water, which improves the health of all community members and reduces the time women and children spend collecting water. Children can now spend more time in school and women can spend more time on income-generating activities.

However, the power of the SVWSP is in the systems approach that it takes to improving the livelihoods and opportunities for the village community members. The Village Water System is designed to not only provide water for household use, but also provide the means for other economic opportunities. Solar power in excess of pumping needs can be used to create a phone charging station business. Excess water beyond what is needed for daily consumption can be used to develop a brick-making business, engage in aquaponics, expand livestock herds or grow vegetable gardens and fruit tree nurseries. Members of the community (with a focus on women) can become local franchise owners/operators or can be employed as attendants at the water points. Women can take on roles as

trainers or obtain loans from the third party credit providers to start or grow their own small businesses. All these parts working collectively creates the opportunities for communities to grow their local economy, which in turn stabilizes village support for the upkeep of the water system as it becomes indispensable. The proposed franchise model has been designed to provide low-cost water to consumers while putting in place the mechanisms and incentives to ensure the sustainability of the system.

According to the World Health Organization, every \$1 invested in water and sanitation can yield an economic benefit of as much as \$34, but this only happens if the focus of the effort goes beyond merely installing the infrastructure. The SVWSP Program is designed to provide not just water, but a water system and a business model that helps assure the sustainability and ongoing economic opportunities so that the initial investment can realize its fullest potential.

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Appendix 1: Franchise Partner Detailed Roles and Responsibilities

The franchisor will be required to:

1. Submit a one-time refundable deposit (Franchisor Deposit) into each Water Point Account prior to commencement of operations.
 - a. The Franchisor Deposit acts as a guarantee against certain services the franchisor is obligated to perform under the WSA.
 - b. The Franchisor Deposit will be used to cover actual expenses incurred as a result of franchisor's non-compliance or non-performance of certain obligations under the WSA
 - c. At the end of the contract term, or voluntary replacement of franchisor with another party, the remainder of the Franchisor Deposit will be returned to the franchisor.
2. Hire and train certified mechanics. Training could also be outsourced to UDOM, NGOs or other suitable providers.
3. Have a certified mechanic conduct a regularly scheduled site inspection of each Village Water System (frequency to be determined).
4. Employ field support consultants to provide business ongoing consultation services to the franchisees.
5. Provide franchisees with field handbooks to assist in financial management and operations / repairs of the Village Water System.
6. Respond to franchisee or community service request within 48 hours (or agreed upon timeframe).
7. Guarantee completion of major repairs by network of local area mechanics.
8. Hold an inventory of parts and order appropriate quantities from the preferred list of approved vendors for maintaining quality, timeliness and standard of repairs.
9. Submit the Quarterly Franchisor Report (described below) to each franchisee and COWSO.
10. Serve as Backup Franchisee in the event of non-performance of franchisee.
11. Identify, recruit, and provide training for franchisees.
12. Market services and brand to local communities.
13. Provide ongoing training for mechanics, franchisees, and COWSOs.
14. Hire NGO partners to conduct training for community awareness, sanitation and hygiene on a regular and pre-determined basis (e.g. quarterly for the first year and annually thereafter).
15. Monitor the borehole and solar system sensors to help proactively anticipate issues with borehole quality or solar system performance.
16. On a yearly basis, provide technician for assessing the yield of each water point at the community level.

The franchisee will be required to:

1. Submit a one-time refundable deposit (Franchisee Deposit) into the Water Point Account prior to commencement of operations.
 - a. The Franchisee Deposit acts as a guarantee against the services the franchisee is obligated to perform.
 - b. The Franchisee Deposit will be used to cover actual expenses incurred as a result of franchisee's non-compliance or non-performance of certain obligations under the WSA
 - c. At the end of the contract term, or voluntary replacement of franchisee with another party, the remainder of the Franchisee Deposit will be returned to the franchisee.
2. Submit a Monthly Franchisee Report to the COWSO, the franchisor, and the District Water Engineer.
3. Complete minor repairs and maintenance to the Village Water System.
4. Employ personnel for collection of funds, distribution of water, and site security (with a focus on female employment).
5. Remit Monthly Deposit to Water Point Account.
6. Remit Monthly Franchise Fee to franchisor.
7. Report any outages or maintenance issues in a timely manner to the franchisor and COWSO.

Community Owned Water Supply Organization (COWSO) will:

1. Grant exclusive operations and services arrangement to franchisee and franchisor in the Water Services Agreement.
2. Oversee Water Point Account and authorize disbursements for repairs.
3. Act as liaison between franchise partners and community members.
4. Report outages to franchise partners.
5. Support security measures put in place by franchisee.
6. Maintain record of operational days.

Appendix 2: Reporting Requirements

Each of the reports generated by the partners will be circulated among the franchise partners.

The Monthly Franchisee Report will include:

- Revenues
- Expenses
- Quantity of water pumped
- Quantity of water sold
- Number of operational days for period
- Evidence of Monthly Deposit and Franchise Fee payment
- Maintenance schedule
- Concerns (if any)
- Other key information (if needed)

The Quarterly Franchisor Report will include:

- Revenue per month
- Expenses per month
- Number of regular maintenance visits performed
- Credit history for each site
- Number of trainings conducted for social and community awareness in each community
- Number of certified mechanics in network, number lost, number recruited
- Details about major breakdown repairs [if any]
- Number of field consultant visits
- Benchmarking of franchisee performance
- Other key information [if needed]

Appendix 3 - Water Tariff Structure

Three models were considered for the water tariff. The advantages and disadvantages are outlined below. The proposed model uses a per bucket/liter tariff structure (Item 3 below) because it has been found to work best in practice. Whichever system is adopted, however, it needs to accommodate the reality that not everyone has cash, so mechanisms will need to be put in place to allow people to pay with livestock, crops or to barter other services.

1. Flat monthly fee per household, structured as either unlimited access or a capped daily or monthly amount.
 - An unlimited access model is likely to lead to overconsumption and low revenue per liter, resulting in a mismatch between costs and revenues as additional strain is imposed on the pumps when more water is withdrawn
 - A lump sum monthly tariff may also be problematic for community members who have irregular income and little access to savings institutions
2. Set amount from the community
 - Allows the community to create a collection method that they view as most equitable and fair; encourages participation and a sense of ownership among community stakeholders who are more aware of local sensitivities
 - Likely lacks a realistic enforcement mechanism and accountability in the event of a lack of funds
 - May be subject to volatile local political dynamics
3. Per bucket/liter tariff
 - This approach best matches revenues with costs
 - Transparent process that is easy to implement at the distribution point as all pumps will be fitted with a meter
 - This model is already implemented in some communities in Tanzania so likely to be culturally appropriate and accepted by community members as fair
 - Results in greater seasonality in revenues
 - Based on the average domestic consumption pattern taking into account the household size, excess consumption for other economic activities such as agriculture could be charged at a different rate. On a case-to-case basis, pipes could be installed at the well location for pumping water elsewhere for other metered usages such as agriculture or aquaculture.