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ABBREVIATIONS

BIP	Business implementation plan
CLO	Community-led operator
GWCS	Gumbo Water Cooperative Society
INGO	International non-government organization
SSUWC	South Sudan Urban Water Corporation
WASH	Water, sanitation and hygiene
WTP	Water treatment plant
WUC	Water Users' Committee

EXECUTIVE SUMMARY

South Sudan's capital city Juba suffers unreliable water service delivery, and is dominated by private sector provision. Although a public water supply exists, the public infrastructure, constructed in 1937, is rapidly ageing and its under-maintained piped network is limited to city centre coverage. As such, it is only able to serve about 17% of the city's population with piped water, forcing at least 70% of households in Juba to fetch water for domestic use from unimproved water sources such as water vendors and/or surface water like the River Nile. The South Sudan Urban Water Corporation (SSUWC) is mandated to provide water to urban communities, including Juba. However, due to resource constraints, SSUWC has struggled to maintain services across the city and has no capacity to extend services to underserved areas, where communities currently rely on alternative private or communally managed systems.

Against the backdrop of the current protracted conflict and crisis that South Sudan has faced since December 2013, Oxfam and other international non-government organizations (INGOs) have been able to install small-scale decentralized water systems across Juba. However, there is insufficient consistency between the systems that are being installed, especially in relation to the development of management arrangements that support sustainable operations.

In response, **Oxfam has been working with local communities and exploring potential hybrid management arrangements:** institutional frameworks that go beyond the basic community management model, and instead connect community-based structures with market-oriented principles. To support that, this report is promoting a paradigm change: one that allows the sector to move from traditional, voluntary community management arrangements, towards the professionalization of community-based organizations directly responsible for managing the delivery of basic services such as water.

The report is based on **Oxfam's experience with Gumbo's Water Treatment Plant (WTP) community-led operator throughout 2017,** and contributes to the debate on the role that communities can play in the process of managing water supply systems amid a protracted crisis. In doing so, it illustrates how to develop a viable, sustainable and resilient business implementation plan (BIP) that is pro-poor and addresses water quality and quantity issues. The findings discussed here depict the very early stages of Gumbo's community professionalization, as the WTP was not yet operational at the time the BIP was developed. Looking ahead, Oxfam recognizes the need to continue to provide sustained institutional support, well beyond the handover of the system to the community and the first year of operations.

Findings are based on market research conducted by Oxfam in South Sudan between April and July 2017, which comprised interviews with more than 300 individuals over a three-week period. A mix of quantitative (household survey and willingness-to-pay survey) and qualitative tools (focus group discussions, key informant interviews, onsite observations, stakeholder mapping) were developed and used to help triangulate findings and validate data. Information was collected from a varied range of stakeholders directly engaged in Juba's water, sanitation and hygiene (WASH) sector, as well as potential users and customers of Gumbo's WTP and the community structure responsible for managing it. A desk-based WASH context analysis and a short internal literature review of market-based approaches to water service delivery in protracted crises and disaster situations were also conducted.

This publication is one of several outputs published under Oxfam's Global Humanitarian Team's two-year programme *Promoting market-based responses to emergencies through WASH market mapping and analysis,* funded by USAID's Office of Foreign Disaster Assistance (OFDA) and aimed at increasing disaster resilience and effectiveness of WASH-related emergency responses through market-based programming.

1 INTRODUCTION

BACKGROUND

South Sudan has experienced war for at least four of the last six decades, including an ongoing conflict that began in December 2013. As a result of this state of protracted crisis, the provision of water services in the capital Juba has reached a critical situation. In 2015, only a third of Juba's population had access to clean piped water,[1] with the remaining 75% of inhabitants and transient communities predominantly served by water tanker vendors (45%) or directly accessing surface water (including river, lake or swamp water).[2] The South Sudan Urban Water Corporation (SSUWC) is mandated to provide water to Juba, but resource constraints – both financial and human – mean it continues to struggle to maintain services across the city and has no capacity to extend services to underserved areas without external support. Fresh fighting in Juba in July 2016, combined with the conflict-driven economic crisis, hyperinflation, shortages of fuel and consumables, and delays in paying salaries of civil servants has further strained private and public service provision systems.

As a result, drinking water has become a premium commodity in the city. Oxfam-led research has demonstrated that since the latest round of conflict in Juba in July 2016, the cost of a 250-litre drum of drinking water has more than doubled. Households now spend nearly 30% of their income on water, six times more than the internationally recognized 'burden-threshold' benchmark of 5%.[3] Some households have been forced to halve their daily purchase of treated water and many have decreased the volume of water they use to 5 litres per person per day – when Sphere standards (minimum standards in humanitarian response) advise that a minimum of 15 litres per person per day is needed to satisfy drinking, cooking and personal hygiene needs.

Short- to mid-term prospects for public investment in infrastructure (including WASH infrastructure) are bleak, with peace building efforts curtailed by the ongoing conflict, to which the vast majority of the state budget is being channelled. Furthermore, South Sudan's WASH sector remains at an embryonic stage, and while some guiding policies exist, legal gaps remain, and operationalization has been slow. This has contributed to the dilapidation of existing service delivery systems, as well as a lack of clarity of sectoral roles and responsibilities, leading to fragmentation and duplication of such roles, exacerbated by weak accountability and oversight systems.

Communities in Juba are thus eager for solutions to chronic issues such as dilapidated infrastructure, lack of investment and unfair pricing. Ongoing safe access to potable water amid South Sudan's protracted crisis is fundamental to people's survival, and represents a step towards developing a situation of normality and ultimately one in which the people can thrive. Partnership with the private sector has, however, demonstrated to communities that water treatment and distribution services can be better managed and has the potential to provide an additional source of income.

Furthermore, sector stakeholders recognize the urgent need to strengthen management, operation and monitoring arrangements of new and existing water supply systems in Juba, while incorporating resilience and preparedness thinking.

Working through communities – a new approach

To advance this professionalization process, Oxfam in South Sudan has been supporting supply chains to improve the distribution of water during and between shocks. Since 2016, Oxfam has been working alongside community organizations, water tank drivers and bicycle

vendors to ensure that safe, clean water is available, affordable and accessible for Juba's poorest households.

This has been achieved by engaging with private and public operators in developing appropriate management models, as well as promoting public–private partnerships, developing regulatory frameworks, strengthening accountability mechanisms, and increasing resilience and emergency preparedness of market actors.

This approach supports Oxfam's objective of bridging humanitarian and development interventions, by providing a comprehensive (hardware and software) integrated approach to WASH service delivery in the context of a protracted crisis.

It is a component of Oxfam's Global Humanitarian Team's two-year programme *Promoting market-based responses to emergencies through WASH market mapping and analysis*. Funded by USAID's Office of Foreign Disaster Assistance (OFDA), this programme seeks to increase disaster resilience and effectiveness of WASH-related emergency responses through market-based programming. It particularly focuses on strengthening and developing the water supply chain market in Juba, as activities are aimed at supporting pre-crisis resilience and market recovery – in this case by supporting water supply market actors to expand their existing business.

In Juba, the project included development of a business plan and provision of institutional support to the Gumbo Water Treatment Plant (WTP) community-led operator. This package sought to help the operating entity to professionalize, and to consolidate management arrangements capable of responding to the community's water needs before, during and after shocks (including spikes in conflict, significant deteriorations in the health situation, including but not limited to cholera, and economic disruption).[4]

2 GUMBO WATER TREATMENT PLANT

In 2016, direct funds from Oxfam supported the construction of a solar-powered water treatment plant in one of the poorest and most cholera-affected areas of Juba. With an optimal production capacity of 300m^3, the Gumbo Water Treatment Plant (WTP) provides a lifeline service to an estimated 20,000 people, in an area that public and private services fail to reach. It operates by sourcing raw water from the River Nile, which is then filtered and chlorinated, thereby providing clean and potable water to an estimated 13 water tank drivers, 30 water bicycle vendors and 600 households.

Gumbo WTP is one of a kind in Juba. It is solar-powered, a technology not yet widely used in the sector, which exponentially decreases dependency on increasingly expensive consumables such as diesel and oil – one of the driving factors of water price increase in Juba. It is also multipurpose, in that it has been designed to simultaneously sell clean and potable water to a varied range of users/clients, such as water operators, water bicycle vendors and households, thus ensuring that benefits are shared well beyond the immediate vicinity of the plant, and cascade through the water market chain. It also has the potential to be transformational for the Gumbo community, as it represents a significant business operation. Not only has it been handed over to the community at no cost, but savings from the use of solar energy, coupled with high revenue from sales, indicate considerable profit margins. Water provision points have been found to have delivered significant social and health benefits in the area.

In order to ensure the long-term future of these manifold benefits, and given the operational complexity of WTPs, Oxfam undertook a critical assessment of existing management practices for water kiosks and small-scale community-managed water schemes, as well as other models, such as social enterprises and cooperatives, which were found to be new concepts in the WASH sector in Juba. As a result, a business implementation plan (BIP) was developed, outlining the steps needed to ensure the commercial viability and long-term sustainability of Gumbo's WTP.

3 GUMBO'S BUSINESS IMPLEMENTATION PLAN

WHY A BUSINESS PLAN?

In a protracted crisis context, support to management structures has traditionally been limited to the training of water committees and/or water point technicians over short periods of time. The reactive nature of emergency responses has not always been conducive to long-term sustainability, and most water management arrangements have been designed to support smaller-scale infrastructure such as hand-pumps. Gumbo was built as a large-scale WTP and a multipurpose facility. Considering its operational complexity, and the protracted crisis context within which it has to operate, Oxfam sought to go beyond traditional community-based management approaches to ensure the WTP's long-term operational and financial sustainability.

To achieve this, Oxfam gave direct support to the community-led operator (CLO) by developing a business implementation plan (BIP) as a first step in the CLO's professionalization ladder. Gumbo's BIP not only provided in-depth market research information about Gumbo's business potential, but also illustrated the kind of institutional and capacity-building support needed to support Gumbo's WTP's long-term sustainability and resilience to future shocks.

Gumbo's BIP was designed as a roadmap, and Oxfam's research supported existing understanding of the gaps in the capacity of the CLO, leading to the development of tailored training packages that would directly address issues related to tariff setting, governance, accountability and contingency planning. In turn, data collected for the BIP provided Oxfam with crucial information on users' socio-economic backgrounds, consumption patterns, service expectations, willingness and ability to pay for future improved water services, disposable income and business models. To gather this information, the BIP covered six core dimensions (see table 1).

Table 1: Core dimensions of Gumbo's business implementation plan

Core dimension	Key information
WASH sector enabling environment	Provided in-depth understanding of South Sudan's Urban WASH legal and institutional framework, to ensure that operational, management, accountability and contingency plans were in line with national policies and programmes; while responding to and operating within key institutions.
Technical feasibility	Described the infrastructure layout of the water treatment plant and suggested technical improvements needed in the medium- to long-term, to ensure the long-term sustainability of the infrastructure, as well as staff wellbeing and retention.
Commercial viability	Depicted the profile of private buyers likely to purchase water: their patterns of consumption, their purchase power, their service expectations and willingness to pay; as well as a life-cycle cost analysis. It also provided suggestions on arrangements for collection of service charges/tariffs.
Marketing	Provided key information on the main customer base and recommended how to market water sales to each customer segment.
Management arrangements	Described initial management arrangements and provided suggestions on what the best-fitting alternative management set-up would be, considering existing social structures as well as operational and maintenance (O&M) needs, accountability and contingency planning.
Local accountability mechanisms	Provided recommendations on mechanisms that the community-led operator would need to have in place in accordance with the institutional and legal framework of the sector.
Contingency planning	Provided guidance on how to implement strategies that enable the continued provision of services in the wake of an event that poses an unacceptable business risk and/or operational disruption to Gumbo WTP.

The plan has been developed according to the principles of: universal access (the needs of all members of affected communities will be taken into consideration, especially women, children, marginalized and vulnerable groups); financial sustainability and affordability (to develop mechanisms that support sustainability of water systems while delivering water at an affordable price for the poorest in communities); and ownership (local communities accept management arrangements and responsibility for operation and maintenance is devolved to the local level).

The BIP was also developed as part of Oxfam's institutional support handover package to Gumbo's WTP operator. Such a tool has previously been identified by Oxfam studies and pre-crisis market analysis (PCMA)[5] exercises as a key instrument to help institutionalize market-based interventions that better facilitate the delivery of water and sanitation to 'at risk' communities; consolidate arrangements that mitigate the impacts of critical water shortages and related cholera outbreaks; and guide methods of implementation that support market system strengthening (e.g. accountability mechanisms).

It particularly focuses on strengthening and developing the water supply-chain market in Juba, as activities are aimed at supporting pre-crisis resilience and market recovery – in this case by supporting water supply market actors to expand their existing business.

KEY FINDINGS

The following section provides a snapshot of the BIP's contents and reflects on how each of the core dimensions provided information relevant to the sustainability of Gumbo's operations, while increasing Oxfam's understanding of the support the CLO might need in the future.

Substantiated by extensive market research conducted over two months, the BIP also provided the CLO with clear information regarding its customer base, the kind of tariff structure that would best respond to the water market, the challenges posed by existing management arrangements and the need to review its internal structure.

WASH sector enabling environment

The research demonstrated that the WASH sector in South Sudan remains embryonic, and while some guiding policies exist, legal gaps remain, and operationalization has been slow. This has led to a lack of clarity over sectoral roles and responsibilities, leading to fragmentation and duplication of such roles, poor accountability and weak oversight systems – all of which can limit the sustainability of water service provision. Limited access to legal guidance was found to pose a potential risk to Gumbo's operations, as it could easily lead to confusion over the respective roles and responsibilities of different institutions (i.e., local authority, water utility, etc.).

With this in mind, the BIP highlighted key policies relevant to the Gumbo WTP's operational arrangements, providing clarification on key water service delivery guiding principles, and the expected service levels to be provided by Gumbo's operating agency.

The national water policy establishes that WASH service provision falls under direct responsibility of the Government of South Sudan.[6] Meanwhile, local government authorities are mandated to ensure the provision of safe water supply and sanitation services within their respective jurisdictions. (Local Government Act, Section III-1).[7] Further devolution of responsibilities is likely to take place once the new Water Bill is approved, so Gumbo's operating entity will need to engage with local government authorities (e.g., Juba City Council and the local government authority Rejaf Payam) from its inception. Furthermore, the national water policy also recognizes that community-based approaches play a vital role, especially owing to the absence of effective governance for long periods of time. The policy also recognizes that sustainability of community-based water supplies ultimately depends on the active participation of user communities in planning, design, operation and maintenance of schemes (Water Policy – Paragraph 4.3.4.).[8]

In terms of sector standards and guidelines, research revealed that the sector currently has limited regulatory oversight of standards and guidelines for service provision, especially those relating to water quality. In the future, should the Water Bill (2014) be approved, these are to be issued by the Safe Water Supply and Sanitation Services Regulator, and form part of the Service Provision Agreement between the local government authority and the service provider.[9] Considering how embryonic the sector remains, and how sector institutions struggle with resources for dissemination, standards and guidelines for service provision must be gathered from a variety of sources, which would have been difficult for Gumbo's CLO to achieve on its own.

Technical feasibility

Discussions with Gumbo's construction company and Oxfam's WASH technical staff highlighted that, in order to ensure both the long-term sustainability of the infrastructure and good levels of staff wellbeing and retention, certain improvements were needed to site security, staff facilities and back-up equipment planning. It was not possible to put all these measures in place in the short term. However, Oxfam recognized the importance of raising awareness of these issues

during the handover of the WTP and training of the CLO. As such, the operating agency became aware of specific shortfalls that would need to be addressed, which would become their direct responsibility once the handover was completed.

To prepare for this, technical considerations were incorporated into Gumbo's financial sustainability model and management arrangements to ascertain how much capital was needed to cover these structural improvements, and to ensure that accountability mechanisms were in place. Key improvements were to site security (e.g., reinforcement of solar panel attachment to main structure; improved lighting); staff wellbeing (e.g., construction of pit latrines for WTP employees); and back-up equipment and contingency stock (e.g., chlorine, alum sulphate and consumables for water quality tests).

Commercial viability

One of Oxfam's primary concerns from the outset was the WTP's commercial viability and sustainability in the context of the protracted political crisis in South Sudan. The priority was to ensure that the Gumbo WTP would serve the poorest and most vulnerable people, while remaining a competitive, profitable and thus viable business model within Juba's water supply market; so as to limit, as far as possible, dependency on external agencies such as Oxfam.

To better support the operating agency in that process, Oxfam conducted substantial market research with the users of the WTP to collect data on their socio-economic backgrounds, business operation models, consumption patterns, service expectations, and willingness and ability to pay for improved water services in the future. Such detailed customer profiling, coupled with a life-cycle cost analysis, helped Oxfam refine suggestions to maximize Gumbo's ongoing commercial viability and the efficiency of its operations. This exercise also provided insights on what kind of tariff structure would be most effective in responding to market prices, guaranteeing affordability for the poorest and most vulnerable people and securing the sustainability of service provision.

Customer profiling

Market research demonstrated that the WTP's direct customers include around 608 people living close to the WTP, 30 bicycle water vendors currently collecting water from the river opposite Gumbo, and 13 water tankers passing along the main road (Table 2). Water needs calculations revealed that the bulk of water produced by Gumbo is likely to be delivered by the water tankers, given their greater storage capacity. Estimates also provided insight into the extent of foot traffic within and around the WTP's premises, raising awareness of aspects of visitor management and customer safety. Furthermore, the research also raised the importance of the humanitarian principle of impartiality in relation to water allocation and distribution – that is, the provision of safe and clean potable water to the poorest and most vulnerable people living in Gumbo.

Table 2: Estimated water demand per user category for optimal 300m^3 production capacity

Users Category #1 – Households (HH)	
Total HH living within 500m radius	76
Total number of individuals likely to directly buy water from Gumbo	608
Daily water needs of HH living within 500m radius (litres) [Sphere standards]	9,120
Daily percentage of water from WTP reserved for HH direct sale	3%
Users Category #2 – Bicycle vendors	
Bicycle vendors operating in Gumbo in 2017	30
Jerrycans collected per trip (20 litre jerrycans)	10
Amount of water collected per trip (litres)	200
Maximum number of trips a bicycle vendor does (per day)	10
Maximum number of jerrycans a bicycle vendor carries (jerrycan/per day)	100
Maximum amount of water a bicycle vendor collects (litres/per day)	2,000
Daily water demand from existing bicycle vendors (litres/per day)	60,000
Daily percentage of water from WTP required to satisfy bicycle vendor demand (%)	20%
Users Category #3 – Water tankers	
Number of water tankers likely to visit WTP every day	13
Number of tankers – 4 cubic meter tank (15 x 250 litres = 3750)	6
Number of tankers – 7 cubic meter tank (30 x 250 litres = 7770)	7
Average number of daily trips to the WTP	3
Amount of water collected per pay/per 4 cubic meter tanker	11,250
Total amount of water collected per day /per 4 cubic meter tankers	67,500
Amount of water collected per pay/per 7 cubic meter tanker	23,310
Total amount of water collected per day /per 7 cubic meter tankers	163,170
Daily water demand from water tankers (litres)	230,670
Daily percentage of water from WTP required to satisfy water tanker demand	77%

Source: Business Implementation Plan – Gumbo Water Treatment Plant (2017)

Market research also probed water users' ability and willingness to pay, tailoring approaches to different user categories.

For households, a survey was designed to assess how socio-economic and demographic household characteristics, alongside existing water resources and patterns of consumption, impact water users' willingness and ability to pay for improved water services and other goods in the future. Data was triangulated through focus group discussions of disposable income (household income and expenditure) and household experience of service (in normal times, versus during shocks). For water vendors (tankers and bicycle vendors), market research was conducted through focus group discussions of the type of service provided and expectations for future improvements to water services, triangulated with short surveys on current business operations.

Water user category #1 – households

Market research on households' socio-economic and demographic characteristics, alongside existing water resources and patterns of consumption, revealed the extent to which household tariffs need to be tailored to ensure accessibility and long-term sustainability. For example, research uncovered that of Juba's peri-urban areas, Gumbo hosted the highest concentration of

poorest people (53.8%), with 63% of households surviving on less than $1 a day, and 44.9% reportedly unable to adequately cover essential household expenditures. While almost half of Gumbo's population (49.6%) was found to fetch water directly from the river, others continued to buy water from tankers (22.7%) and some, on special occasions such as family gatherings on birthdays/funerals/etc, from bicycle vendors (6.8%).

Paying households were found to be spending 30% of their income on water, even though they were resorting to life-threatening coping strategies such as decreasing levels of consumption to 5 litres per person per day, or supplementing consumption with untreated river water. Some were found to be paying for water purification treatment (water guard); spending, on average, 26 SSP10 per week treating water. Despite that, households indicated an ability and willingness to pay for water if assurance was given that it was clean and potable. The 'Willingness to Pay' Household Survey revealed that over 90% of households currently fetching water from the river, and living in close proximity to the Gumbo WTP, would be willing and able to pay for clean drinking water (5–10 SSP per jerrycan). This not only demonstrates that households recognize the value of clean water, but also that households represent a potentially significant source of revenue. The finding that 6.6% of households that lived in close proximity to the WTP would not be willing or able to pay for water at all was used to inform the process of tariff-setting.

Water user category #2 – bicycle water vendors

Market research showed that this small-scale informal water vending business plays a vital role in supplying water to Gumbo's households (within a 1.5–3km radius of the WTP) and keeping the local economy going, as they supply the bulk of small local businesses by the side of the main road. Since 2017, however, the number of active bicycle vendors operating in Gumbo has decreased by half, from 60 to 30, with most returning to their countries of origin (Uganda, Burundi, Kenya and Rwanda). This is mainly due to inflation, which has seen operational costs rise as customers' purchasing power has decreased; both of which have contributed to a substantial reduction in profits. Despite this, calculations revealed that each remaining bicycle vendor can distribute up to 2,000 litres of water in a single day, which represents a considerable revenue stream.

Water user category #3 – water tankers

Sale of water to water tanker businesses has the potential to represent the biggest source of income out of all expected users. It was not possible to determine exactly how many tankers would likely purchase water from Gumbo, so estimates were primarily based on demand from households and bicycle vendors. Calculations revealed that Gumbo's WTP has the likely capacity to supply up to 13 water tankers (of 4,000 litres and 7,000 litres) a day, filling their tanks three times a day. However, a small survey and informal discussions held with tank operators revealed that they have reduced their activity within Gumbo over the last 12 months, preferring instead to supply neighbourhoods closer to the city centre where demand is ongoing and many people are still able to afford increasingly higher prices (e.g., richer households, NGOs, hotels, etc.). The poor accessibility of Gumbo by road, low demand, and increasing operating costs due to higher fuel prices and the distance between the water source and Gumbo's households are also contributing factors.

Given this reduced demand from the water tanker operators, the business implementation plan highlighted that further investment in road accessibility was needed, coupled with a tariff structure for customers and a market strategy that puts forward a good business case for water tankers to come to Gumbo and distribute within the area.

Financial sustainability

To demonstrate Gumbo's commercial viability, the BIP also projected cash flow following the principles of the life-cycle cost analysis and cost recovery. Using these approaches, it was possible to account for expenses to enable the WTP's short-term and long-term operationality, including provisions to replace, extend and enhance the water supply system (Tables 3 and 4). By calculating the level of expenditure, it was in turn possible to demonstrate just how much the community-based operating agency would have to charge to operate on a cost-recovery basis (Table 5), and how much profit it would be able to raise after all expenses had been considered (Table 6).[11]

Calculations revealed that even charging the very minimum, in an optimal scenario, the Gumbo WTP's financial sustainability was assured. This demonstrated that, if transparent and effective cash handling procedures were followed, money generated through the sale of water would be enough to cover monthly expenditures (operations and minor maintenance), while setting aside enough for major replacements and even a surplus that could be used as a community revolving fund to finance activities for the wider benefit of people living in the Gumbo area.

The financial forecasts depicted below only reflect initial estimates developed before the WTP was operational. Most sources of expenditure were considered, but moving forward it is likely that new costs will be incurred. For example, taxes were not included in initial calculations because the concept of social enterprise in South Sudan is new, and it remains unclear how the government will tax this business.

Table 3: Gumbo WTP: Operations and minor maintenance expenditure (monthly basis)

OPERATIONS & MINOR MAINTENANCE EXPENDITURE	Unit	Quantity	Rate (SSP)	Frequency	Cost (SSP)	Cost (USD)
SALARIES					84000.00	$ 560
WTP Manager	Per pp/month	1	30000.00	1	30000.00	$ 200
WTP Supervisor	Per pp/month	1	15000.00	1	15000.00	$ 100
WTP Assistant 1 (tap stand - households)	Per pp/month	1	8000.00	1	8000.00	$ 53
WTP Assistant 2 (tap stand - bicycle vendors)	Per pp/month	1	8000.00	1	8000.00	$ 53
WTP Assistant 3 (tanker filling station)	Per pp/month	1	8000.00	1	8000.00	$ 53
Guard (Armed security - inc. Food and monthly incentive)	Per pp/month	2	4500.00	1	9000.00	$ 60
Incentives for Water Management Committee	Per pp/month	6	1000.00	1	6000.00	$ 40
OPERATIONS					21000.00	$ 87
Office supplies	Per month	1	1000.00	1	1000.00	$ 7
Communications	Per month	1	4500.00	1	4500.00	$ 30
Transportation (technician, supervisor, manager)	Per month	1	7500.00	1	7500.00	$ 50
Desludging Pump Rental (2x a year for 2 days) [YEARLY cost]*	Rental days	2	12000.00	4	8000.00	$ 53
CONSUMABLES					2606750.00	$ 203
Chlorine (powder)	Kg/per day	1.5	616.67	30	27750.00	$ 185
Aluminium Sulphate (Coagulant)	Kg/per day	9	120.00	30	2700.00	$ 18
WATER QUALITY MONITORING					1545.25	$ 10
FRC and pH (daily) - at source level (DPD1 & Phenol Red)	Per day	2	3.24	30	194.16	$ 1
FRC and pH (biweekly) - 10 x2 household x 4 tablets a month x every other week (DPD1 & Phenol Red)	Every two weeks	2	3.24	160	517.76	$ 3
Chemical (selected parameters) 6 month interval (LAB) **	Every 6 months	1	5000.00	2	833.33	$ 5.56
IN STOCK FOR MINOR REPLACEMENT/CONTIGENCY*					14591.67	$ 97
Consumables for 2 months	Per month	1	38450.00	1	3204.17	$ 21
Galvanised Steel pipes 3"	Metres	4	35400.00	1	2950.00	$ 20
Assessories	Assorted	1	22500.00	1	1875.00	$ 13
Installation &Commissioning (Labour)	No	1	52500.00	1	4375.00	$ 29
Maram	Trips	16	26250.00	1	2187.50	$ 15
TOTAL OPERATION & MINOR MAINTENANCE EXPENDITURE						$ 957

**Yearly cost diluted in monthly expenditure*

Source: Business Implementation Plan – Gumbo Water Treatment Plant (2017)

Table 4: Gumbo WTP: Capital maintenance (major replacements)

Component	Quantity	Year of construction	Total Cost (USD)	Replacement Freq	2017	2018	2019	2020
Intake Pump - GRUNDFOS DWK 80.22 pumps	1	2017	$ 2,000.00	10	$ 200.00	$ 200.00	$ 200.00	$ 200.00
Drainage pump - Booster Pump GRUNDFOS DWK 80.22 pump	1	2017	$ 2,000.00	10	$ 200.00	$ 200.00	$ 200.00	$ 200.00
Distribution Fittings	1	2017	$ 2,145.00	10	$ 214.50	$ 214.50	$ 214.50	$ 214.50
Elevated Water Storage Tank	1	2017	$ 4,020.00	10	$ 402.00	$ 402.00	$ 402.00	$ 402.00
Photovoltaic solar modules YINGLI SOLAR SW250	38	2017	$ 11,400.00	20	$ 570.00	$ 570.00	$ 570.00	$ 570.00
AC solar pump controller (inverter) LORENZ PSK2-7 5.5kVA	2	2017	$ 5,000.00	20	$ 250.00	$ 250.00	$ 250.00	$ 250.00
				TOTAL PER ANNUM	$ 1,836.50	$ 1,836.50	$ 1,836.50	$ 1,836.50
				TOTAL PER MONTH	$ 153.04	$ 153.04	$ 153.04	$ 153.04

Source: Business Implementation Plan – Gumbo Water Treatment Plant (2017)

Table 5: Tariff structure

Revenue Sources per Month (30 days)	Unit	Rate (SSP)	Quantity	Revenue(SSP)	Revenue (USD)
USER TYPE 1: HOUSEHOLDS				**34200**	**$ 228**
3 x Jerry cans per household/per day over a month	76	5	6840	34200	$ 228
USER TYPE 2: BICYCLE VENDORS				**36000**	**$ 240**
80 x Jerry Cans per bicycle vendor per day over a month	30	0.5	72000	36000	$ 240
USER TYPE 3: WATER TANKERS				**105840**	**$ 706**
Daily water needs for Tankers/Cubic litres over a month	230	15	6900	103500	$ 690
Filling Station entry fee per tanker/per day over a month	13	6	390	2340	$ 16
TOTAL per month				176040	$ 1,174

Source: Business Implementation Plan – Gumbo Water Treatment Plant (2017)

Table 6: Projected cashflow (Jan–April 2018)

Revenue & Expenditure per Month (Jan-Apr 2018)	January		February		March		April	
REVENUE (A)	SSP	USD	SSP	USD	SSP	USD	SSP	USD
USER TYPE 1: HOUSEHOLDS	34200	$ 228	3420	$ 23	3420	$ 23	3420	$ 23
USER TYPE 2: BICYCLE VENDORS	36000	$ 240	72000	$ 480	72000	$ 480	72000	$ 480
USER TYPE 3: WATER TANKERS	105840	$ 706	105840	$ 706	105840	$ 706	105840	$ 706
Monthly Surplus (C)	0	$ -	9497	$ 63	31047	$ 207	52597	$ 351
TOTAL	176040	$ 1,174	190757	$ 1,272	212307	$ 1,415	233857	$ 1,559
EXPENDITURE (B)	SSP	USD	SSP	USD	SSP	USD	SSP	USD
Operations & Minor Maintenance	136754	$ 957	136754	$ 912	136754	$ 912	136754	$ 912
Capital Maintenance (Major Replacements)	22956	$ 153	22956	$ 153	22956	$ 153	22956.25	$ 153
TOTAL	159710	1110	159710	1065	159710	1065	159710	1065
MONTHLY SURPLUS (A-B = C)	16330	$ 63	31047	$ 207	52597	$ 351	74147	$ 494

Source: Business Implementation Plan – Gumbo Water Treatment Plant (2017)

Income generated by the WTP will be used to pay for operations and minor maintenance expenditures (salaries, incentives, consumables, minor repairs, etc.), while generating enough savings for capital maintenance and major expenditure (at least 10–15% of monthly income). There are current discussions on the possibility of channelling additional savings towards a Community Revolving Fund, from which payment can be withdrawn for activities related to the improvement of the Gumbo area. Suitability of this scheme is yet to be determined, but we expect it will be defined once final governance arrangements are in place.

Marketing

To further support the consolidation of Gumbo's Water Treatment Plant business model and increase Gumbo's managing entity potential for water sales revenue during periods of stability, Oxfam has also developed 'Gumbo's Marketing Plan for Private Sector Buyers'.

This was developed as an operational document, with Gumbo's managing entity in mind. It provides key information on the main customer base and puts forward suggestions on how to market water sales to different segments of private buyers, including: i) individual households (directly purchasing water from the tap stands); ii) bicycle vendors (purchasing water from the WTP to sell to customers); and, iii) water tankers (purchasing water from the WTP to sell to customers). The marketing plan covers a 12-month period and for each customer segment it provides a dedicated customer profile and addresses topics such as: a SWOT (strengths, weaknesses, opportunities and threats) analysis; revenue potential and how to increase sales; advertising methods; budget/outlay costs required and human resources required.

Management arrangements

The WTP was designed to be operated and managed by the Gumbo community through a voluntary, community-led water users' committee. Its residents played an active role in the process of designing and commissioning the WTP and initial arrangements were based on the premise that only by involving key local community stakeholders, leaders and individuals could full community ownership and responsibility be maintained, and the project's sustainability guaranteed. Management arrangements also involved Oxfam for institutional support and capacity building, along with other key agents within the sector such as the public water utility (SSUWC) responsible for monitoring and regulating quality standards.

Gumbo's initial management arrangement capitalized on existing social structures and ensured the empowerment and representation of local people. However, questions arose as to whether the model would be able to respond to and withstand critical issues that were likely to threaten long-term sustainability, transparency and accountability. Discussions revolved around issues including:

- **Volume of cash handling:** The Gumbo WTP was handed over to the community at 'zero-cost'. Combined with its production capacity, it was clear that it held potential for a significant business operation. This meant that management arrangements normally used for 'water kiosks' or regular 'small-scale' community-managed water schemes (e.g., hand-pumps) would most likely not be adequate and extra considerations would need to be given to accountability mechanisms and transparency, in order to deter corruption, misappropriation of funds, community conflicts, etc.
- **Operational complexity:** Gumbo was designed as a multipurpose WTP, intended to sell water to a range of users and clients (private vendors and households). To ensure smooth running of operations and continued demand across such a varied customer base, a solid understanding of customer management is required. This is especially true given that the WTP is only accessible via one road, increasing the likelihood of queues and social tensions.
- **Life-saving critical role:** The Gumbo WTP is part of Oxfam's response to ensure continuous clean and potable water supply in the area, withstanding the ongoing crisis and sudden shocks, such as conflict, natural disaster or disease outbreak. Ensuring the WTP's ongoing functionality

is thus also critical in the wider scheme of Oxfam's cholera preparedness, prevention and control response, as it minimizes the potential for new outbreaks in one of Juba's most prone areas.

- **Lack of legal status:** Initial management arrangements meant that the water committee management was unable to register as a legal entity, creating complex challenges to necessary tasks such as opening a business bank account.
- **Lack of service regulator:** Until the Water Law is formally adopted, regulation of WASH services will remain severely limited. In the absence of a formal regulator for urban water services, regulatory functions need to be conducted by other actors and through other mechanisms to ensure, and where possible, enforce good management practices.

Transitioning towards professionalized service provision

To overcome these issues, Oxfam engaged in discussions with legal specialists and analysed South Sudan's WASH sector framework to assess and recommend potential alternatives. After consulting with the community, WASH specialists and governance advisors, the model of Gumbo Water Cooperative Society (GWCS) was suggested as the most contextually relevant and applicable.

This arrangement took into consideration Gumbo's initial management structures to minimize interference with agreements already in place between Oxfam and community representatives. Furthermore, it also drew inspiration from the draft Water Bill (2014), which already accounted for and established legal parameters for the creation of Community Owned Safe Water Supply and Sanitation Services Organisations (Paragraph 110). By working within existing legal frameworks, it was ensured that GWCS would be developed in accordance with national policy, and legal and regulatory frameworks, increasing the likelihood that it would be officially recognized and thereby be in line for any benefits from government that this official status may entitle it to in the future.

Founded on the principles of professionalization of community-based service delivery, GWCS was designed to foster engagement of community-based social structures with market-oriented management and the existing wider water governance architecture. In doing so, the GWCS promotes a professional service delivery approach, including collective responsibility for payment, making community cost recovery a general practice.

Professionalization in this context involves the promotion of good business practices (e.g. bookkeeping, billing, customer relations, etc.) and hiring of paid staff with the necessary skills and expertise to run specific operations. Furthermore, in the absence of an established regulatory framework, this model also supported the development of systematic ways to hold service providers to account for their work, measuring their performance against predefined standards. In practice, this meant that, through their elected representatives in GWCS, the Gumbo community retained the ultimate management and decision making power, but delegated specific tasks related to the operation and administration of the WTP system to individual entrepreneurs.

Such hybrid management was developed on the premise of a two-fold paradigm shift: (i) communities become clients for management services, rather than providers of the services themselves; and (ii) the approach moves away from the voluntary provision of community-based water services towards a more institutional approach to service provision. This model was thus set up to support service providers to implement performance-based management and adopt good business practices, while working towards agreed standards and levels of customer service – ultimately consolidating the system's transparency, accountability and efficiency.

New management model

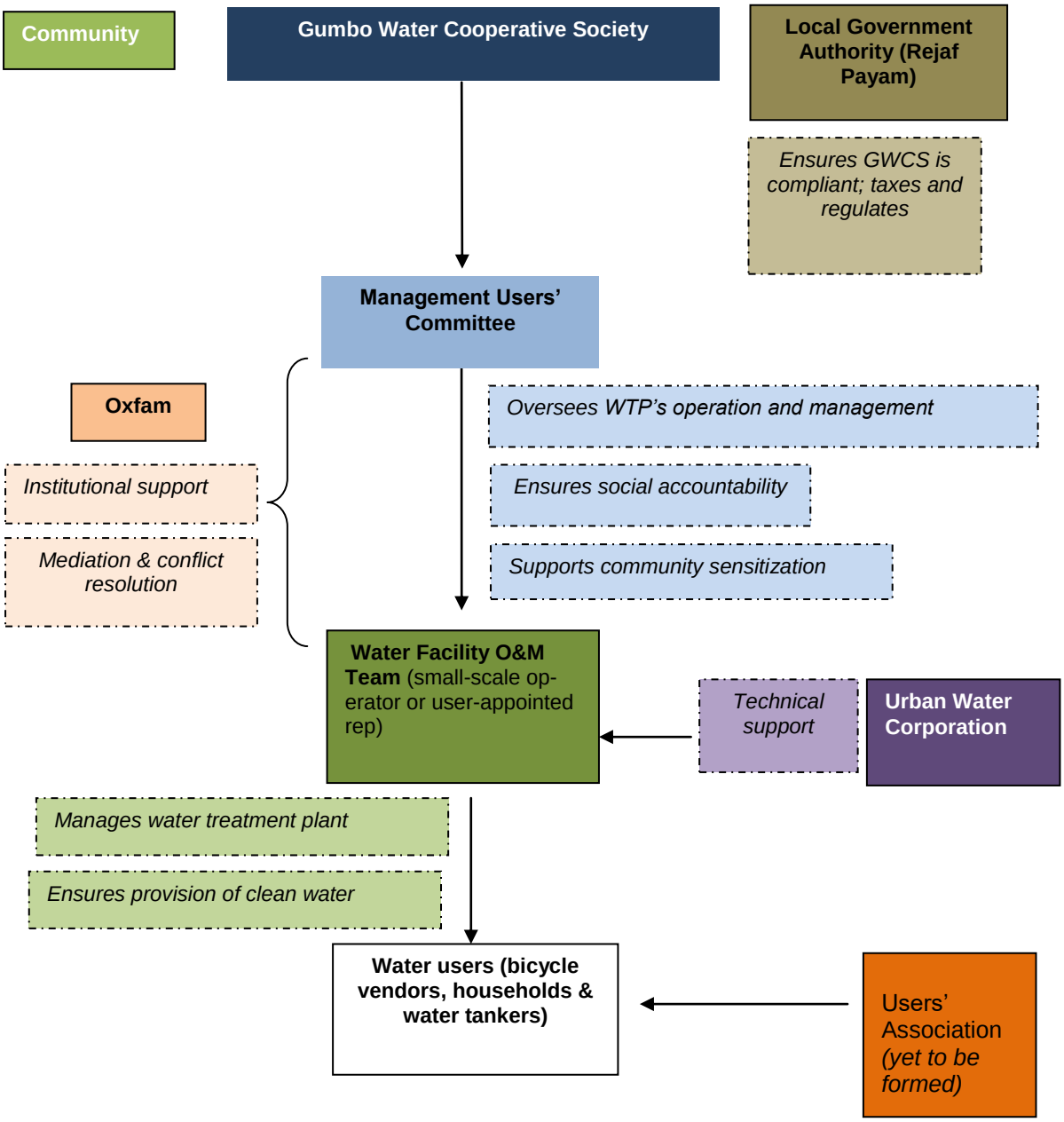
The main difference between the initial model and that of the GWCS is that the community is now not directly involved in running the WTP. In the new management model, GWCS is contracting out operations and management of the WTP to a user-appointed representative group or a small-scale private operator, with minimum business acumen and/or experience in running water-related business operations. The model includes a water users' committee, through which regulation, oversight and accountability would be ensured.

In the new proposed organigram (Figure 1), GWCS remains the key administrative entity. Its executive arm (the Management Users' Committee) is responsible for overseeing the general performance of the WTP's service delivery system, while safeguarding tripartite accountability between GWCS and the service provider, as well as that between the service provider and water users. The daily running of operations and maintenance were instead contracted out to small-scale private operators or user-appointed representatives, in this case, the Water Facility Operations and Maintenance Team.

This model follows a cash-based incentive approach, whereby members of the WUC (Water Users' Committee) receive an incentive for the time they dedicate to overseeing the management of the facility; while the Water Facility O&M Team is contractually employed and fully remunerated. During the two to three years of operation, Oxfam and the SSUWC are responsible for providing technical and organizational support. For example, in case of a breakdown, SSUWC will deploy a technician to fix the issue with costs incurred to be fully covered through Gumbo's water sales (*see* financial sustainability section).

This new institutional arrangement also includes ongoing support from Oxfam and close interaction with wider water governance structures, such as the public water utility (SSUWC) and the local government authority (Rejaf Payam).

Figure 1: Gumbo WTP management arrangements



Source: Business Implementation Plan – Gumbo Water Treatment Plant (2017)

Having obtained agreement on the overall organizational model, Oxfam is currently leading the development of a governance package for GWCS, which supports its legal registration and development of by-laws. Part of that process includes working with the Management Users' Committee to refine new roles and responsibilities. Although these have yet to be in full operation, Gumbo WTP's management arrangements and support architecture are likely to include the division of roles and responsibilities outlined in Table 7.

Table 7: Division of roles and responsibilities

	Water User Committee	Water Facility O&M Team	Oxfam	Public water utility	Local government authority
Operations & management		•			
Setting service standards	•			•	
Setting tariffs	•				
Monitoring performance	•				
Accountability	•		•		
Regulation				•	
Technical support			•	•	
Organizational support			•		
Compliance					•
Conflict mediation			•	•	•

Local accountability mechanisms

Accountability is a prerequisite to ensure effective water governance and the sustainability of WASH interventions. In South Sudan, where the enabling environment is embryonic and institutions are weak, it is particularly important to channel social accountability through the GWCS. This was achieved by designing appropriate accountability mechanisms aimed at protecting each category of users' interests and rights, from both a service provider and consumer perspective. The approach was selected in direct response to Juba's challenging political, social and economic context. It also supported the professionalization of service delivery; key to ensuring that the WTP remained sustainably operational even throughout crises.

Inspired by the work of WaterAid on social accountability[12] and UNDP Water Governance Facility/UNICEF Accountability in WASH,[13] Oxfam developed tools from both the supply/provider (Table 8) and demand/user perspective (Table 9) that enhanced the interaction between service providers and users. This was done to ensure that the Gumbo WTP would be run transparently, efficiently, sustainably and in collaboration with key stakeholders.

Table 8: Provider-side accountability tools

Aim	Mechanism	Description	Leading agency	How often
Information and consultation	User outreach/ad hoc user meetings and forums	• Display public information on: - Water tariffs - Opening hours - Complaint phoneline - Emergency numbers	GWCS General Assembly	Beginning of operations and update as needed
	Publication of performance data	• Display public information on: - Amount of water produced - Amount of water sold - # of complaints, type of complaints and how long it took to resolve - Water quality • Produce quarterly financial and technical reports	GWCS Management Users' Committee	Information on monthly basis; report every quarter to be shared with local government authorities, Oxfam and UWC
Standard setting and regulation	Contract with service provider	Performance contract between GWCS and Water Facility O&M Team, which specifies expectation of service provided (water quality standards, opening hours, etc.)	GWCS Management Users' Committee	Beginning of operations
	Regulation	Development and ratification of customer charter and integrity pacts	Draft by Oxfam and agreement by GWCS Management Users' Committee	Beginning of operations
Performance monitoring and feedback	Retrospective performance/ perception surveys	Conduct customer satisfaction surveys to follow up on service commitments and identify inefficiencies and problem areas	GWCS Management Users' Committee	Quarterly basis
Redress and recourse	Internal complaint/grievance mechanisms	Define how people complain, to which point of contact, how long it takes for complaints to be resolved and what kind of responses are given	GWCS Management Users' Committee	Beginning of operations

Source: Business Implementation Plan – Gumbo Water Treatment Plant (2017)

Table 9: User-side accountability tools

Aim	Mechanism	Description	Leading group	How often
Information and consultation	Citizen's charter	GWCS Users' Charter: Gumbo users spell out provider responsibilities and service standards for ratification by provider, with regular monitoring meetings to evaluate progress	Users' Group representatives (HH, bicycle vendors, water tankers)	Beginning of operations and meetings on regular basis
Performance monitoring and feedback	Citizens' user platforms	GWCS users' platforms: users meet to reach coherence and consensus as to service challenges	Users' Group representatives (HH, bicycle vendors, water tankers)	Meet when needed, initially supported by Oxfam
Redress and recourse	Use of complaint mechanisms	GWCS Users' make use of complaint mechanisms to individually or collectively voice grievances that help improve services and receive compensation	Gumbo community	When needed

Source: Business Implementation Plan – Gumbo Water Treatment Plant (2017)

Contingency planning

Gumbo WTP provides a vital service to the community. Safeguarding its continued operation before, during and after a crisis is thus crucial to enable the communities to be minimally prepared and to endure and bounce back faster from shocks. Gumbo faces a high external security threat, as it is located next to the only existing bridge linking both sides of town, as well as near army barracks (Figure 2).

Figure 2: Gumbo WTP and external security threats

Although the city has remained stable since 7–11 July 2016, insecurity generated by the crisis is a reminder of how socially and politically volatile the city remains. GWCS and Oxfam acknowledge that Gumbo is also likely to be affected by flooding due to its proximity to the river. Given how vital the water supply is to communities in withstanding crises and bouncing back more quickly from them, it is essential that plans are developed to safeguard its operation during shocks. To that end, the BIP also indicated the need to develop a contingency plan and conduct a multi-stakeholder workshop.

BIP action plan

Development of the business plan demonstrated that, in order to ensure the long-term sustainability of Gumbo WTP throughout shocks and crises, further institutional support would be needed, well beyond handover of the system to the community and for a minimum of two years. Given the levels of water production, revenue and turnover, as well as the variety of users and location of the WTP, traditional approaches to voluntary community management were not fit for the task and were deemed likely to lead to failure sooner rather than later. To mitigate this risk and consolidate governance structures, the BIP recommended the development of an institutional support package to be delivered by Oxfam before or during the early stages of the handover process (Table 10). Coupled with Oxfam's role as institutional advisor to the GWCS's governance structure, this exemplifies Oxfam's approach to supporting CLOs to professionalize and communities to manage water supply in the context of protracted crisis.

Table 10: BIP action plan – Institutional support package

	Package	Oxfam's role
#1	**Organizational support**	• Supporting governance transition/management arrangements • Support setting up performance monitoring tools • Support setting up accountability tools and processes • Support setting up financial procedures • Supporting pro-poor tariff-setting structure based on commercial viability and sustainability
#2	**Operational support**	• Ensuring onsite O&M training and supervision through a qualified Oxfam water technician for the first three months of operations • Provision of subsidized consumables (aluminium sulphate and chlorine) for the first year of operations • Payment of incentives to Water Users' Committee and salaries to O&M Team during the first two months of operations • Improvements to the Water Treatment Plant that improve security of the facility, staff health and safety measures, and income generation • Development of a contingency plan • Development of a marketing plan • Daily onsite presence to monitor water quality standards • Development of O&M performance standards and criteria
#3	**Organizational training**	• Management arrangements, roles and responsibilities • Conflict mediation • Tariff setting • Water quality monitoring • Financial procedures • Operation and maintenance of a water treatment plant

Source: Business Implementation Plan – Gumbo Water Treatment Plant (2017)

KEY LEARNINGS

Voluntary community-based water supply management arrangements have been scrutinized and their effectiveness questioned for several decades now. Issues that undermine these arrangements have been linked to limited capacity to sustain community engagement; the informal nature of community organizations leading to lack of legal recognition; and the short-term funding cycles of the implementing agencies that provide humanitarian assistance.[14]

Despite these challenges, Oxfam's work in South Sudan demonstrates that, in the absence of public service providers and legal frameworks that regulate private service provision, **communities continue to play a key role in ensuring critical services**. This is particularly true in the context of Juba, where public water utility lacks human and financial resources, private sector providers are unregulated and unreliable, and political volatility and economic crisis continuously pose a threat to ongoing service provision.

The Gumbo WTP experience reveals that, for community management to work in a context of protracted crisis, **implementing agencies will likely have to provide substantially more regular and structured support to operating agencies that goes beyond the initial system infrastructure and involves ad hoc technical assistance**. More importantly, they will need to explore the potential of hybrid management arrangements: institutional frameworks that go beyond the basic community management model, bringing community-based structures into contact with market-oriented principles. Ultimately, these structures should represent all facets within the community and adopt a culture that promotes the notions of collective responsibility for payment and community cost recovery as standard practices.

This report therefore ultimately argues for a change in paradigm: one that allows the sector to move from traditionally voluntary community management arrangements, towards professionalization of community-based organizations directly responsible for managing delivery of basic services such as water. **In practice, this shift translates into the design of WASH programmes that:**

- **Are longer-term and channel funds towards WASH-related software components**, such as institutional support including help covering with registration costs, assessing the commercial viability of water systems, and organizing and leading multi-stakeholder engagement opportunities to address accountability issues, conflict mediation, etc.
- **Promote management arrangements that take into consideration local specificities but are based on market-based principles.** This includes separation of roles and responsibilities (e.g., water management committee responsible for O&M oversight, while operations and management are the direct responsibility of an experienced operator/service provider).
- **Consider the some level of subsidization that ensures sustained and ongoing pro-poor service delivery.** Considering the nature of protracted crises, the likelihood that systems will remain operational at all times is low. To minimize the impact of shocks and ensure sustained service provision, Oxfam recognizes the need to critically integrate a subsidy scheme. The challenge will be to develop a model that does not encourage dependency or undermine transparency and accountability, but contributes to long-term sustainability as and when the political and economic situation of the country improves. Nonetheless, implementing agencies and donors should jointly explore hybrid models that consider cross-subsidization.

NOTES

1 AfDB. Resilient Water and Sanitation Project for Improved Lives and Health in Juba (RWSPILHJ). African Development Bank, Juba: South Sudan

2 K. King. (2016) Deteriorating Economic Situation and its effect on safe and adequate water supply in Juba, South Sudan. Oxfam, Juba: South Sudan

3 Fankhauser & Tepic (2007). Can poor consumers pay for energy and water? An affordability analysis for transition countries. Energy Policy, 35(2), 1038–49.

4 As part of this project, a private sector micro-grant scheme was also developed, aimed at providing direct operational support to the water tankers business to increase their resilience and emergency preparedness.

5 Pre-crisis market analysis – a market analysis tool applied before emergencies occur, when markets are functioning 'normally'. This tool helps to inform not only potential emergency responses but also to improve preparedness, contingency planning, mitigation, disaster risk reduction, and early recovery.

6 MWRI (2011) Water, Sanitation & Hygiene (WASH) Sector Strategic Framework – "Water for Life and Development, Sanitation and Hygiene for Healthy and Productive Citizens". Ministry of Water Resources & Irrigation: Juba

7 GoSS (2009) The Local Government Act. Government of South Sudan: Juba

8 GoSS (2007) Water Policy. Government of South Sudan: Juba

9 GoSS (2009) Draft Water Bill. Government of South Sudan: Juba

10 USD $1 = 150 SSP (exchange rate as of July 2017).

11 USD $1 = 150 SSP (Exchange Rate as of July 2017)

12 WaterAid (2010) Social accountability Tools and mechanisms for improved urban water services. WaterAid: London

13 UNDP Water Governance Facility/UNICEF (2015) "WASH and Accountability: Explaining the Concept" Accountability for Sustainability Partnership: UNDP Water Governance Facility at SIWI and UNICEF. Stockholm and New York.

6 H. Lockwood & A. Gouais (2015). Professionalising community based management for rural water services. IRC Briefing Note.

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