Case Study: Effects of the Sanitation Marketing Approach in the Kaffrine Region, Senegal

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World Vision Mission

World Vision Senegal (WV) has committed to improving the accessibility of sustainable sanitation systems to vulnerable households and children in its program regions. WV has recognized that many of the national "our promise" aspects such as gender equality, school participation, or nourishment are inherently tied to good hygiene practices within communities. The 2021-2025 strategic plan states the need to

> "Significantly improve child well-being by enabling families and communities to achieve sustainable access to adequate potable water, improved sanitation facilities, and good hygiene practices"

To implement these goals WV has utilized national and regional water, sanitation, and hygiene (WASH) programs to incentivize changes in hygiene practices for vulnerable children and their respective communities. WV has been engaging local authorities and leaders in activities to promote awareness surrounding WASH, namely sanitation marketing. The program aims to not only have local leaders or governing bodies understand core WASH issues but spur the creation of Village Development Committees or Associations (VDC/VDAs) to create sustainable sanitation industries through internalized funding mechanisms, formally known as S4T groups.

WV's programs aim to introduce methods to curb open defecation (OD) practices and ensure continued proliferation of these strategies to limit reliance on subsidization to maintain open defecation free (ODF) status. An estimated 88% of diarrhea-related illnesses stem from poor water and sanitation, causing almost a million child deaths a year (Coville and Orozco, 2014). As a result, around 5.7% of all disability-adjusted life years (DALYs) and 4.0% of all years-of-life lost (YLL) are due to WASH related issues (Prüss et. al., 2002). Proper sanitation can curb these numbers, promoting gender equality, school participation, and healthier lifestyles. WASH interventions have been found to decrease OD-related diseases by up to 36%, compared to a 17% risk reduction from similar water quality improvement (Esrey et al., 1991). Senegal's government under has committed to guaranteeing universal access to drinking water and sanitation by 2030. However, as of 2021 sanitation access only sits at 65.63% for urban areas and 41.26% for rural areas (WV).

Background

Sanitation marketing, compared to direct aid, seeks to motivate communities to improve sanitation efforts through a combination of "triggering" and sustainability practices. As opposed to direct aid WV uses a program, commonly known as Community Lead Total Sanitation (CLTS), to build the technical and social sustainability of sanitation works. The aim being to transition from a charity support model of "subsidy recipients" to "subsidy customers" of community run programs. CLTS assists the introduction of safe sanitation for scenarios where high interest rates are present or traditional lines of credit are not viable.

Additionally, the approach markets to low and middle-income households the equal importance of sanitation investments to areas like transportation, technology, or real estate. Successful CLTS campaigns create locally run programs that spread latrine implementation and maintenance through developing an active market for sanitation products and services.

Applications in Senegal

WV Senegal works directly through the local municipality to implement CLTS, centering on village-based funding. CLTS teams, when establishing programs, map vulnerable parts of the community and organize VDAs to administer it. WV representatives work with local governors to align WASH related goals of the charity with those of the municipality, combining the funding. Integration is key, as the decentralized nature of Senegal's government requires regional work to be done in strict accordance with local objectives. Therefore, each sanitation marketing program differs in its implementation and purpose, but a general structure is observed.

Initially, a "triggering" event is organized by the program, where WV staff work to create a culture of shame around OD through a series of demonstrations (e.g., placing feces next to food to show how insects transfer bacteria between the two). Through such demonstrations and repeated visits communities will move to seek WV's assistance in implementing sanitation efforts, now cognizant of OD's impact on their livelihood. Funding for subsequent action plans is then initiated on a community level. Communities will raise collective account controlled by the VDA/S4T, contributing on either a weekly or a monthly basis. A Memorandum of Understanding (MOU) is signed between the local government on their commitment to the sanitation sector. Funds for sanitation projects will then be available for low or no interest rate loans for some, while given as grants to others. Local businesses are trained on constructing and maintaining these projects to integrate sanitation efforts into the local economy and ensure sustainability.

Objective and Motivation of the Study

This case study will summarize and evaluate the impact of sanitation marketing by WV staff in WASH project areas in Kaffrine, Senegal. Through describing approaches to sanitation marketing village-by-village this study aims to share insight on the application of the CLTS approach. The study will outline what steps were taken by WV to create sustainable programs though interactions with the community, funding, and collaboration with local government. Through this overview the study will then present a series of core lessons as well as potential policy suggestions for future sanitation marking programs.

Location and Conditions

The Kaffrine region of Senegal is located to the east of the capital Dakar. With a population of 544,011 and density of 48 persons per square km it is divided into four administrative departments: Birkilane, Kaffrine, Koungheul, and Malem Hoddar (Census, 2013).

Located along the Dakar-Niger railway the region is home to mostly farmers, situated in the country's Peanut Basin. Millet, peanuts, and maize are grown by over 85% of farmers. Climate change has begun to threaten these practices as erratic rainfall and rising temperatures will impact crop yields (AU Senegal).

Transportation infrastructure in the region is relatively good, with motorways and streets allowing access to some villages and cities for trucking and transportation. This is however hampered by the climate, as rainfall makes packed-dirt roads slow or unusable. Government services are present with police helping control and patrol motorways in addition to visible sanitation efforts to limit waste disposal in public areas.

Site visit 1: Mabo AP

The WV Mabo Area Program (AP) is located 45 minutes from Kaffrine City by car. The micro-project visited in the village of Dagabala is a collaboration WV and OSHUN, an impact company operating in Senegal and Burkina Faso. While not a directly sanitation-related program, it is vital in introducing aspects of WASH into the region. Safer water access can motivate community action in areas like OD.

Beginning in 2019 WV worked with the community to install a water delivery system utilizing a solar panel, electrical pump, and water tower to allow access to safe drinking water for the community. AP managers initially worked within the village to trigger local advocacy related to water safety, building negative sentiments towards the use of contaminated water sources for domestic use. Through this the community moved to organize a water distribution system around the technology subsidized in part by WV and the Mabo regional government.

On initiative of the village two more water towers were constructed without WV funding near the original pump system. Each pump is managed by women from the community who distribute water through a token system, not only expanding access to this resource but also placing women into leadership roles.

WV staff collaborated with the village chief, Mabo mayor, and local contractors to transition the momentum gained from the triggering activities into initiative to continue improving water access. This was mainly facilitated by the VDA in both a logistical and social capacity.

Through conversations with the local leaders and WV staff, as well as observation of the main obstacles to overcome for WV were managing the varying interests in the group. The mayor, chief, and contractor all sought a certain role in implementation, but had competing motivations. The mayor, just recently elected, wanted a quick turnaround, taking pictures and videos of the meeting to show to his constituency. The Chief was concerned about the project site impacting access to the central road, as well as vulnerability to flooding. Ultimately the WV staff were able to negotiate a deal and map out the area where the WV and OSHUN upgrades to the existing water system would be installed. This interaction seemed to underscore the importance of strong relationships with all administrative and governmental contacts in each micro-project. Providing a significant level of understanding to local governmental and religious leaders was key to gaining access to the social channels needed to harness the power of groups like women and younger adults. While they are not present in the discussions, women and younger children interacted the most with the water systems and are more greatly affected the related health issues (Pouramin et al., 2020)

Site visit 2: Diamagadio AP

The WV Diamagadio AP program has several micro-projects focusing on WASH related activities. The Hamdalaye micro-project visited was new for FY22, having just entered the final

stages of CLTS triggering. Interviews conducted with the VDA revealed several key motivators behind engagement with the program: disease transmission, quality of life, and women's health.

Most women interviewed in Hamdalaye mentioned that they had become concerned about disease transmission between OD zones and homes through animals and food. Most houses keep domesticated animals such as cattle, donkeys, or horses behind their property, which is often the most common area for OD. The women stated that this had caused several infections in their animals which transferred over to humans: cholera, typhoid, hepatitis, diarrhea, and worm infestation being some of the most common diseases in these scenarios. They suspected insects had also moved these bacteria between both animals and food. When asked about why latrines were the focus of the sanitation improvements, they answered that for them combatting OD with latrines was synonymous with improving healthcare access.

Quality of life was often mentioned alongside latrine implementations, with one VDA member stating that she hoped to be able to organize further WASH programs to improve access to potable water for domestic and agricultural use. The neighboring village of Dankou has a WV subsidized well, which the Hamdalaye VDA recognized as having a large effect on OD related illness. She said it has been difficult to afford safe water for both, often having to prioritize drinking water which led to issues with contaminated crops. Sanitation marketing inspired residents to look at other elements of WASH in their community, recognizing links between health issues, sanitation, and water safety.

The VDA reported that 28 households had now registered interest in purchasing a latrine, moving Hamdaalaye's program forwards in CLTS. Their commitment to transitioning more of the community to latrines as reflected in the effort put into the weekly "cleaning day", where the village was swept free of trash and other litter. The VDA leaders met with WV WASH staff to begin to organize a local sanitation market, which included the training of a local mason to be able to install latrine systems in home. Reliance on internal, rather than external, contractors make the village's project sustainable even after the expiration of the WV mission. The Hamdaalaye and Dankou village masons would be trained collectively to be ensure a diverse sanitation economy in the village cluster. WV staff will then assist in stocking a store in the village with relevant cleaning supplies for the latrines, which VDA members say is key to help them elevate their quality of life. This approach helps create an enabling environment that simultaneously increases supply and demand, modeled in *figure 1* by Mukherjee et al., 2009 as the Total Sanitation Marketing (TSSM) system. It ensures that there is no fallback to OD once the program has ended, which has proved successful in the older micro-project in Dankou.

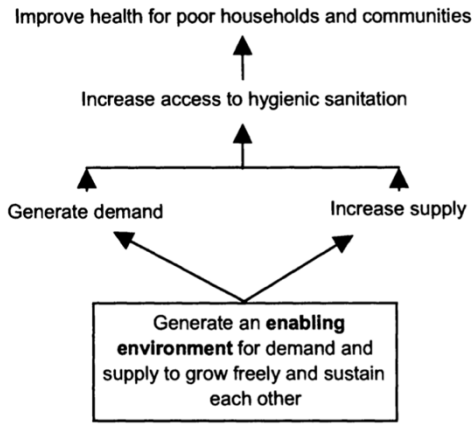

Figure 1. TSSM project causal logic

FIGURE 1

This VDA meeting demonstrated how vital women are in the early application of all stages of not only CLTS, but WASH. In an agriculturally dependent economy of Kaffrine male household members spend most of the day working, leaving women to engage the most with tasks affected by WASH such as gardening, cleaning, and fetching water. As a result, women have more of an incentive to improve their domestic quality of life. The group expressed that they saw engaging in WASH as a pathway to training women and younger children in "activities that will be able to fund an improved quality of life". To them this meant women-specific healthcare, skills training, and a larger role in their community.

Neighboring Dankou's initiative has been in place since 2006, and the continued effect of empowering women through WASH is evident. Compared to the group VDA meeting in Hamdalaye only a few members met with the WV staff, quickly updating them on new latrine requests and other progress while sharing a registry of new contacts for WV to reach out to. Through just observation it is noticeable how much pride is taken in these VDA WASH positions, promoting many to what seemed to be elevated leadership roles in the community.

Site visit 3: Ndiao Bambaly Health Post

The Ndiao Bambaly health post is responsible for providing health care to the village of Ndiao Bambaly and its surrounding villages. Staffed by one ICP, one nurse, one pharmacist, and three assistants the center provides care ranging from simple medication to clinical services. Upon arrival patients either head to the pharmacy, to purchase drugs such as Amoxicillin or Anti-diuretics, or buy a ticket for a clinical consultation. As services are limited and demand is high, patients wait in adjoining rooms or outside the post. ICP Mr. Thiam says the center sees around 1200 patients a month from surrounding villages for consultations. WV is one of multiple NGO partners in the center, organizations like USAID and WHO contribute supplies and marketing materials.

WV is working with the post to provide improved sanitation access in the facility; this includes 5 sinks, two latrines, and a water tower on the roof. Working with external contractors, sinks have been added to the ICP office, nurse's station, infirmary, and maternity ward, which Mr. Thiam says will help keep staff and patients safer. The Kaffrine department government has recently made it a requirement for new health posts to be built with sufficient latrines, making this upgrade much needed. He also mentioned that the water tower, once constructed, will help ensure day-to-

day operations in the post can better combat disease transmission. Mr. Thiam estimates that close to half of the 1200 cases his office sees a month are a direct result of OD-related illnesses, especially in children and young adults To him, continued sanitation marketing in the region could reduce this ex-ante moral hazard; while anti-diuretics are available the consultations, treatment, and overall cost still capture vital resources.

While WASH improvements are made with the latrines and potable water infrastructure a potent issue, when compared to other posts, was a lack of proper disposal mechanisms for medical waste. Sharps containers were available throughout the facility but medical waste such as IV bags, syringe barrels/plungers, or used lap-sponges were deposited outside.

Post staff said that medical waste is driven to Kaffrine City weekly for incineration, but that process was both expensive and, based on the season, sometimes impossible. Roads leading to Ndiao Bambaly are unpaved and quickly rendered undriveable by rainy season flooding. A small incinerator had been installed near the vehicle entrance of the center through a WV donation, but waste had to be left outdoors till staff had time to operate it. Crude incineration practices help clear space of waste but resulting infectious, pathological, or chemical waste can pose a risk to patients and those around the center. As pointed out by Chisholm et al., 2021 the lack of sanitary landfills in Senegal poses a clear risk to land and water quality that must be addressed. A solution between NGOs and the Senegalese government is much needed for this issue to ensure the safety of outposts like these.

CRITICAL COMMENTARY

Norms and cues

Standard microeconomic theory assumes that people are “highly rational, self-interested, and internally controlled agents”. Logically poor decision-making must then stem from missing information or resources (Coville and Orozco, 2014). Policy solutions are traditionally to then provide more resources or information for the decision-maker, theorizing it leads to better long and short-term choices.

However, this approach neglects the fact that most people operate under behavioral biases and cognitive constraints; factors which information access have little effect on. For example, a person can have full access to information about a decision, but “face issues of self-control…at the expense of their future self-interest” (Coville and Orozco, 2014). This can be seen in small farmers not fully utilizing fertilizer while it is economically viable, low savings rates among poorer populations, or low vaccination rates even under subsidies (Karlen et. al, 2013) (Kremer et. al., 2009) (Banejeree et. al., 2010). Due to the sheer number of decisions people face in day, especially those in socioeconomically vulnerable groups, long-term choices often take a back seat to reduce mental fatigue, opting to instead chose the default options of e.g., no fertilizer, no savings, or skipping vaccinations. Choices like opting to forgo OD or hand washing are sometimes not made because of a lack of information, but rather because of the mental prioritization of tasks in areas where certain aspects of sanitation are not yet clear social norms (Coville and Orozco, 29).

Kahneman and Tversky, 1979 found that the cognitive capacity to make these choices depends on the examples that come to mind when a person weighs the odds of a decision like OD. This then depends on the significance of that event; if a person knows someone who has been affected by

a disease that can be spread through OD their reasoning can be impacted. Perceived losses are then often seen as more important than perceived gains, impacting behavior.

This line of thinking exists in the studied sanitation marketing campaigns, with WV staff's demonstrations and distribution of materials contributing to the heuristic approach to WASH. There exists potential to expand this process to overcome the cognitive barriers that can limit program uptake, as well as encouraging sustainability. WASH managers or VDAs could create messaging that quantifies how sick days are related to OD through specific stories, rather than pure statistics. A study found a positive correlation between OD awareness when farmers in Kenya were shown the effects of water contamination on babies instead of statistical correlations (Kremer et al., 2009). Text message based and other practical reminders for elements of WASH have also proven effective in creating long term behavior change some settings Coville and Orozco, 31). Through reminders, e.g. LED lights on soap dispensers, sanitation is introduced into the mind at critical mental junctures. Additional smart incentive systems could be introduced by WV to bridge the gap between initial uptake and positive long-term effects. Upfront benefits like phone credit, commodities, or services can spur uptake through tangible short-term effects for consumers. WV has already done significant work on proper timing, framing, and packaging strategies for sanitation marketing which has increased the perceived present value of programs for participants.

Sustainability of programs

Many of the WV staff in the field in Kaffrine mentioned the importance of sustainability in the WASH projects throughout the region. Establishing the VDAs, training local masons, and the installation of WASH-related infrastructure. Even after the end of project follow-ups are integral to ensuring the continued success of the program long after initial impacts like water access, sanitation facilities, etc. totals have been tallied. Seigler et al, 2014 found that only 1 in 10 organizations engaging in CLTS that claimed to have follow-up mechanism in place to ensure ODF status were doing so. From the sites visited during this study, varying from 1 to almost 20 years in age, WV seems to have diligently followed TSSM to create enabling environments that can ensure the longevity of the programs. However, note should be taken from literature that has analyzed the failure of very similar projects to prevent similar challenges. Barnes et al., 2014 found in a comprehensive literature that the top three factors for success in similar sanitation projects were:

1. Strong Community engagement/empowerment
2. Culturally Appropriate Marketing
3. Personal characteristics of individuals involved

From site visits done in the study WV seems to excel in all three categories; fully engaging with all regional leaders through staff that are well-versed in not only local culture, but the connections needed facilitate successful programs. Barnes et al. note that to sustain these factors WASH leaders must enforce minimum standards/constraints, sustainability criteria outside of just technology, and long-term data gathering.

Barnes et al. list the top three reasons for sanitation program failure as:

1. Inappropriate technology
2. Lack of ongoing contact
3. Supply driven market

From conversations with WV staff points 1 and 2 are being accounted for in general planning, with site visits confirming steps to address the possibility of these issues. However, signs of a supply-driven market did occasionally appear, which could either be a sign of an issue in WV planning or the nature of these aid projects. While the subsidization of latrines appears sustainable in the long term, with local masons and local markets supporting the supply side, but many of

the services requested by villages like Hamdalaye cannot be sustainable (*figure 2)*. The need for NGOs to subsidize cleaning materials, water towers, or trash disposal is not scalable. The challenge lies in the institutionalization of WASH-related infrastructure. As pointed out by Rosenzweig and Kopitopoulos, 2010 the local government model is scalable because "functioning local government administrations exist in most countries and cover the entire country" (1).

NGO support when dependent on donor funding it is not compatible with the decentralization needed to create sustainable markets. To limit this ex-ante moral hazard outside of latrine construction it may point towards a general need for higher country-wide investment in sanitation infrastructure. While the Plan Senegal Emergent (PSE) under President Sall has led to yearly economic growth above 6%, it has not translated to much broad-based growth (Shipley, 2018). This along with waning confidence in anti-corruption reforms sees a need for institutional reform. While the post-Wade reforms cracked down on parallelism in institutions, clientelism in the civil service has still resulted in up to 6,000 postings without a formal interview process, creating incentives for decisions aligned with interest groups to secure job tenure (Shipley, 2008). WV WASH efforts have been successful, examination of institutional factors could help expand the already effective field work done by WV staff.

Sector organization in the sanitation industry

If programs continue to scale in APs across WV's WASH efforts, the question of sustainability also must cover the external infrastructure available. While potable water access is not as challenging to introduce into the market, sanitation can be as it is more of a social phenomenon then a technical one (Wegelin, 2000). Sanitation does not carry as a potent political issue either, often being labeled as more of woman subject than a greater public good. While sanitation marketing works to change this stigma, engineers and the private sector do not find the low level of technicality or long timeframes appealing for investment compared to the water sector (Shordt and Snel, 2002). Shordt and Snel explain that "Sanitation programs are challenging to organize and control as they relate to small budgets over scattered areas, requiring similarly consistent private behaviors by different individuals" (3).

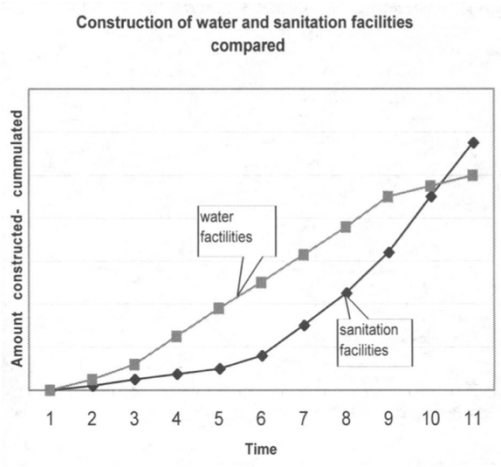

FIGURE 2

The incentive for entrepreneurs, like the village masons trained by WV, decreases throughout the sanitation supply chain. Schaub-Jones, 2011 illustrates this in *figure 3*, with the line demonstrating the increasing amount of entrepreneurial skill needed to succeed in these market segments. This stems from the greater amount of capital required to operate segments 2 and 3 of the process. Bereziat, 2009 investigates segment 2 of this market in Dakar, specifically vacuum trucks to remove waste from latrine systems.

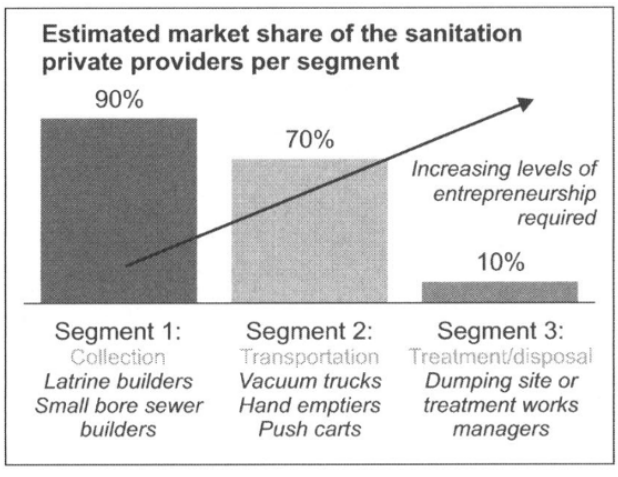

FIGURE 3

The market in Dakar for these services is estimated to exceed 3 million USD, yet poorer populations in Dakar still must resort to manual emptying of their systems.

Bereziat notes that Senegal's government typically relies on this private sector to deliver sanitation but is unaware of the preference of the market for government contracts, rather than private. Firms tend to avoid household latrine emptying as the process is complicated to monitor; it is difficult to know how many trips were made as compared to demand services like water or trash it is irregular and often on a one-off basis. Efficient and proper tracking are then difficult to achieve because of the continually varying locations and scale of individual jobs.

Sanitation efforts in Senegal rely on a variety of institutions: government, community organizations, NGOs, private sector, and project teams. There is a fragmented framework that is difficult to coordinate and even more difficult to fund. To crate sustainability in sanitation practices reforms to this system must be made, otherwise risking continued low engagement from the private sector needed to sustain it. For WV projects this should be a key issue going forward as sanitation marketing is developed throughout APs. Once the construction and maintenance of latrines is integrated into local economies, considerations should be made about how sanitation can fit into the winder regional and national market.

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