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Conditions for private sector involvement and financing in rural water supply

Paper for the WASH systems symposium

N. van der Wilk



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340 million people living in rural areas across sub-Saharan Africa still lack access to basic drinking water services. In order to achieve universal and equitable access to safe and affordable drinking water for all by 2030, it is essential to explore new water service delivery models and means of funding these. The UDUMA model put forward by the Odial Solutions Group demonstrates that private sector actors, under certain conditions, can lead the development and financing of such new sustainable rural water supply initiatives. UDUMA introduces an alternative operation and maintenance (O&M) model for small-piped networks and manual pumps in rural and semi-urban areas. An innovative revenue collection system and the large scale at which projects are developed guarantee a steady cash flow and reduce risks. The use of new technologies contributes to operational efficiency. The users benefit from an improved and sustainable access to clean drinking water, with elevated service standards, affordable for even the poorest households. Based on long-term affermage contracts with local authorities, the financial and social returns on investment make it possible to attract alternative public and private funds for modernising and expanding rural drinking water infrastructure. There are however a number of pre-conditions to be able to call upon such blended finance solutions.

Introduction

Financing the Sustainable Development Goals (SDGs) might very well be the biggest challenge in reaching the ambitious 2030 targets. This is particularly true for WASH related goals. It is estimated that the capital investments (CAPEX) required to achieve the WASH SDGs (targets 6.1 and 6.2) will have to increase threefold from current investment levels (Hutton & Varughese, 2016, p. 7). With investment comes the question of financing the operating costs (OPEX) ensuring proper maintenance of the new equipment and maintaining the service levels. In the long run, WASH operating costs are to exceed new capital investments (Hutton & Varughese, 2016, p. xii).

The French private sector company UDUMA, a subsidiary of the Odial Solutions Group, has been developing business models to lift the financing gap for both CAPEX and OPEX around rural water supply in Africa. This practice paper will share the starting points of the UDUMA model, as well as its experiences in financing pump rehabilitation projects. After a brief description of the context in which

UDUMA operates, the paper will shed light on pre-conditions for private sector involvement in operating and financing rural water supply.

Context

In scarcely populated rural areas where the average village size rarely exceeds 1000 inhabitants, manual pumps are currently the only viable water pumping equipment worth investing in - for both government and private sector. Indeed, the per capita costs of constructing and maintaining a piped water system is significantly higher compared to installing multiple manual pumps. In many regions, this is also related to finding a water source able to provide a sufficiently high pumping flow to meet the demand. Large scale manual pump projects have allowed tens of thousands of villages all over sub-Saharan Africa to access a reliable source of groundwater. However, the upkeep of manual pumps has failed in many countries. It is estimated that one in three pumps is out of service at any given time. The consequences for low levels of access to water are obvious, but the impact in terms of lost investment, USD 1.2-1.5 billion in sub-Saharan Africa alone (Baumann, 2009), are equally disastrous.

Although small villages will depend on manual water pumping technology for a long time to come, the low sustainability of such equipment is leading to a dwindling willingness of governments and donors to continue financing rural water supply projects. This stands in stark contrast with the ambitious SDGs aiming to achieve universal access to clean drinking water. Rural populations continue to suffer from deteriorating access to potable water, which is contributing to the rural exodus across the African continent.

Pump dysfunctionality is linked to several factors: lack of adequate mechanisms to collect and store funds, economic inability of communities when ad hoc payments are requested for immediate repairs, and lack of local level technical know-how and spare parts (SSEE, 2015). Driven by new technologies, an increasing number of private sector initiatives are emerging to tackle these issues, focusing primarily on pump maintenance. At the same time, governments have started adopting rural water supply policies favorable to involving private sector actors and pushing for more organised user fee collection. Although it seems that a professional private sector approach may contribute to more effective pump maintenance, the sustainability of the business model behind these enterprises remains unknown. How do they ensure a steady flow of revenues when end users cannot

cope with high ad hoc intervention costs? This requires a system change in the way governments, donors, private sector and users perceive the financing of (improved) rural water supply services.

UDUMA proposes a disruptive O&M model for rural water supply equipment based on the following three pillars: 1) a quality service at a low cost; 2) a water tariff paid by volume by individual households; and 3) operations at scale to mitigate risks for the operator and for the user.

UDUMA operational model

Different from other initiatives which tend to focus on maintenance, UDUMA addresses the entire chain of water service delivery: modernisation of the water pumping equipment, operation and maintenance and monitoring of water quality. In exchange, users pay a fee by volume consumed (pay as you fetch). Local pump caretakers are in charge of fee collection and for basic hygiene of the water point. A water safety plan ensures water point hygiene, regular water quality testing and curative action in case of doubt. Trained mechanics guarantee a maximum 72 hour pump downtime and have access to local spare part depots. The existing water user associations monitor the service and, together with the municipal authorities, hold accountable the operator.

An efficient operational model and use of specific technologies allow UDUMA to offer these services, while keeping operating costs low. Each pump is equipped with a water meter and an automatic meter reading device (data logger), making it possible to monitor water consumption and pump breakdowns. A prepaid cashless payment facility ensures effective revenue collection - water users pay for the service at the pump with a tag which they recharge at dedicated kiosks, through a mobile money account or with cash. Water quality is tested through field kits and the results are shared through the telecom network. The mechanics are responsible for collecting all monitoring data on consumption levels, revenue collection, pump downtime, repairs and water quality. Pump breakdowns and complaints can be shared through SMS text messages.

Scale and risk sharing

The water services are offered through affermage contracts with local public authorities, which grant UDUMA the right to operate water services in selected areas and to charge tariffs. Such contracts often emanate from long preparatory work with the line Ministry in charge of Water. In Burkina Faso, 3 municipalities signed contracts with

UDUMA as part of a pilot project to test the approach. More recently, 11 municipalities in the southern region of Sikasso, in Mali, have signed affermage contracts with UDUMA for the management of their water points equipped with manual pumps. At the end of the contract, all equipment is handed back to the community in a good state of functionality. Working on municipal and regional level offers the advantage of scale. Obviously, scale can offer cost advantages (i.e. economies of scale) when, for example, amortizations and fixed costs are spread over a larger turnover. But scale also reduces certain risks. As for water pump users, the biggest risk may be a significant breakdown of their pump, with the financial consequences of repair costs to be born, as well as the impact of not having access to the water source for a certain period. The likelihood of risk is particularly high in the case of old or sub-standard pumping equipment. The potential consequences in rural areas can be very high when there are no alternative water sources available, which is often the case in the dry season. The impact is further prolonged when confronted with the collective inability to gather sufficient funds to have the pump repaired.

In an affermage model, the water operator is confronted with a similar risk: a significant breakdown of a pump has financial implications because the operator is responsible for the repair costs (spare parts and labour) and may in some cases also face penalties when the pump is not repaired within a certain time span.

Being able to pool funds and share the risk of a pump breakdown with other pump users and across communities can offer great relief for people that in many cases live off a minimum cash income. Pump users pay a small regular fee to buy off the risk of being exposed to "high-cost, low-probability" pump repair costs. This same insurance principle can attract operators, including private operators, who are looking to reduce the risks of working in rural areas. Among these is UDUMA. Further reading on the insurance principle can be found in the Smith School Water Programme working paper on Insuring Against Rural Water Risk (SSWP, 2015).

Funds pooling system(s)

The pooling of funds presents the users and an eventual professional operator with another challenge: how to collect such funds in an environment which is particularly challenging for such an operation. When working with the bottom-of-pyramid in order to finance basic services, the financial capacities of communities are limited when it comes to collecting larger sums for ad hoc payments. The capacity to pay can be seasonal (related to cash crop sales), which needs to be taken into account. Socio-political dimensions can come into play when specific

groups or individuals are able to contribute the requested sums, while others cannot. In addition, when funds are to be pooled over a larger area, which is the case when talking of scaling-up, the physical collection of fees, from village to village, is a barrier. With the arrival of mobile money services reaching even the most remote areas, this challenge is now partly overcome.

The key question is who pays what? It might be suggested or assumed that private operators would not care so much about who pays, as long as it achieves its turnover targets. This is not true however when taking into consideration the risk factors described above. In the UDUMA model the choice has been made to rely on the small contributions of thousands of individual households (tariffs) than to depend on government subsidies (taxes) or charity (transfers). This is the outcome of a risk analysis based on past experiences, recognising that government subsidies may be liable to financial solvability of the contracting agency, and to all sorts of political influences, and acknowledging that charity contributions can be unpredictable depending on purely external factors.

For the same reasons, it is also UDUMA's strong belief that sustainability of rural water supply systems can only be achieved if end user contributions cover all operating costs of the service provided as well as capital maintenance expenditure, which is the cost of renewing assets in order to ensure that services continue at the same level of performance that was first delivered. This brings us to another component on a private operator's balance sheet: profit margin. The business model proposed by UDUMA generates a thin but sufficient margin to offer a return on investment (ROI). We are talking of net 10-20% margins on a fifteen-year basis. This makes new projects bankable and encourages public and private financiers to invest in rural water supply infrastructure. UDUMA's experiences with the fundraising process are described in the next sections.

The user tariff is determined in collaboration with the national and contracting authorities. Tariffs take into account any legal minimum or maximum tariff, estimated consumption levels, the scale of the affermage project and affordability of the tariff for the end user. In Mali for instance, the UDUMA service will be offered at a tariff of 500 FCFA per cubic meter (€0,76/m³), or 1,5-eurocents per 20-liter jerrycan. This corresponds to the tariff being charged at water points which already have a functional pay-as-you-fetch system in place. The tariff covers all operational costs, capital maintenance expenditure and allows for reimbursing the initial 40% private capital investment.

Different initiatives across the globe are implementing new water service delivery models for rural areas. Each proposing different service levels, they are exploring innovative approaches to reduce operating costs and to use scale and fee collection modalities to arrive at an economic equilibrium. The ability to produce a return on investment and to attract private funding for the modernisation or expansion of water supply equipment, may just make the difference towards achieving the SDGs by 2030.

Blending finance, mitigating risks

In a nutshell, the UDUMA model works because operating costs are kept low, risks are spread over a large number of pumps and revenues are collected directly from the end user. The model however requires the upfront renewal of a large part of the pump fleet. The renewal reduces maintenance costs over the course of the first years of the affermage contract but is also necessary in order to integrate water meters in the pumping equipment. The modernising of the pumps comes at a cost, but the advantage for the users is significant. Water point functionality from the outset is 100%, increasing the access to water and the quality of the service in the UDUMA model, is of a higher standard. The advantage in terms of sustainability is also important. The life of the water points is extended by at least another 15 years, and because of the capital maintenance expenditure over the course of this period, the pumping equipment is expected to last much longer beyond the end of the affermage contract.

The innovation proposed by UDUMA is to leverage the thin margins generated by the water service in order to attract private capital to invest in water point rehabilitation. Although the social return on investment of rural water supply projects is potentially very interesting for investors, especially impact investors, the financial return on investment is not sufficient to have all CAPEX funded through private sources. This makes it necessary to look at alternative hybrid or blended finance constructions. The OECD defines blended finance as "strategic use of development finance for the mobilisation of additional finance towards sustainable development in developing countries". In this context additional finance means commercial finance (OECD, 2018, p. 16). Alex Money defines hybridity in this context as "synthesizing long-established practices of infrastructure finance with new and innovative approaches" (Money, 2018, p. 7).

Before looking at an example of how UDUMA has used these new financial constructions, it is important to consider the key conditions for the private sector venturing

into financing rural water supply projects in Africa. The following draws on experiences gained from discussions with UDUMA shareholders, public and private banks and potential (impact) investors. A more complete picture of all enabling conditions making projects bankable and to access private capital markets is provided by Alex Money in the work cited above (Money, 2018).

Preconditions for attracting private funding

The possibility of attracting private funds to finance rural water systems in Africa depends on the risks associated and the potential return on investment (ROI). These factors matter on two levels: for the financier who takes the risk of investing and seeks a certain ROI, but also for the operator taking the risk of doing business, bearing the cost of the capital acquired, whether through interest rates or equity, and seeking a profit margin. Besides risk evaluations and potential returns on investment, the social and environmental impact of an investment also matter. There is an increasing interest in impact investing, close to US\$ 23 trillion in 2016 (Money, 2018)), making the capability to demonstrate the social impact of an investment another precondition for investing. Indicators then include levels of water consumed, the number of people reached or equipment functionality rates - assuming these indicators can be verified objectively one way or another. The water meters used by UDUMA in its mumps and the personal tags for revenue collection are tools for verifying such indicators at a relatively low cost.

For the operator, the preconditions globally correspond to what has been described in the previous sections: being able to operate at scale, to keep operating costs low and to generate a steady flow of revenues with the smallest possible risks of payment default. In a business model based on payment by volume, it is important to establish average consumption levels and to agree on tariffs with the relevant authorities which are affordable for the users and acceptable to the operator. Finding the right balance between consumption and tariffs is key to achieving sustainability. There are other factors that play a role in decision making for both the financier and the operator. These include the scalability of the project, the enabling environment for investors and the possibility of having guarantees such as credit guarantees or collateral.

Facilitating the preconditions

In the UDUMA model, governments, donors, civil society and private sector are brought together in a multi-stakeholder partnership in order to meet exactly these conditions, with the objective of achieving long-term sustainability of the rural water supply delivery model.

Confirming the legal framework of operations. This implies obtaining written confirmation from the relevant authorities about the possibilities and restrictions for private operators to work on scale and the legal requirements in terms of tariffs, contracting modalities and public procurement. This also stretches to the general business environment (taxes and duties to be paid, fiscal advantages, protection of goods, etc.), often because these aspects are not always strictly defined by the legal framework. It is obvious that good relations with national and local authorities are helpful in securing these preconditions.

Demand creation. As mentioned above, the greater the potential demand for the service, the more interesting it is for different parties to invest. Local authorities and local civil society (NGOs, trade unions, women's groups) should be associated in bridging the gap between the demand for clean drinking water and the users' willingness to pay for the service. This can be achieved by running joint awareness raising projects, working on users' knowledge base and collective norms. There is a multitude of different approaches that have been developed to facilitate such behavioural change processes.

Leveraging technological innovations. Partnerships with telecom operators and companies from the fintech and cleantech industries offer great possibilities to further optimise business operations. Smart metering, mobile money, NFC solutions and data connectivity allow UDUMA to reduce the costs of revenue collection and allow for monitoring sales, consumption and equipment functionality. Investing and piloting these new approaches and technologies do pay off.

Risk sharing. Risks related to financing and operating rural water systems can be spread by working on scale and across regions. As outlined in the next section, bringing together, or blending, different funding and guarantee mechanisms can actually reassure investors.

Findings and results

Throughout its fundraising phase, UDUMA's project in Mali encountered a number of practical experiences worth sharing with other practitioners. UDUMA Mali encompasses the rehabilitation of 1400 water points, renewal of the pump fleet and O&M services on the basis of a 15-year affermage contract with 30 municipalities in the Sikasso region. The service standards and revenue collection modes are similar to what is described above. Total CAPEX amount to EUR 5 million, including EUR 1 million for technical assistance and awareness

raising campaigns. The business model allowed for a maximum of 50% debt. For strategic reasons, it was preferred that equity financing was not sought (cash in exchange for company shares).

It was assumed that securing the minimum 50% non-reimbursable investment subsidy would facilitate finding the remaining commercial capital. Discussions with different bilateral and multilateral donors, as well as with IFIs, always stalled at identifying the right instrument to directly subsidise a private enterprise with a co-funding component. In 2017, UDUMA successfully applied to the Sustainable Water Fund (FDW), a EUR 45 million facility funded by the Netherlands Ministry of Foreign Affairs in support of Public Private Partnerships contributing to water safety and water security in developing countries. Leading a consortium with three Dutch NGOs and the Malian National Water Agency, UDUMA obtained a EUR 3 million grant, or max. 60% of the total investment costs, after a competitive call for proposals managed by the Netherlands Enterprise Agency (RVO). The project is currently being implemented.

The search for complementary funding started by turning to commercial banks active in Mali. Four different banks were approached, among which was one Malian bank. Financing a new activity in a sector traditionally avoided by businesses required quite a bit of explaining. An even larger barrier however was the fact that financing was being requested by a newly established entity (UDUMA Mali S.A.). The proposed interest rates reflected local market rates (around 8%). Unfortunately, the only bank which showed concrete interest in funding the project required a 100% bank guarantee, either from the parent company, or directly provided by a European bank. This was unrealistic as the cost of such a guarantee alone would be similar to the cost of obtaining a loan from a French bank. Total financing costs would be three to four times higher compared with a loan obtained from a French commercial bank.

UDUMA turned to European investment funds with social impact objectives. The innovative character, the high social impact and the minimal, but required financial return on investment of the UDUMA Mali project triggered the interest of these funds. And with the Dutch subsidy for CAPEX, the ROI of the project was attractive enough. However, this was not sufficient to close a deal. The EUR 2 million capital needed would not fit in a larger infrastructure portfolio, with entry ticket and project management fees also too high in relative terms. Unsurprisingly, the track record of UDUMA was

often questioned. What would ensure such an innovative approach, even though tested in a number of municipalities, would actually work when rolled out at scale? Political risk associated with investing in developing countries also caused hesitation. The UDUMA projects depend on obtaining affermage contracts with public authorities and this political character seemed to trouble investors.

In the course of 2018, UDUMA finally secured sufficient capital. One public and one private sector bank familiar with the activities of the Odial Solutions Group together provide a EUR 2.1 million loan at market rates. The French public investment bank, Banque Publique d'Investissement (BPI) played a crucial role. It offered an initial EUR 800.000 loan which provided leverage when discussing the investment project with private sector bankers. Four commercial banks were approached and one showed immediate and concrete interest on the condition of BPI participating in the financing of the project. A EUR 800.000 loan has been agreed with an interest rate at market level with repayments starting in the first year of the project. In order to close the funding of the UDUMA Mali project, an additional EUR 500.000 loan was obtained from BPI on similar terms.

Both BPI and the commercial bank explored different means of obtaining securities. Firstly, the commercial bank requested a 30% credit guarantee on its loan. This guarantee could be obtained, again, from BPI. BPI is supported by the European Investment Fund, which guarantees and refinances loans provided by BPI allowing it to offer low interest rates. Another request for securities was about collateral. A similar demand was earlier voiced by the Malian banks. In the absence of existing significant assets of UDUMA, the extent to which the pumping equipment could serve as collateral for the loans was even investigated. Finally, the two BPI loans required personal guarantees: a life insurance on the head of the managing director of UDUMA guarantees loan repayments in case of such a scenario.

Blended financing structure UDUMA Mali

Subsidy 1: Netherlands Ministry of Foreign Affairs, through the Netherlands Enterprise Agency, a EUR 3.000.000 subsidy conditioned by a 40% co-funding from the operator and reporting on outputs and sustainability.

Subsidy 2: UK Department for International Development, through the GSM Association, a GBP 150.000 grant for rolling out the electronic revenue collection system, conditioned by a 50% co-funding and regular reporting on KPIs.

Bank loan 1: A French commercial bank, for EUR 800.000, with a seven year maturity term at less than 2% interest

rate, repayments start in the first year. This loan requested a 30% guarantee.

Bank loan 2: BPI, for EUR 800.000, with a seven year maturity at less than 2%, repayments start in the third year.

Bank loan 3: BPI, for EUR 500.000, with a seven year maturity at less than 2%, repayments start in the third year.

Guarantee 1: BPI, for 30% of the commercial bank loan.

Guarantee 2: life insurance on the head of the UDUMA CEO.

Conclusion

UDUMA's first experience in trying to obtain project funding for investments in rural water supply demonstrates that there are factors other than bankability and financial and social returns that are important to public and private sector funders. Subsidising the private sector to engage in the rural water sector in Africa is not yet common, the public instruments are not yet ready for such schemes - the Dutch FDW facility really stands out in this respect. The size of the investment matters. Guarantees matter. Financial and operational track records count. And this should not be surprising. Anyone who has ever attempted to obtain a bank loan for a start-up enterprise will recognise these demands for ROI and securities. It is important to realise that these preconditions also apply to innovative rural water supply projects in Africa. This brings us back to the contents of the first sections of this paper, emphasising the need for operating at scale, ensuring revenue collection and mitigating risks.

The enthusiasm met from bilateral and multilateral donors, impact investors and European and African banks to investigate the possibility of co-investment in a rural water supply project offers great prospects. Such projects tick all the right boxes: a contribution to SDGs, environmentally neutral, long term sustainability, contributions to local employment, a direct effect on the lives of women, technology-driven and a significant potential for scale-up. There is a great need for alternative rural water supply models and if the private sector contributes through professionalisation of these models and through the financing of water supply infrastructure, the SDG may actually still be within reach.

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Contact details

Nicolaas VAN DER WILK
6, Rue Lavoisier
Tel: +33 2 38 22 62 33
Email: n.vanderwilk@uduma.net
www: www.uduma.net



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