



Leveraging Market Opportunities to Achieve Development Impact:

Entrepreneurial Solutions to Improve Access to Sanitation and Safe Water

In partnership with Austria, the Bill and Melinda Gates Foundation, Denmark, Finland, and Japan.



Globally, more than 2.5 billion people lack access to safe water or adequate sanitation, including more than half the population of Sub-Saharan Africa. Many of these families live beyond the reach of piped water and sewerage networks, forcing them to rely on self-funded, household solutions. While this pressing challenge is often viewed as a development issue to be addressed by the public sector and nongovernmental organizations (NGOs), the yawning gap between need and service delivery persists. But this demand for improved services also presents a market opportunity for the private sector. In 2010, the International Finance Corporation (IFC) established the Sanitation and Safe Water for All (SSAWA) program to explore ways to mobilize the private sector's incentives, resources, and capacity for innovation to improve water and sanitation services affordably and at scale.

IFC was not alone in seeing this need to engage the private sector. With public budgets already strained, many governments are seeking opportunities to leverage private investment to serve more people within the realistic limits of public coffers.

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SANITATION AND SAFE WATER FOR ALL

SSAWA is an IFC advisory services program designed to harness private innovation, technical skills, and financing to equitably increase access to safe water and sanitation for underserved consumers. This summary brief reviews this exploratory approach to market transformation, which was implemented by IFC in Kenya from 2010 to 2014. The lessons learned are explored here to inform future efforts to design and develop markets to provide access to safe water and sanitation.

The private sector can bring welcome innovation and new business models, as well as financing, to the sector. And the private sector also stands to gain – the base of the pyramid (BoP) is increasingly recognized as a major underserved market for a range of products and services, and the water and sanitation industry is no exception. Yet private finance has historically provided a small fraction of total global investment in water and sanitation, and there are no major trends that suggest a change in the status quo without an external catalytic intervention.

GLOBAL SNAPSHOT

Market Context

More than 2.5 billion people worldwide do not have access to safe water or adequate sanitation.¹ The poor are the most severely affected – a situation that is likely to be exacerbated by increased demand caused by rapid urbanization as a result of population and economic growth, and climate-induced water scarcity. About 6.3 percent of all deaths, 9.1 percent of the world's disease burden, and 88 percent of the estimated 1.4 million children that die from diarrheal diseases every year are the result of unsafe drinking water and inadequate sanitation and hygiene.

Global economic losses associated with inadequate water supply and sanitation are estimated at \$260 billion annually, or about 1.5 percent of gross domestic product.² The BoP market has an aggregated buying power of about 4 billion people, representing about \$5 trillion in annual expenditure. Aggregated spending by poor households for (often unsafe) drinking water exceeds \$20 billion.³ The estimated size of the global BoP sanitation market is more than \$8 billion annually.⁴ These estimates do not reflect the higher costs of reaching universal coverage.

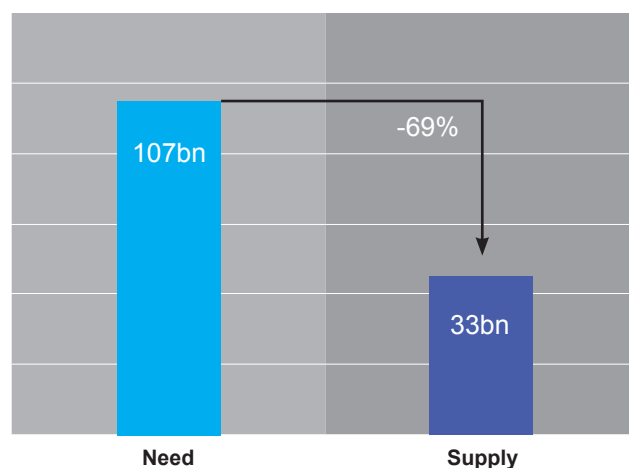
Financing Shortfall

Despite the clear importance of safe water and sanitation as a core development requirement, current levels of public financing are – and are likely to remain – inadequate to solve the problem. Globally, achieving universal coverage would require an estimated

cumulative investment of more than \$535 billion, consisting of \$332 billion for sanitation and \$203 billion for water.⁵ In Africa, public investment shortfalls are particularly acute, with many countries struggling to develop and sustain access to water and sanitation services at the rates needed to achieve the United Nations Millennium Development Goals (MDG) on water and sanitation. MDG target 7C aims to “halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation.”

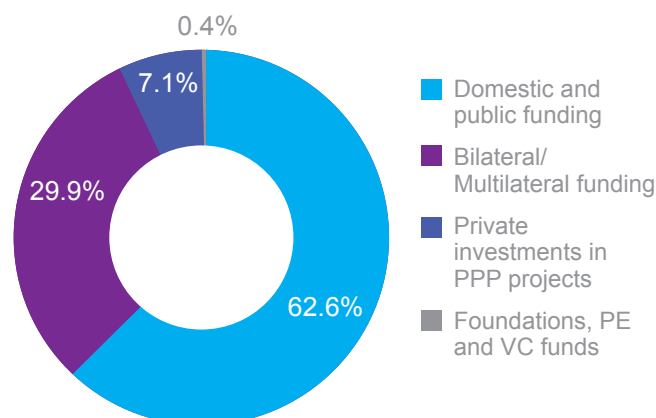
This would require 78 percent of the Sub-Saharan population to have access to safe water and 80 percent to improved sanitation, but by 2012 the actual percentage of people with access to these services remained well below targets, at 66 percent and 40 percent respectively.

FIGURE 1: Annual financing estimates to achieve universal water and sanitation coverage



Note: Annual investment shortfall to reach universal coverage in developing countries, calculated between 2010 and 2015 (WHO 2012)

FIGURE 2: Supply of financing to the water and sanitation sector by source of investment



Note: 2014 Dahlberg Analysis

Bridging the Gap

Private investments account for less than 8 percent of global investment in water and sanitation. SSAWA's work was based on the hypothesis that private investment needs to grow if rates of access to water and sanitation are to accelerate substantially. Measured donor-funded support for the private sector, carefully targeted to help businesses and investors overcome real and perceived risks, can dramatically extend the reach of limited public funds and demonstrate more efficient models for aid delivery.

DEVELOPING MARKETS FOR SAFE WATER AND SANITATION

Traditionally, IFC has helped expand access to water and sanitation by investing in capital-intensive municipal-scale infrastructure. This is an important catalyst for economic development, but it often fails to reach the poorest populations that fall outside of areas served by piped networks. In 2009, IFC published a study, *Safe Water for All: Harnessing the Private Sector to Reach the Underserved*, which looked at the barriers preventing greater private sector delivery of water and sanitation products and services. It identified a number of promising market-based approaches that have emerged in some markets, successfully attracting private sector participation and finance into BoP water and sanitation markets.

Supporting Market-Based Approaches

IFC Advisory Services, recognizing this challenge and building on the findings of the Safe Water for All report, developed the SSAWA program in 2010 to support market-based approaches that expand access to safe water and sanitation for underserved populations.

SSAWA started with a focus on Kenya. The Kenyan market had several features that made it a good starting point for the program:

- The government of Kenya's midterm plan ("Vision 2030") highlighted the financial need for private sector investor participation. As a result, sanitation subsidies are prohibited and the costs of commercial borrowing can be included in setting water tariffs.
- There were many emerging commercial approaches in the sector.
- IFC could leverage the experience and resources of several specialist partners.

Program Activities

The Safe Water for All report highlighted four main barriers to the development of market-based approaches in water

and sanitation: information gaps impeding end-users and potential private sector providers, lack of business support for first-mover enterprises (the first significant occupant in a market) entering the sector, lack of access to finance gaps for private companies in the sector, and lack of a conducive enabling environment. SSAWA consists of five components to address these gaps:

1 | Market Intelligence: What is the market opportunity at the BoP? SSAWA generated market intelligence to identify opportunities in the sanitation sector and encourage businesses to enter and expand their investments in the Kenyan market.

2 | Business Support: What models work, and where and how? The program provided business support to help firms develop, test, and scale up market-based approaches to water and sanitation service delivery.

3 | Financial Products: How can more private finance be attracted into the sector? The program supported banks to identify and invest in commercially viable opportunities in water and sanitation.

4 | Business-Enabling Environment: What regulatory interventions are needed, and from whom, to create a more conducive environment for private investment in the sector? SSAWA worked closely with the World Bank Water and Sanitation Program (WSP) to engage Kenyan policymakers on issues of sector formalization, cost recovery, and decentralization.

5 | Knowledge Management: What types of resources are needed to more clearly articulate the opportunity and to support first-movers to develop and refine their businesses in the sector? The first four components generated a rich stock of data, providing the foundation to develop toolkits for the business community.

SSAWA Experience in Market Segments

SSAWA explored several innovative market-based approaches, including a range of sanitation and waste re-use business models, household solutions for sanitation and hygiene, financing models for piped water delivery, and vended (or "kiosk") water markets. The SSAWA team worked closely with the IFC Lighting Africa program, learning from its success in transforming African solar lighting markets for BoP customers.⁶ SSAWA tailored

project activities to address barriers to private sector participation in individual market segments.

"No other program has sought to systematically explore, in a given geography, the potential for private sector involvement across segments in water and sanitation."

– Dahlberg Advisors

The remainder of this document provides an overview of the main activities and lessons learned by SSAWA in three key segments of the water and sanitation market in Kenya:

- 1 | Selling Sanitation:** Supporting plastics manufacturers to develop, market, and distribute new aspirational and affordable household sanitation solutions.
- 2 | Kenyan Water Utilities:** Supporting the expansion of commercial financing to subnational water utilities.
- 3 | Vended Water:** Testing the scalability of innovative water-kiosk business models.

SELLING SANITATION: HOUSEHOLD SOLUTIONS FOR IMPROVED SANITATION

The Selling Sanitation initiative, a partnership between IFC’s SSAWA program and the World Bank’s WSP,⁷ developed an innovative market-based approach to expand access to sanitation services in underserved communities.

Before SSAWA, most sanitation marketing programs in developing countries tended to focus primarily on the demand side of the sanitation market. These approaches recognize the challenges of behavior change and the need to “sell” the advantages of improved sanitation, resulting in the evolution of a wide range of traditional and social marketing methods. Where the supply side has been considered, approaches often focus on the public sector or NGOs, and business development support for the private sector has tended to be localized (for example, training of village masons). While this can be effective in supporting local capacity, it presents challenges in achieving scale. SSAWA has built on this experience and taken the model a step further: directly engaging the private sector to address demand with attractive, consumer-focused products and services.

The IFC and WSP team engaged with a range of larger firms (primarily plastics manufacturers) with the capacity to manufacture and distribute household sanitation solutions on a large scale. While these firms had the capacity to supply plastics-based latrines and other sanitation products, they did not necessarily understand the needs and aspirations of the target market or have confidence in the scale of demand in an unproven, yet potentially lucrative, sector. In addition, the manufacturers did not have effective and developed channels for household-level distribution of their products. Through Selling Sanitation, the team helped interested firms overcome these barriers through the following targeted and sequenced interventions:

SSAWA AT A GLANCE

Budget: \$1.7 million
Investments facilitated: \$22.9 million in expected financing to date
Duration: Three years and four months
Funding: 43% from the World Bank Group and public donors, 32% from client fees, and 25% from private donors
Donors: Austria, the Bill and Melinda Gates Foundation, Denmark, Finland, and Japan
Partners: World Bank Water and Sanitation Program, Aquaya Foundation, and Safe Water Network

SSAWA worked with a range of private sector firms across five segments of the sanitation and water supply sectors:

	Water	Sanitation
Utility-scale model (municipal grid)	X	X
Decentralized services (community point of use)	X	X
Household solutions (consumer products)		X

- **Market analytics:** Market-entry risks were reduced through extensive national consumer market research, helping businesses quantify market demand and understand target segments.
- **Product development advisory services:** An extended phase of consumer research and development (R&D) advice helped offset the upfront R&D costs of developing new products.
- **Demand creation:** The team worked closely with the Kenyan government to develop a new type of consumer awareness campaign, modeled on the Lighting Africa consumer awareness programs, which is designed to promote new product categories (rather than specific brands, which could not be publicly funded). This provided manufacturers with a higher degree of confidence that demand for new products would exist, and marketed events on which to piggyback product advertising and distribution.
- **Product distribution:** The team helped develop active distribution channels and distribution relationships with microfinance institutions for both households and outlets.

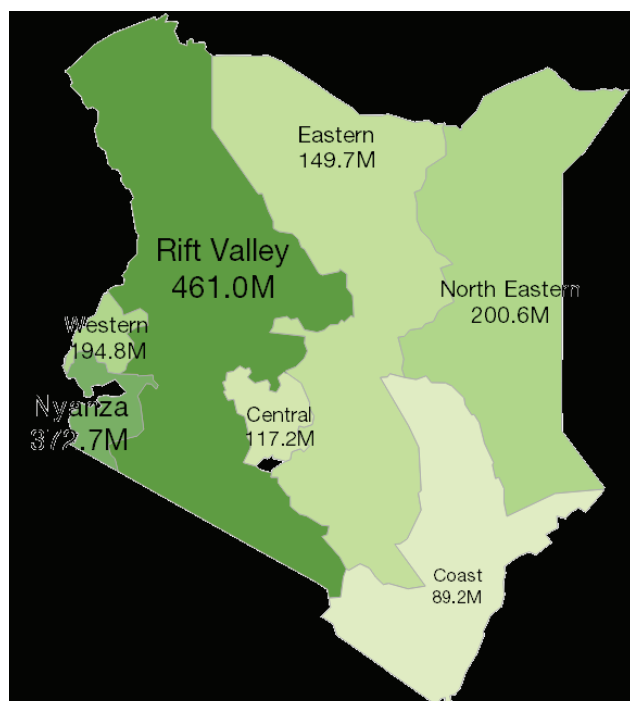
The rationale for IFC and WSP joining forces was the respective comparative advantages provided by the two

teams. WSP brought strong relationships and trust with the government, considerable technical-staff capacity in the sanitation field, and a network of offices across East Africa through which the program could be replicated in future. IFC brought relationships and credibility with the private sector, an understanding of how to trigger private investment, and experience in various forms of social and environmental market development work.

Assessing the Market

The team's early discussions with private firms revealed their clear interest in exploring opportunities in the sanitation sector. However, individual companies were unwilling to shoulder the first-mover costs required given the uncertainty of the scale of demand and the ease with which competitors could replicate new products. The Selling Sanitation initiative conducted in-depth consumer and market research to help the firms better understand the profile of the customer segment, including its sanitation needs and aspirations. This research revealed a sizable commercial market opportunity for improved toilet slabs (platforms), as well as a range of specific consumer insights that would be used to inform future product development.

Market potential for improved toilet slabs by region in Kenya



- Market potential:** About 6.3 million Kenyan households need improved sanitation facilities, including 21.4 million people (68 percent) in rural areas. This translates into a potential market of 3.2 million toilet slabs, valued at \$75 million in sales.

- Product/technology solutions:** Most existing household sanitation products are not tailored to the preferences of BoP households, but rather to design standards set by NGOs, which have traditionally defined the market for this sector.
- Demand trends:** Demand for sanitation products and services is increasing in Kenya, including among the rural poor, driven by rising income levels and education, and boosted in some areas by government-sponsored community-led total sanitation awareness-creation programs.
- Willingness to pay:** Households spend a significant amount of money on (often unhygienic) latrines. In the existing market, most toilets are built of timber, wood, or cement. Costs range from 3,000 Kenyan shillings (\$35) to 8,000 Kenyan shillings (\$95) for slab materials alone. Pits are typically dug at 15 feet or more, at an average cost of 250 Kenyan shillings per foot (\$45 per pit). Labour and transport of materials are added to this cost. SSAWA worked with plastics manufacturers to build on this relatively undeveloped and inefficient market.

Business Support to Manufacturers

Based on these market findings, the Selling Sanitation team conducted intensive consumer research to



help manufacturers develop a new set of aspirational, consumer-focused products. The design support phase ran from June to October 2012 and resulted in design directions for four models of plastic slabs that could be retrofitted to existing timber, mud, or concrete slabs, or integrated into a new-build toilet. A wide range of manufacturers participated in the design process.

Two established manufacturers with operations across East Africa – Kentainers and Silafrica – used the design stage to start

manufacturing new products. These companies saw the opportunity to develop products that could be sold not just in Kenya but throughout the East African market.

The products developed through the consumer research process are aspirational, mirroring the tastes

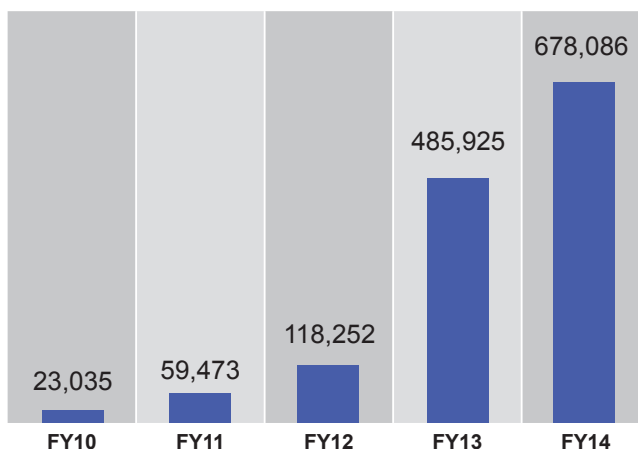
and preferences of target customers, but they are also affordable and competitively priced. They are durable, yet lightweight and stackable, which means that, unlike concrete, they can be moved if a latrine pit filled up or collapsed, and are easily transported over longer distances. Moreover, the new products provide significant health benefits over the alternatives constructed with wood and mud – the slabs can easily be cleaned, sealed with a lid, and ventilated if necessary, hence meeting all the definitions of “improved” sanitation.⁸

Demand Creation and Behavior Change

Generally, sanitation campaigns (such as community-led total sanitation) have focused on changing behavior and eliminating open defecation. Such efforts have already established a practice of toilet usage across most of Kenya, but different approaches are needed to encourage consumers to improve their sanitation solutions. The new products described above offer households that have already adopted sanitation behavior changes access to improved sanitation for a relatively low marginal cost. The primary market is households with an existing, poor-quality toilet or households that have a toilet that qualifies as improved, such as a concrete slab with a lid, but aspire to own a more modern, durable, and sanitary product. These households would potentially gain health benefits and financial savings from the improved products developed by manufacturers under the SSAWA program.

At this early stage of market development, it was clear that better products alone might not be enough to transform the market. Demand creation, or “push” strategies, would be needed to effectively communicate to consumers key product features and the benefits of new slabs over traditional alternatives. The team,

FIGURE 3: Annual sales of pico-PV lanterns in Kenya



working with the Ministry of Health, collaborated with PSI-Kenya to design a national campaign to create demand, reaching 1 million potential customers by mid-2015. The campaign will not only promote the concept of improved sanitation practices, but also link this messaging to aspirational consumer products to provide a platform for manufacturers to market their solutions.

This approach has been successful in other markets. For example, Lighting Africa has worked with governments to sponsor consumer awareness campaigns on the hazards of kerosene and the benefits of solar lighting products, and supported manufacturers to develop and deliver solutions to meet household aspirations. Figure 3 indicates the annual sales of pico-PV lanterns (1-10 watts) to households in Kenya, illustrating the market growth achieved through the Lighting Africa initiative.

SILAFRICA: DEVELOPING AFFORDABLE, FUNCTIONAL, AND ASPIRATIONAL SANITATION PRODUCTS FOR POOR COMMUNITIES

Silafrica is a leading East African plastics company founded in 1963, with manufacturing locations in Kenya, Tanzania, Ethiopia, and Uganda and product distribution in 25 African countries.

Although Silafrica was an early advocate of developing affordable and aspirational products for the BoP, limited knowledge of the sanitation market prevented it from entering this sector. SSAWA's information on consumer preferences and product design directions has enabled the company to invest in product innovation and better understand BoP customer needs.

Silafrica has emerged as a frontrunner in the nascent BoP sanitation market, investing \$300,000 to install monthly production capacity for 30,000 sanitary platforms and piloting its first sales in Kenya in late 2014.

“We are [developing] a range of affordable, functional, and aspirational plastic latrines for the BoP market. Our aim is to use our design approach, which looks at the consumer perspective, manufacturing perspective, and distribution perspective, to bring about a product that reaches the consumer at the lowest possible cost.”

Last Mile Finance and Distribution

Once consumers are aware of new products and their benefits, the next stage – and perhaps the most difficult – is helping them access those products through local distribution channels.



Example of an existing design in the market. Right: New plastic sanitation slabs enter the market.

As a result, Selling Sanitation supported manufacturers to develop local distribution channels for consumers to purchase sanitation products suited to their needs.

Small hardware stores, for example, are an existing distribution channel in rural areas. These stores, of which there are many, are already in the business of selling to households and have established relationships with

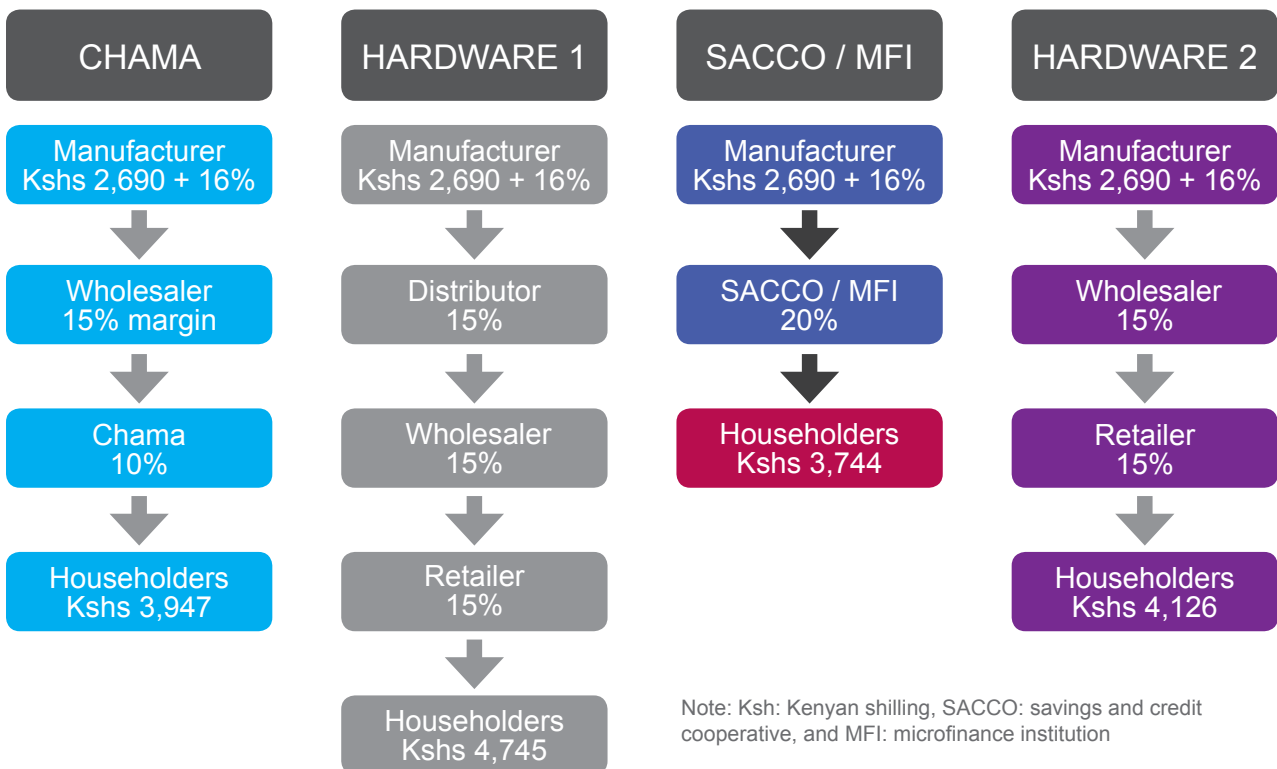
the manufacturers' existing wholesale distributors (in particular through the sale of water tanks). However, hardware shops are a passive channel because sales are entirely dependent on consumers visiting storefronts and demanding a product.

Alternative, more active channels for creating demand are being explored, including microfinance institutions and savings and credit cooperatives, as well as chamas, which are informal cooperative societies that pool and invest savings. These niche channels provide more intimate interaction with households and, critically, can bundle products and appropriate low-interest financing.

Chamas, microfinance institutions, and savings and credit cooperatives have great potential reach in the BoP market.⁹ However, although they can provide product distribution and financing at the lowest prices for poor consumers, they do require additional business support that manufacturers are not positioned to provide in order to adapt their business models to include consumer product sales alongside loans and savings products. WSP will continue supporting manufacturers to strengthen distribution channels with BoP financing institutions.

It is likely that hardware stores will be the main distribution channel used by manufacturers, due to their established relationships with distributors, until larger-scale sales through other channels can be proven.

FIGURE 4: Cost of distribution through different channels



Note: Ksh: Kenyan shilling, SACCO: savings and credit cooperative, and MFI: microfinance institution

Early Results

Selling Sanitation has already led to two partner investments with a combined value of more than \$500,000. The final product designs are in production and distribution began in October 2014, with 1,000 durable plastic slabs sold before the launch of the demand-creation campaign in November 2014. Selling Sanitation also catalyzed a commercial partnership between Silafrica and Equity Bank to leverage the bank's extensive BoP presence (Equity Bank provides 56 percent of all Kenyan bank accounts) to distribute and sell toilet slabs on credit. Equity Bank has agreed to lower its interest rate on loans for new plastic slabs and has signed an agreement to distribute the new products through 16,000 agents that have direct contact with consumer households. An agreement was also signed with Kenya Women Microfinance Bank Limited, one of the largest microfinance institutions in Kenya, to act as an umbrella for distribution through chamas.

Although these are early results, public and private sectors elsewhere in East Africa, including Uganda, Tanzania, and Ethiopia, are interested in replicating this model. Manufacturers involved in Kenya with factories in other East African countries and distribution networks spanning Sub-Saharan Africa are well positioned to access the larger regional market.

PIPED WATER: UTILITY-SCALE INVESTMENTS

Targeted Support to Kenyan Water Utilities

Traditionally, providers of commercial finance in the water and sanitation sector – including IFC – have primarily focused on utility-scale municipal infrastructure investments. These are typically large networks serving thousands of connections, where the volumes and economies of scale involved are sufficient for well-run utilities to recover costs and cover the cost of commercial borrowing. However, while such investments are able to reach large-scale customer bases, in poorer countries they often fail to reach the poorest households living outside of existing piped networks.

In Kenya, an impressive model for financing smaller-scale water infrastructure has already been piloted by the World Bank. The project, Maji ni Maisha, was a partnership between the WSP, K-Rep Bank, and the Global Partnership on Output-Based Aid (GPOBA). The project used a blended, output-based financing approach to provide investments for small piped networks serving fewer than 1,000 household connections, with investment needs ranging between \$100,000 and \$200,000.

These would generally be community projects, financed through an 80:20 debt-to-equity ratio, with 50 percent of



Water infrastructure financed under the Maji ni Maisha project

the debt brought down through the output-based grant when the project was complete and the agreed targets were verified. The loans were offered at commercial rates. Maji ni Maisha demonstrated the potential for local-bank lending for smaller infrastructure, as well as the opportunity to use targeted grant finance to leverage commercial investment. A study by the World Bank Group revealed that in the first 10 projects financed under Maji ni Maisha, coverage increased by half, water production doubled, and revenue tripled.

Building on these experiences, SSAWA identified two areas of potential relevance for IFC: financing small piped water systems and slightly larger municipal water utilities.

Private Financing of Small Piped Water Systems

The SSAWA program saw an opportunity for broader private sector participation in project financing and operation and maintenance support under the Maji ni Maisha program. SSAWA's market research identified a total market of more than 1,200 small water service providers in Kenya's rural areas, serving about 3.7 million people, or 40 percent of the country's total population receiving piped water. The scale of investment needed for these systems varies significantly, but cumulatively was estimated to be about \$114 million. Out of 1,200 systems, 156 have more than 1,000 household connections. An internal World Bank Group study of the Kenyan water market indicated that this smaller pool represented a potential investment of \$64 million and is predicted to triple annual turnover from \$20 million to \$64 million if financing is provided.

Because the market comprised many small projects, only in aggregate could these potential investments attract real commercial interest. One of Maji ni Maisha's challenges was to build a project pipeline at the pace needed to achieve scale. This was especially difficult when most projects were under community management, which inevitably increased the transaction costs and length of time for project development and financial closure.



In some cases, this challenge was addressed by bringing in a professional firm to manage operations and maintenance and revenues generated in return for a fixed-fee management contract. This helped the lender feel comfortable with the quality of system management and gave the communities a reliable water supply without the pressure and workload of managing the system themselves. The question was whether this approach could be extended further, such that the private firms already managing these community systems could also facilitate upfront investment to develop new systems through some form of build-operate-transfer arrangement. Such firms could logically borrow more easily and on better terms than communities, and could also potentially benefit from economies of scale if multiple projects were aggregated into larger contracts.

While conceptually attractive, this approach failed to gain any real traction because the depth of the potential private sector operator market was low, and operators with capacity were hesitant to take equity risk in such projects. Also, the concept appeared both complex and untested from a community perspective, which limited the potential to group many projects to a commercially attractive scale. One project mobilized a small equity

investment from a private operator, but ultimately the calculated return on effort under the SSAWA program did not justify the level of work and funding needed to continue using this approach.

Water Utility Financing – Needs and Opportunities

After exploring the small piped water market, the SSAWA program shifted its focus to the slightly larger – but still smaller scale than traditional project-financed – utilities that serve many of the provincial towns in the country. Following tariff reform in Kenya in 2008, many of these municipality-owned utilities were generating positive cash flows and needed investment funds to serve rapidly growing urban populations. Public funds from national government and sporadic grant financing were both available, but were insufficient to meet the investment need. From a commercial perspective, the utilities were significantly underleveraged, and had opportunities to expand services and increase revenues by taking on commercial debt.

IFC and WSP identified four municipalities with commercially viable projects around which the concept for a water utility financing facility was developed.

The facility drew on the structure developed under Maji ni Maisha but with larger project sizes, between \$2 million and \$5 million, and less concessional support. The SSAWA program worked with IFC's infrastructure investment department to convert these projects into bankable transactions by helping utilities overcome internal capacity constraints within an imperfect and changing legal framework. Although these were only moderate investments, the program hoped to set a precedent by demonstrating that lending to the sector was viable and could have a transformative effect in unlocking considerable local currency financing. For example, Kenya's pension funds alone stood at \$6.4 billion in value in 2012 and are looking for precisely the type of long-term, stable returns generated by water utilities.

Business Support for Utilities

The first business challenge for these publicly owned water companies was that they had never been appraised by commercial lenders. They lacked accurately audited financial accounts and the internal capacity to deal with the accounting, reporting, and other demands that a commercial lender would expect. As such, SSAWA provided advisory support to the two most proactive clients – Embu Water and Sanitation Company (EWASCO) and Malindi Water Company – to help the utilities become investment-ready. Business support focused on analyzing cash flow and improving financial and asset management. For EWASCO, initial support was so well received that business support was extended through a more intensive advisory assignment on a fee-for-service basis.

The Challenges of a Dynamic Enabling Environment

In addition to the utilities' internal capacity, there were also significant challenges in Kenya's enabling environment for commercial lending to the water sector. Commercial interest rates in Kenya spiked five points to nearly 20 percent by late 2012, which severely affected market-rate lending because the number of viable projects in the water sector at these rates was inevitably very low. Interest rates subsequently saw a moderate rebound, but the lasting perception was that some form of blended finance would be needed to ensure a sufficient pipeline of projects under any potential financing facility.

In addition, Kenya has been undergoing an ambitious process of political devolution since 2012, with substantial authorities being delegated from national to county level. As devolution progressed, uncertainties arose on local versus national governance of subnational utilities, their operations, and, critically, legal ownership of cash flows. Cash flows are a utility's main asset, which is why clearly defined ownership is critical. Lenders cannot recover value from items like buried pipes.

Although SSAWA was able to build the capacity of utilities to access funding, and WSP and IFC were able to develop a blended finance structure that was conducive to lending, unclear ownership of cash flows prevented immediate larger-scale lending from taking place. This is an issue that WSP continues to work on. It has developed a project that will again use GPOBA funds to leverage commercial investment. In the meantime, despite ongoing challenges with the enabling environment, EWASCO was able to obtain a loan in 2014 of just under \$1 million, which included a partial credit guarantee via the United States Agency for International Development's Development Credit Authority.

Lessons Learned

Looking forward, it appears to be a question of "when" not "if" commercial financing of water utilities will evolve in Kenya. A World Bank "shadow credit rating" study of 43 major utilities in Kenya revealed that 13 of them have the potential to accept commercial financing, and this number will hopefully grow as technical assistance to the sector builds internal systems and skills.¹⁰ Also, once the devolution process plays out, the environment in Kenya may once again support commercial investment in utility financing, given the cost-reflective tariffs and the regulations that allow the cost of commercial borrowing to be passed into these tariffs.

A lot of work still needs to be done, however. Many water utilities in the country have capacity challenges and weak balance sheets. An interesting lesson from the SSAWA project was that utility capacity does not always correspond with the volume of cash flows; small utilities are sometimes less bureaucratic and political, and hence more investable, than large ones. In general though, utility companies accustomed to using grants and concessional finance are mostly unaware of and unprepared to meet the requirements of a commercial lender. At the same time, banks tend to lack an understanding of the water utility business that would enable them to accurately assess utility-borrowing risk.

A multifaceted advisory approach is therefore needed. Carefully targeted public support to banks (training and market intelligence), utilities (partial subsidies and technical assistance), and government (regulatory assistance) could overcome the challenges of attracting private investment, and ultimately provide improved access to the poor with lower levels of total public expenditure. Several organizations are trying to catalyze this market through targeted risk-sharing products and grants. Some sources of financing, such as the United States Agency for International Development, require verification that funding is being used to reach poor and underserved customers, while others, such as German development organization KfW, do not require results verification at this level. It will be interesting to see whether and how this difference affects outcomes.

VENDED WATER: DISTRIBUTED DELIVERY OF SAFE WATER FOR POOR CONSUMERS

Distributed services, or micro-utilities, refer to the delivery of basic services, such as power and water, to rural or peri-urban communities through small-scale, decentralized facilities. This approach lowers capital costs as a result of reduced grid-connection infrastructure (pipes and transmission cables), increasing the potential for financial sustainability in areas with low per-capita demand.

This concept of distributed services is not new. Throughout the world, water has long been supplied using decentralized systems, from the level of basic village wells upward. More recently, such models in market-based form have started to emerge and, in some countries, grow. In India, rural water enterprises have reached 3,000 of the 200,000 rural communities that lack any source of safe water.¹¹ Throughout Asia and Latin America, fully commercial water treatment and vending businesses, generally established by independent entrepreneurs, are proliferating rapidly in response to growing consumer demand for safe drinking water. In metropolitan Manila, for instance, the number of vended water businesses has grown to more than 3,000 in the last decade. These businesses first emerged to provide treated bottled water for middle- and upper-income consumers, but aggressive competition among thousands of succeeding businesses drove prices down to levels affordable for lower-income groups.

In Kenya, interest in this business model under the SSAWA program was initially motivated by the Aquaya Institute's research. Aquaya documented the organic emergence of a large drinking water refill market in Indonesia and the Philippines. These businesses are essentially distributed water bottlers, which employ various forms of filtration and disinfection systems to treat water onsite for sale to both end-users and resellers in 18- to 20-liter clear plastic containers or jerry-cans. By providing refills (which does not require packaging) and selling in large unit volumes, this product is priced well below "traditional" bottled water, with the per-liter retail cost of refills at about \$0.02 in Indonesia and \$0.07 in the Philippines. The Aquaya research also showed that in these countries, water quality is high and market penetration has reached lower-income customers, including those earning as little as \$2.5 per day. As of 2007, the Indonesian water refill industry was estimated to supply 3 billion liters of safe water every year, resulting in annual revenues of \$50 million and employment of about 30,000 individuals.

Following this research in Southeast Asia, Aquaya was able to access funding to undertake further research in Kenya to answer the question: Could this type of business model be a viable solution to the huge problem of lack of access to safe water for the urban poor? And if so, could the market be catalyzed?

Competition and Price in the Kenyan Market

To help answer these questions, IFC provided additional support to Aquaya following a competitive selection process held at the start of the SSAWA program. Vended water in Kenya is still a nascent industry. It first appeared in the mid-2000s when a Nairobi supermarket chain began selling bottled refill water to high-income customers. Entrepreneurs began imitating the idea, and since 2009, the industry has grown from a couple of businesses targeting high-income consumers in central Nairobi to more than 20 purely for-profit locations across the greater Nairobi area, targeting a mostly peri-urban market of middle-income consumers with products that substitute the more expensive bottled water sold in large supermarkets.

One of the main challenges of the vended water model is offering a price that is affordable to poorer consumers. Prices in Kenya are still too high to reach significant numbers of low-income customers. However, the growth in the number of outlets is encouraging and should lead to price reductions as competition intensifies. As competition increases among vendors, it will also increase among suppliers and can be expected to result in better-quality and more affordable equipment.

In Kenya, the average cost per liter of vended water is about \$0.15, or about \$3 to refill a 20-liter jerry-can. The hypothesis that prices will continue to fall in Kenya is supported by the evolution of the vended water market in Asia.¹² Vended water first emerged in Southeast Asia as a middle-class consumer product in response to demand for cheaper options during the Asian financial crisis and currency devaluations of the mid-1990s.¹³ The growth of the sector in Asia led to operational and supply-chain efficiencies. The downward pressure of competition on vended water prices in Kenya can already be seen. In one year, from 2011 to 2012, the Water Shop Naivasha Limited, the largest vendor in the Naivasha market, responded to increased competition by halving its prices. In addition, in recent surveys, Aquaya found that the most profitable Kenyan business earned almost 10 times the profits (in absolute terms) of the most profitable Indonesian businesses, suggesting ample room for competitive growth in the industry.¹⁴

However, another factor in the growth of the Asian market is access to finance, which is markedly more problematic in Kenya. Most Indonesian start-ups in this sector, for example, can self-finance equipment costs

SUCCESS STORY – THE PUREFRESH BRAND

Anthony Kamotho is the owner of the Water Shop Naivasha Limited (owner of the PureFresh brand). He started his first water-reselling business in January 2010 without Aquaya's help, recognizing that there was an unmet need in his hometown of Naivasha, located about 100 kilometers outside of Nairobi.

By the third month of business, Anthony had made a net profit, and within 17 months he had fully recaptured his initial investment. The company has grown to become the largest and most profitable of the Kenyan onsite water treatment and vending businesses.

PureFresh sells 12-liter refills provided in a branded jerry-can (sold to the customer on the initial purchase) rather than a clear plastic bottle. Increased demand from competitors in Naivasha drove PureFresh to lower the price per liter of water by 50 percent during 2012 and 2013, increasing access to lower-income consumers.

In March 2015, the Water Shop received an \$80,000 impact investment to help Anthony grow his business.



Advanced treatment system at a vended water business. Right: Storage capacity allows vended water businesses to avoid supply disruptions.

of about \$2,000 for a complete water-treatment-vending package, whereas Kenyan entrepreneurs report spending an average of more than \$12,000 to secure and assemble individual components into an operable treatment-vending system. Financing is also an important barrier to scaling these models. This is discussed further below.

Support to Kenyan Entrepreneurs

The objective of the IFC-Aquaya project was to demonstrate the viability of the business case for small-scale water treatment and vending businesses and, in the process, generate practical market intelligence that could be used to help accelerate market development to reach low-income consumers. To achieve these

goals, Aquaya supported various local entrepreneurs to establish six demonstration water treatment and vending businesses in Kenya between November 2010 and January 2012. Aquaya also worked with local banks, KCB and Family Bank, to facilitate financing for these businesses. One of these companies, the Water Shop Naivasha, continues to grow and just received an impact investment of \$80,000.

Other businesses were slower to achieve profitability, which helped the team identify the critical success factors that would guide others in the future. Management skills and commitment to the business were the key drivers of success, but other important factors include reliable access to source water and locations close to residential neighborhoods that reduce transportation constraints for customers.

Water Business Kit – Encouraging Entrepreneurs to Innovate¹⁵

The lessons learned from the first phase of hands-on business support were used to develop a toolkit to help businesses enter the market. This “Water Business Kit” includes practical information for would-be water entrepreneurs, including guidance on how to select sites for new facilities, how to fulfill regulatory requirements, and how to ensure water quality. It also offers advice and guidance on general equipment specifications, as well as templates for business plans and cash-flow models. Through this toolkit, the SSAWA program aimed to foster healthy competition that would continue to lower the price of vended water and expand access to safe water for poor consumers.

The Water Business Kit has been one of the most widely requested knowledge products developed under the SSAWA program. Many entrepreneurs have approached the team to ask for further guidance or provide feedback on their experience using the kit, which suggests that the private sector sees a market opportunity in vended water. However, challenges remain, both in scaling the industry and for developing this model as a solution to safe water for the BoP, as noted below.

Lessons Learned

A few distinct lessons can be drawn from this experience. If the objective is for this business model to provide a mass-market solution to the challenge of lack of safe water access, then either considerable patience, or some form of creative pro-poor incentives, is required.

“Our company is in the process of launching a number of water franchise businesses in East Africa (Uganda, Burundi, the Democratic Republic of Congo) in a very similar fashion as [described in the] Water Business Kit Kenya. This document, by the way, is by far the best thing we have read on this subject. Thanks so much for the great research and work that went into [...] your contribution to this domain!”

– Randy Welsch, Jibu Company CEO

As Ranjiv Khush from Aquaya concludes: “Entrepreneurs will always, naturally, go for the sweet spot – that is, they will target demand, which in the current market is primarily coming from middle- and upper-income groups. If you want to incentivize entrepreneurs to innovate, to develop products and markets that are going to support lower-income market segments, there is a need for financing mechanisms that support that kind of activity. We need to think really quite carefully about incentives for entrepreneurs to take on more difficult market segments. It will happen naturally, of course – as competition increases, entrepreneurs are driven to the fringe – but this will take a very long time. So, we can say, ‘We know this is going to happen in ten years – let’s wait,’ or we can decide to accelerate the process.”

A second lesson relates to the challenge of scaling new business models through financial intermediaries. The Water Business Kit was originally intended to provide an entry point for a partnership with at least one local bank. It would provide banks with a basis to understand the dynamics of the business model and a standardized way to appraise new applications, thereby generating new business. In practice, the banks did not generally show great enthusiasm for being first-movers into what they saw as an untested and niche market. This lack of interest from the banks was exacerbated by the lack of collateral among new market entrants, a common challenge for start-up entrepreneurs in any setting. The conclusion, and one that has been made in many contexts, was that some new form of intermediation was needed to bridge the thousands of high-impact investment opportunities with nontraditional impact investors willing to accept greater risks. This could present an opportunity for others to take up in future.

As described above, one of the major challenges in Kenya was the high upfront capital costs for new treatment systems (61 percent of total start-up costs) given the nascent level of market development. Aquaya developed a potential solution to lease equipment to potential entrepreneurs.

“Vended water is a tough business, but one that presents a real and viable market opportunity for the private sector. Some keys to success are informed selection of appropriate sites, wisely driving site-capacity utilization, and consistent and reliable operations (any level of quality failure has huge implications).”

– Giridhar Srinivasan, IFC Senior Operations Officer

This would reduce the need for additional outside financing (one of the major barriers to scale) and could reduce costs if a single leasing intermediary was able to import equipment in bulk. While this solution could not be developed within the timeline of the SSAWA pilot, it might be an interesting concept for others to explore.

CONCLUSION

The SSAWA program was an exploration in mobilizing private sector financing to improve water and sanitation services for the underserved. Although it was a geographically targeted and relatively short-term initiative, it did reveal some promising findings that suggest that private finance can be stimulated in the sector, and could, over time, become a more meaningful mechanism to address the major financing gap that exists for water and sanitation in almost all developing countries.

The SSAWA program hopes that the findings and lessons described here can be used to inform the growing number of initiatives that are trying to find ways to leverage market incentives to achieve water and sanitation development goals. Within the World Bank Group, WSP continues to develop many of the initiatives discussed in this paper.

IMPACT BEYOND AFRICA – D’LO HAITI

The Water Business Kit helped inform future IFC investments outside of the Kenyan market. For example, D’Lo Haiti is a for-profit venture providing safe drinking water to consumers in underserved countries. The IFC investment team drew on the findings from the Water Business Kit to guide D’Lo Haiti’s initial launch of a 40-facility pilot, which it aims to expand to a 300-kiosk, Haiti-wide deployment.

D’Lo Haiti’s target market is underserved communities in peri-urban and rural areas where customers currently pay high prices for safe water. A post-pilot scale-up could reach between 5 percent and 8 percent of the Haitian population who are currently underserved or beyond the limits of public infrastructure or water trucking. It would serve about 145,000 Haitian consumers, saving them more than \$350,000 annually on securing safe water.

The delivery of water and sanitation solutions through market-based mechanisms is not a complex challenge, but it does need to be confronted: public funding, while critical, remains vastly insufficient to address the scale of the water and sanitation access challenge in the developing world. It is important that efforts to bridge the gap between public and commercial solutions continue, and we encourage others to build on these efforts. ■

Further Information/Resources

World Bank Water and Sanitation Program

(www.wsp.org)

IFC SSAWA program resources

(www.ifc.org/ssawa and www.ifc.org/sellingsanitation)

Gates Foundation (www.gatesfoundation.org)

Aquaya Institute (www.aquaya.org)



FOOTNOTES

1 World Health Organization and UNICEF. Progress on Drinking Water and Sanitation: 2012 Update. United States: WHO/UNICEF Joint Monitoring Programme for Water Supply and Sanitation, 2012. http://www.who.int/water_sanitation_health/publications/2012/jmp_report/en/.
2 Ibid.

3 The Next Four Billion report, IFC.

4 World Sanitation Financing Facility (WSFF, <http://www.sanitationfinance.org>) in Geneva in 2009.

5 As calculated by the World Health Organization for a five-year period from 2010 to 2015.

6 For further discussion of IFC's market transformation steps and their application in the Lighting Africa program, see Designing Market Transformation Project for the Base of the Pyramid: The Lighting Africa Program.

7 The Water and Sanitation Program (WSP) is a multidonor partnership administered by the World Bank to support poor people in obtaining affordable, safe, and sustainable access to water and sanitation services.

8 United Nations definition (<http://www.wssinfo.org/definitions-methods/>).

9 This effort is still at an early stage so results are not yet available, but the success of this approach should be seen by late 2015. Baseline data collection for an impact evaluation has begun to measure the cost-effectiveness of these different channels in reaching BoP consumers.

10 Financing Urban Water Services in Kenya, Utility Shadow Credit Ratings, WASREB and WSP, Nairobi, Kenya, November 2011. <http://www.wsp.org/sites/wsp.org/files/publications/WSP-Financing-Urban-Water-Services-Shadow-Ratings-Kenya.pdf>.

11 2013 PPT Presentation by Dr. Al Hammond, Director, Health for All program, Ashoka, Co-Founder, Healthpoint Services India Pvt. Ltd. <https://whconference.web.unc.edu/files/2013/10/water-for-BOP.pptx>.

12 <http://www.aquaya.org/project/water-business-kits/>.

13 Ibid.

14 Aquaya Internal Report for IFC.

15 <http://www.aquaya.org/project/water-business-kits/>.