Supporting sustainable WASH services in difficult operating environments

A case study from Nicaragua

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Hygiene promoter Charvely Lampo, 20, on the right, explains WaterAid's water monitoring chart to a young woman. Wawa Bar, Bilwi, Nicaragua, 2015.

Introduction

If WASH services are to deliver continuous benefits to users they must be supported by strong, responsive, permanent in-country institutions. Strengthening permanent institutions is very challenging in difficult operating environments and requires approaches that work beyond the delivery of taps and toilets alone. This document is aimed at WASH practitioners and policy-makers developing management and support processes that ensure service sustainability. It seeks to share WaterAid Nicaragua's experiences of reinforcing sustainable WASH service provision in an environment characterised by weak and under-resourced institutions, exposure to disasters, and a history of conflict and political polarisation. To achieve this objective, WaterAid Nicaragua is strengthening the service delivery, strategic planning, financing, monitoring, coordination, accountability mechanisms and post-implementation support functions of permanent institutions. Barriers to sustainability and WaterAid's approaches to addressing them are described in the proceeding sections.

National context

Nicaragua's income status, as defined by the World Bank, was considered lower-middle income in 2015, however, its gross national income per capita, $1,870, is significantly lower than the regional average of $9,095. The Human Development Index, a composite score based on health and education indicators, has Nicaragua in the bottom third worldwide (125th out of 180 countries) with a score of 0.631[1]. Between 2009 and 2014 general poverty in Nicaragua dropped 14% and extreme poverty dropped 6%, from 14.6 to 8.3%[2]. Despite these gains in poverty reduction, inequality is still a significant concern and poverty is most prevalent in the autonomous regions of the Nicaraguan Caribbean where WaterAid operates.

Where WaterAid works

Nicaragua is divided into three regions, Pacific, Central-North and Caribbean, which are subdivided into 17 administrative departments or regions. WaterAid programmes are focused in the two Caribbean autonomous regions, *Región Autónoma del Caribe Norte* (RACN) and the *Región Autónoma del Caribe Sur* (RACS), which make up approximately 50% of Nicaragua's total land area. Only 15% of the country's total population live in this region, and nearly three quarters of the people live in severe poverty as defined nationally: $1.73 per day.

The challenges facing RACN and RACS are many. Limited transportation and other civil infrastructure means that the cost of moving goods and providing public services is high. A low population density (11 people per square kilometre) means that per capita costs are high for public services. Together these conditions mean that economies of scale are difficult to achieve, and the availability of goods and materials is limited, making it difficult to establish viable supply chains. Economic challenges are compounded by the area's vulnerability to extreme weather events such as hurricanes and tropical storms. Staff appointments within local institutions can be politically driven, meaning capacities can be lost when there are changes in leadership. Conflicts over land ownership frequently erupt, impacting on access to

[1] UNDP, 2015 http://report.hdr.undp.org/
[2] 2014 Standard of Living Survey by the National Development Information Institute

villages and social cohesion. Geographic isolation and administrative segregation means that these regions are often politically disconnected from the Pacific regions, and therefore are not prioritised.

Despite these challenges, there are many opportunities in the Caribbean regions. There is great social and cultural diversity in the indigenous Miskitu, Mayangna and Ramas peoples, as well as the ethnic Creole, Mestizos and Garifunas, and the community social networks are strong with an ingrained sense of equity and inclusivity. There is also an abundance of natural resources and local resources for construction, and the accompanying knowledge on appropriate construction practices.

BOX 1: WaterAid Nicaragua country programme

Programme started in 2012 and since then has focused its work in 20 villages and two peri-urban towns in the RACN. The programme has grown from two people with an annual budget of $133,000, to a staff of 18 and an operating budget of $750,000. It has established strong partnerships with local organisations, government, private sector and international non-government organisations.

Programme achievements 2012–2014:

- 18 schools with improved WASH services, 7,323 people with improved water supplies and 5,224 people with improved sanitation.
- Capacity development of local governments in areas of planning and coordination.
- Development of innovative approaches to provide water and sanitation services to the poorest in peri-urban areas as well as remote, rural indigenous populations.

Key objectives for the new strategy:

1. Continue programmatic approach, which combines 'traditional' implementation at the community level with strategic support and activities at the sector level (e.g. sector knowledge development, coordination groups and technical working groups).
2. Focus on a municipality-wide approach extending work into new areas of the RACN.
3. Continue to focus on indigenous communities and marginalised groups, with a strong emphasis on community participation and empowerment.
4. Prioritisation of sanitation and hygiene, while integrating maternal and child health into these activities.

Status of water and sanitation services

In Nicaragua 87% of the population has access to an improved water source – 99% and 69% in urban and rural areas respectively. With regard to sanitation, 68% have access nationwide, with 76% coverage in urban areas and only 56% in rural areas[3]. An estimated 420,000 people practise open defecation, with the vast majority of these individuals living in rural areas. In the autonomous regions where WaterAid works, conditions are drastically different; only 18% of the population has sustained access to safe water, and 20% has access to adequate sanitation. These low rates

[3] WHO/UNICEF (2015) Progress on Sanitation and Drinking Water: 2015 Update and MDG Assessment.

are exacerbated by poor service functionality (up to 80% of water supply services are estimated to be non-functional[4] at any one time).

Institutional arrangements

Nicaragua is characterised by a complex institutional configuration with a mix of different government agencies having overlapping, conflicting and/or unfulfilled roles and responsibilities for service provision. The picture is particularly complicated in the autonomous regions, where both donor and treasury funds are channelled alternatively via a national agency (Nuevo FISE), the regional government and indigenous territorial governments, who then have the remit to implement locally alongside municipalities. Whilst municipalities have legal responsibility for providing water and sanitation services, in practice this mandate is often not fulfilled.

TABLE 1: Main Nicaraguan institutions involved in water and sanitation sector and their main responsibilities.

Main entity	Roles and responsibilities
Nicaraguan State Enterprise for Drinking Water and Sewerage (ENACAL)	Public utility serving urban water users including nearly 100% of the population in Managua. ENACAL is also responsible for planning.
Ministry of Environment and Natural Resources (MARENA)	Responsible for environmental policies and watershed management and climate change adaption and mitigation initiatives.
National Water Authority (ANA)	Decentralised executive body for water resource issues, with its own legal status and administrative and financial autonomy. Provides concessions for water resource use. Develops the National Plan of Water Resources that serves as the basis for basin plans.
National Commission for Water Resources (CNRH)	Mandate for sector planning, as well as acting as a participatory forum with advisory and coordination functions, and oversees work of National Water Authority (ANA).
Nicaraguan Institute of Water and Sanitation Systems (INAA)	Regulator that develops norms and standards for water and sanitation service providers (public, private, civil society, etc.), provides concessions for service providers, and collects and processes complaints by customers.
Emergency Social Investment Fund Programme (FISE)	Aims to facilitate access to basic universal services for impoverished communities and vulnerable groups, and to promote social protection. It is responsible for water, sanitation and hygiene sector in rural areas. Authority for rural

[4] Herrera RS, Obando SA, & Casey V (2014) WaterAid Country Programme Evaluation.

Under the presidency	WASH sector was transferred from ENACAL to FISE by Presidential decree in 2004.
Municipal government	Municipalities are responsible for ensuring the provision of water and sanitation services in Nicaragua, however, very few are directly involved in service provision.
Water Committees (CAPS)	Legally recognised community groups responsible for managing and maintaining rural water supply services for communities with fewer than 500 people in accordance with 2010 law.

Sector finance

The government of Nicaragua has a plan to invest approximately $2 billion in water and sanitation during the period covered by the Sustainable Development Goals (up to 2030). Under this programme, called PISAH – *Programa Integral Sectorial de Agua y Saneamiento Humano de Nicaragua*, about $70 million per year is expected to be invested in the rural sector starting in 2016. This is an increase of over 300% from the rates of 1991–2013. However, a gap still exists.

A significant percentage of the investments in the water and sanitation sector are financed by foreign donors or multilateral development banks. A prime example is the programme financed by the Spanish Development Cooperation (AECID) and managed by the Inter-American Development Bank (or *Banco Interamericano de Desarrollo,* BID), which is dedicating $343.3 million to improve water and sanitation services in 19 secondary cities. This includes a $58 million water project in Bilwi in RACN.

It is common for communities to contribute between 10–15% of the total capital costs. However, there is no clear policy stipulating the required contributions that communities should make and therefore this percentage represents what has become the accepted standard. Municipal governments are also expected to contribute up to 10% of the total capital cost, in accordance with their allocation of 7% of treasury fund transfers to the WASH sector (and another 7% to education and 7% to health). The private sector does not play a significant role in WASH sector investment.

Sector challenges

The challenges facing the WASH sector in Nicaragua are varied.

- Complicated legal framework, largely as a result of an aborted privatisation process resulting in fragmentation of roles and responsibilities among multiple institutions.
- In the indigenous territories there is generally a low capacity of both local government and local organisations to plan for, construct, operate and maintain water and sanitation services.
- This low capacity is complicated by a lack of clarity over roles and responsibilities between central government institutions (e.g. FISE, ENACAL), the autonomous regional governments and the municipal governments. This results in parallel structures and has prevented the decentralisation of power to the local level.
- Lack of clear strategies to enact the priorities expressed in policy.

- Limited awareness of sector-specific policies and plans at autonomous Caribbean region and municipal level.
- Deficit in spending on water supply and sanitation, limited resources at the municipal level and insufficient funding provided by central government.
- Limited understanding of the life-cycle costs of water and sanitation services, meaning planning does not take into account the true financing needed to ensure sustainability. The water resource context of the Pacific and Central-Northern regions is totally distinct from the Caribbean region where low-lying surface water predominates and precipitation rates are high, demanding different technical approaches to those that are promoted at the national level.

Approach of WaterAid Nicaragua

WaterAid's approach to development seeks to address the issues of service sustainability by strengthening service delivery in the communities where it works, whilst simultaneously working to strengthen the strategic planning, financing, monitoring, coordination, accountability mechanisms and post-implementation support functions of permanent institutions. This mixed approach combines a focus on best-practice service implementation with up-stream system strengthening support to permanent institutions. The approach is in alignment with the principles that WaterAid promotes globally through the Agenda for Change initiative.

In Nicaragua WaterAid draws on an understanding of social and cultural practices together with knowledge of governance systems in the autonomous indigenous territories. The community is placed at the forefront of interventions to encourage ownership and demand for services. WA Nicaragua complements this participatory approach with engagement of local government and the local private sector to create the conditions for successful delivery of services in the communities, as well as competent oversight, support and regulation of the service providers. This approach challenges WA Nicaragua staff, as well as its local partners, to think beyond taps and toilets to provide solutions that move beyond those that are "one-size-fits-all". The aim is to promote solutions that are specific to the context and therefore ensure a greater potential for sustainability.

WaterAid's work in the municipalities is complemented by work to support sector development at the regional and national level. An example is WA Nicaragua's leadership role in national coordination forums. WA Nicaragua currently chairs the Coordination Committee for the Nicaraguan WASH Network or *RASNIC* (the Spanish acronym), which is a multi-stakeholder forum composed of government institutions, aid agencies, international NGOs, civil society organisations and universities active in WASH. *RASNIC* is a knowledge exchange platform. The motive behind this work is the understanding that strong, accountable, responsive and well-coordinated institutions must exist at all levels if their services are to be sustained.

The following case study is divided into three sections which describe how WA Nicaragua is: 1) strengthening the capacities of municipal government service authorities as well as the systems at the national level; 2) strengthening the service providers and the local private sector; and 3) spearheading efforts to educate and empower communities.

Strengthening government

Commitment to support local government

WA Nicaragua's initial engagement with a municipality is based on the demand expressed by the municipality through *mesas de agua* or roundtable discussions which convene various WASH stakeholders at the municipal level. These meetings are used as an opportunity to make sure that WA Nicaragua expertise is in line with the needs of the municipality. In the autonomous regions of the Caribbean there is a significant need for capacity building of local government, and with very few municipal staff and no designated budget for operations the challenge is even greater. The problem is compounded by staff changes which frequently occur following changes in political leadership. However, WA Nicaragua has worked to establish ongoing cooperative agreements outlining its commitment to strengthening the capacities of the municipality and the municipality's commitment to carrying out its roles and responsibilities to ensure sustainable WASH service delivery. Currently WA Nicaragua and/or its local partners has cooperative agreements with four municipalities, and is providing training and support on a continuous basis.

WA Nicaragua has worked to build the capacity of WASH units within each municipality where it works. These units are an operational arm of the municipality, and are supposed to provide on-the-ground technical assistance and oversight of water systems managed by the community user associations (CAPS). However, capacity for providing support is very limited, both from an operational budget perspective and from a human resource (i.e. skills and knowledge) perspective. Currently WA Nicaragua is organising general training for members of the municipal WASH units on quality assurance and quality control of construction, as well as more specific technical issues, such as how to install, operate and monitor in-line chlorinators.

WA Nicaragua has the goal of improving the administrative capacity of the municipality for planning and budgeting, with the hope that in the mid-term each of the four municipalities where WA Nicaragua works will develop a clear vision and strategy for meeting the Sustainable Development Goals of universal and sustainable access to water and sanitation service by 2030. Practically speaking this would require the development of a multi-year strategic development plan, however, the capacity of the local government staff for public financial management (PFM) is very low. Targeted training on how to develop such plans may be possible in the coming years, however, WA Nicaragua's current work involves building the administrative capacities within the municipality from the community upwards, through participatory governance, involving the training of municipal government staff and community leaders in participatory needs assessment and community mapping. Together, the community leaders and local government representatives facilitate an assessment with the community, identifying priorities and opportunities and producing a costed action plan that could include water supply and sanitation infrastructure, behaviour change or hygiene promotion.

WA Nicaragua facilitates this process and the outputs are used as an entry point to building the capacity of the municipality for planning and budgeting (i.e. development of its annual operating plans).

Supporting the national enabling environment

WaterAid is relatively new in the WASH sector in Nicaragua, therefore, unlike other country programmes it hasn't been as directly active in sector advocacy. In the most recent operational plan WA Nicaragua will be shifting resources to increase the amount of advocacy work in their portfolio that targets sector-level issues. Despite only four years in country, WaterAid has cultivated valuable knowledge through the experience of working with local government and implementing in the communities in the autonomous regions. Much of this knowledge has been gained from piloting and refining new approaches and innovative technologies.

Given the unique social, cultural and geographic context of the Caribbean coast it is not possible to apply a template solution. Therefore many of the approaches that are used elsewhere in Nicaragua are not compatible. WA Nicaragua has been developing new approaches through its participatory approach with municipal government, community leaders, and the private sector. These are described further in the following sections.

Through this work WA Nicaragua has been able to identify challenges and gaps which are systemic and which, therefore, need to be addressed through targeted efforts at the sector level. For example as coordinator of *RASNIC*, the national WASH Network, WA Nicaragua has been advocating for the importance of using water security and climate change adaptation frameworks to plan for services, while expanding efforts to strengthen the role of municipal government staff and community water associations to address issues of climate change and water security. In addition, WA Nicaragua has contributed to the sector through targeted studies commissioned in partnership with other development partners, including a market study on the effective demand for credit for WASH products and a study of the perception and use of multiple water points. WA Nicaragua has also documented and shared experiences of technology introduction in the Caribbean region, including its successes and failures using the WASHTech Technology Applicability Framework (TAF).

Strengthening service providers

Encouraging entrepreneurship and stimulation of innovation

WA Nicaragua stimulates the private sector by cultivating the spirit of entrepreneurship within the peri-urban areas and communities where it works, through its WASH Market Development Project. It does this through gender-inclusive vocational training for community WASH technicians and hygiene promoters. In the town of Bilwi in RACN, WA Nicaragua has worked in collaboration with UNICEF, the regional government and the National Technical Training Institute to carry out training that targets at-risk youths. This training provides participants with skills that have enabled them to become service providers in the water and sanitation sector. Community leaders from religious, academic and government institutions identify unemployed youths who have dropped out of school and are living in high-risk environments to participate in technical and vocational training.

The training consists of 240 hours of coursework (i.e. six weeks full-time) and is broken down into 80% technical skills, 10% life skills and 10% basic business skills (e.g. developing a business plan and budgeting). To date 54 individuals have been trained in two cycles (34 and 20 individuals respectively). A third cycle with 30 participants is currently underway. The government is also taking a role, with the regional government, through the educational secretariat and the regional WASH unit, assisting in recruiting participants and coordinating efforts, and it is also directly funding the costs of the participants. WA Nicaragua is providing guidance on technical aspects and is trying to develop individual curricula for technicians and entrepreneurs.

This programme has been gauged a success, with 16 of the 54 programme graduates active on a regular basis, providing their WASH services in the communities and peri-urban areas. Nearly half of the graduates are women, and one is now pursuing a civil engineering degree at the regional university. The programme will yield significant results in the long-term by increasing the pool of professional staff and semi-professional, skilled labour. These individuals will not only be capable of providing WASH services as private entrepreneurs, they will also feed the pool of potential applicants to staff positions at ENACAL when the municipal water and sanitation system are put in place or within the municipal and regional WASH units.

Support to self-supply initiatives

To support self-supply initiatives and local service providers, WA Nicaragua is exploring the possibility of creating a national research centre, similar to centres in Tanzania that promote Simple, Market-based, Affordable and Repairable Technologies (SMART)[5]. This centre could be used to train technicians and establish a formal licensing process for WASH technicians and service providers in the country. It could also be used to train local government on the appropriate steps for construction observation.

Nicaragua has a long history of success with regards to self-supply, with the rope pump being successfully introduced in the 1980s and the clay pot, point-of-use filter being launched in the 1990s. WA Nicaragua has successful promoted the rope pump in RACN and RACS along with other alternative technologies in rural water supply. These include:

- Ferro-cement water storage tanks for use in rooftop rainwater harvesting
- Manual drilling technologies for developing boreholes
- Improved existing hand-dug wells
- Introduction of the EMAS Pump (originally developed in Bolivia)
- Renewable energy powered (photovoltaic-based and hydraulic ram pumps) communal systems with gravity-flow distribution

To guide the selection and introduction of these alternative technologies, WA Nicaragua has utilised an assessment tool called the Technology Applicability Framework (TAF). TAF is a decision-making tool on the applicability and potential for sustainability of the use of a specific WASH technology in a specific context. It is

[5] http://www.shipo-tz.org/services/training-centre

composed of two components, the screening and the assessment, which give a view of the likely sustainability, uptake and scalability of new technologies considering the contextual conditions needed for their successful introduction. The methodology provides guidance for the analysis and design of a technology introduction process for three different investment models[6].

WA Nicaragua has focused on generating the markets for these alternative rural and peri-urban water supply products and services. To maximise the success of this process, WA Nicaragua has worked to increase the ability of households to pay for these technologies by investing in microcredit services within the areas where it works.

Strengthening communities and service financing mechanisms

Empowerment through microcredit

Globally, there has been demonstrated success using microfinance for achieving gains in access to water supply and sanitation services. In Nicaragua WaterAid has been approaching microfinance with the outlook that it can empower individuals or groups of individuals in many different ways and in relation to various basic services. For example, in relation to rural water supply it can help entrepreneurs to establish their micro-enterprises as service providers (e.g. repairing rope pumps or emptying on-site septic tanks for final disposal of faecal sludge). Microfinance can also help households to improve their water service levels (e.g. by helping them finance the purchase of a manually drilled well, ferro-cement rainwater harvesting tank or pour flush toilet with on-site treatment) or it can enable communities to introduce metering and on-line chlorination into their systems and improve accountability and payment levels.

WA Nicaragua commissioned a study in RACN to better understand the supply and demand of micro finance products that could be used by individuals, households or communities. This study identified segments of the population that could be potential consumers for tailored financial products (i.e. products with terms and conditions to meet their willingness and ability to pay). The study concluded that there is a market of over $4 million for financial products in three small towns in the region, however, this demand was more than ten times greater than the supply (i.e. total value of finance available). As a result of these findings, WA Nicaragua has focused its efforts upstream to try and improve the finance available to the microfinance institutions (MFIs) and the delivery capacity of local service providers. WA Nicaragua also worked with participants of the vocational and entrepreneurial training from the private sector to help business people to understand WASH markets, and efficiently and effectively utilise their loans. This knowledge will allow individual entrepreneurs to develop customised services to meet the existing needs of people in these communities.

WA Nicaragua worked with the Inter-American Development Bank (IDB) to obtain seed funding for its local MFI partner Pana Pana, while leveraging greater access to

[6] Skat Foundation, 2012. Technology Assessment Framework (TAF) and Guidance for Technology Introduction (GTI) – Research Report 2nd Version (WASHTech Deliverable 3.2)

funds from Kiva, a global microfinance institution that provides interest-free loans to its clients. WA Nicaragua then provides technical assistance to the WASH entrepreneurs to ensure that the service delivered is of high quality.

Linking water supply and sanitation

WA Nicaragua has been able to stimulate a drastic increase in sanitation coverage levels in the areas where it works, particularly in those communities where water supplies have already been established as part of the community action plan. WA Nicaragua's approach to sanitation is grounded in an aspirational approach that seeks to educate, empower and motivate those communities with greatest need, but also where the conditions for success exist. Gains in coverage levels of up to 100%, like those in the community of Truhlaya, can be attributed to a number of factors, which include:

1) **A positive triggering approach** seeks to cultivate the perception in the community that latrine cleanliness is a sign of social status. At the same time the approach utilises a technical design that allows for direct access to the toilet from the house, which is elevated off the ground. This is of greatest benefit to those individuals with restricted mobility such as elderly and handicapped people or pregnant women. The vision of this approach is that a pit latrine is no longer viewed as a symbol of progress, but instead, higher service levels are the more socially desired outcome.

2) **Fit for purpose sanitation design.** WA Nicaragua has developed an innovative design for a pour flush latrine combining local materials, for an elevated superstructure, with conventional materials for the toilet seat (porcelain), plumbing, septic tank and drain field. The end product is convenient while also addressing public health and personal hygiene concerns.

3) **Innovative contracting arrangements.** For the construction of the elevated sanitation facilities, as well as rural water supply technologies (e.g. shallow borehole wells with rope pumps, ferro-cement tanks, etc), WA Nicaragua first trains local artisans in the construction practices, and then facilitates the establishment of a three-way contract between WA Nicaragua, the artisan and the household/client. Under this model, payment to the artisan is contingent on the satisfaction of the household in the quality of the work. This not only ensures quality construction, but stimulates a deeper sense of ownership in the infrastructure by the household.

4) **Continued encouragement and recognition of household improvements.** WA Nicaragua has been implementing innovative approaches to ensure that hygiene outcomes last beyond the lifespan of the programme. One example is the *ficha de monitorero de vividenda,* which is a household monitoring tool that was adopted by WA Nicaragua.

   This tool is integrated into a hygiene education programme carried out by volunteer community health workers. It utilises positive reinforcement of good hygiene practices through periodic household monitoring visits. These visits

are carried out by community health workers following an initial sensitisation process that includes community meetings and one-on-one meetings between the head of household and the community health worker. Feedback and support are provided by promoters to the household, and happy or sad water drops are allocated depending on the results of the assessment of practice.

Tracking the progress of household hygiene behaviours using monitoring charts helps health promoters to prioritise households that they should focus on. Monitoring charts have been successfully implemented in 26 communities and have also been adapted for application in schools to track the hygiene and sanitation behaviours of students. Although WA Nicaragua didn't develop the household monitoring programme, the results of its efforts have encouraged the government of Nicaragua to pursue scaling it up nationally.

Evidence of impact and progress

Evidence of the impact and progress achieved with modest funding ($1.5 million) during the first four inception years of the WA Nicaragua programme can be summarised as follows:

1. **Coverage:** There are more than 20 rural communities and 6 peri-urban communities where WASH services are now being provided. This benefits an estimated 7,500 men, women and children, and includes 15 schools. This represents an increase in progress of approximately 5%.
2. **Access:** Water, sanitation and hygiene were provided to particularly excluded populations including physically handicapped and elderly people.
3. **Local capacity:** More than 150 men and women were trained and are providing services in their communities and beyond, primarily in the construction of solutions such as rainwater catchment systems, shallow manually drilled borehole wells and pour flush toilets. More than 20 community water and sanitation user associations were formed, trained, and are now functioning.
4. **Financing mechanisms:** Municipal funding commitments increased from 10% to 20% for the construction of new services. WASH credit products were established with a permanent fund of $300,000 offered by a local MFI partner.
5. **Awareness raising:** There was increased involvement of local municipal and autonomous regional government WASH units, particularly in leading events.

Future of WA Nicaragua

WA Nicaragua is going through a growth period following the first four inception years. The programme is being expanded to include work with the Ministry of Health and health facilities and the Ministry of Education and schools, while focusing a greater effort on building a municipal-wide approach with the local government and indigenous territories in the four municipalities of intervention. Development of the local WASH market will continue to address a significant segment of the underserved in both peri-urban and dispersed rural communities, while advocating with local government for smart subsidies to include the most disadvantaged segments of the population.