RURAL WATER 2021

Compiled and edited by Philip T. Deal, Sean Furey, & Meleesa Naughton

THE RWSN DIRECTORY OF RURAL WATER SUPPLY SERVICES, TARIFFS MANAGEMENT MODELS & LIFECYCLE COSTS

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RWSN

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01 WELCOME!

By Sean Furey, Director, RWSN Secretariat

Welcome to the second edition of *Rural Water,* the RWSN Directory of rural water supply services, tariffs, management models and lifecycle costs.

It is hard to ignore the impacts of the Covid-19 pandemic that continues to rampage around the world leading to great loss of life, loss of health and increased wealth inequality. It is a tough time for many and while we should applaud the heroic efforts of medical services, we should not forget the hundreds of thousands, if not millions, of water professionals working around the world to keep the pumps on and the taps flowing.

Water is life. We all value it, even if we are not always the best stewards of this precious resource.

22nd March is World Water Day and this year, UN Water (of which RWSN is a partner) celebrates the Value of Water. This is much more than about the price, it is also about its deeper cultural, religious, educational and environmental values.

But price is important too – and investments in rural water supply projects and services are historically poor at monitoring, evaluating and communicating their full Life Cycle Costs and income.

This basic numeracy in rural water supply service models and tariffs is vital if fully sustainable, accessible water services are to be available to everyone by 2030.

This year, RWSN is pushing to reach out to more rural water supply service providers, authorities, and regulators all over the world.

So, join us and together we can overcome the challenges of pandemics, climate change and rising wealth inequality and achieve access to safe drinking water for every home and family.

JOIN RWSN NOW

02 SPECIAL FEATURE: WOMEN ARE AT THE HEART OF RURAL WATER SUPPLY SERVICES

This practical guide is the result of a consultation and co-creation process with members of the Rural Water Supply Network (RWSN). Engineers and gender experts have come together to overcome jargon barriers from their respective disciplines. This guide aims to pro-vide water specialists with the language and knowledge on how best to work with gender experts to build more transformative activities.

To create this guide, RWSN members were invited to a collaborative e-workshop, a multilingual e-discussion, and to comment on the draft version of the guide. Furthermore, gender experts in the field of rural water supply were consulted throughout the process to ensure that simplification of the language did not undermine rigour of the underlying social science.

The guide also draws upon lessons from RWSN members collected during a former e-discussion on "How women's engagement in Water User Committees impact on its performance and system functionality" (2016) and a webinar on "Making Water Work for Women, Sharing Inspiring Experiences" (2017).

The guide has five parts: The introduction presents the rationale be-hind this guide and highlights elements to keep in mind throughout the guide.

Then, the concepts of women's empowerment, as under-stood in this guide, are introduced and broken down into five key factors: access to information; participation; engagement & inclusive-ness; power dynamics & structures; and capacity-building.

Part three provides practical steps to follow within each empowerment factor, while false beliefs (or myths) are exposed. After looking at the factors, part four looks at women's empowerment throughout the cycle of an activity: identification, design; implementation; monitoring & evaluation; and reporting.

Each stage contains a checklist of actions. Finally, concluding remarks underline the importance of women's empowerment as a strategic objective in itself, and discuss the impact on external stressors on women's empowerment.

Download now.

02 SPECIAL FEATURE: CALLING ALL RURAL OPERATORS

In 2017, almost 800 million people still lacked even a basic water supply. Eight out of ten of those people lived in rural areas. But first-time access is only the beginning. Sector partners agree: not only is there a need for increased operations and maintenance funding; links between investments and results need to be more transparent, and the value of existing public funding needs to be maximised by incentivising sector performance, improving subsidy targeting and promoting better sector planning and management.

We believe one key answer lies in the use of Results-Based Funding for rural water services. Particularly in rural areas, concessionary funding is needed to guarantee reliable services for everyone. Results-based funding is a way to invest those funds in a manner that is targeted, transparent, data-driven and scalable, while motivating services to improve over time.

Selected performance metrics are used to design performance-based contracts with service providers, and inform payments when results are verified.

The 100M Initiative will undertake a multi-stage data collection exercise to estimate the scale and potential of results-based funding globally. Steps will include:

- Identify and reach out to as many rural water service providers as possible, with a focus on low- and middle-income countries.
- Administer a short survey.
- Identify a Reference Group of service providers across multiple countries.
- Use collected data and analysis to finalise a strategy to develop results-based funding for 100 million people by 2030.

How can you get involved?

A truly global diagnostic requires us to reach rural water service providers beyond those connected to RWSN and other global networks. We seek your help in identifying as many of them as possible.

Are you…

- …a water service provider working in or planning to work in rural areas and willing to complete the survey?
- …working for an agency interested in exploring results-based funding for rural water services?
- …able to provide us with contacts to help us build our global database of rural water service providers and/or rural water programme managers at national level?

Or would you….

- …like to know more about this initiative?
- …be interested to join the Reference Group?

Then contact us at ruralwater@skat.ch

Join the RWSN Sustainable Services community

02 SPECIAL FEATURE:

STOP THE ROT

By Dr Kerstin Danert, Ask for Water GmbH[1]

Premature corrosion and failure of water supply hardware, particularly handpumps, is widespread in countries within Sub-Saharan Africa, but evidence is limited and largely anecdotal. If drillers are not assured of quality handpumps in country, how can they install pumps that provide water users with the services that they deserve? For the tens of millions of people in sub-Saharan Africa who depend on handpumps to meet their daily water needs, handpump failures threaten their health and livelihoods.

In cases where communities receive a handpump or components of substandard quality, parts may rapidly wear. If components of the wrong material or inadequate quality are installed in aggressive groundwater, the water supply may not function properly or can fail. Alternatively, the water may not be suitable for drinking. If the handpumps fails, or if water is turbid, discoloured, or has a metallic taste, users may return to using distant or unsafe water sources. If handpump components wear prematurely, communities can incur unnecessary costs in trying to fix the problem.

The twin challenges of how to ensure the quality of handpumps and how to prevent rapid corrosion of certain pump components have been discussed for over four decades. Corrosion of below-ground handpump components was documented in the 1980s. Research concluded that galvanisation of pump riser pipes and pump rods does not prevent corrosion where the pH < 6.5 and provides limited protection for pH 6.5 to 7. In light of this, programmes have switched riser pipes and pump rods to stainless steel or switched to uPVC riser pipes and stainless-steel pump rods, while some countries standardised on pumps which aims to be fully corrosion resistant by using a uPVC rising main and stainless steel, or fibre glass pump rods. Unfortunately, handpump corrosion problems and concerns over handpump component quality persist. The extent of the problem is not fully known because of relatively little research on this topic, coupled with a lack of information available in the public domain.

Corroded rising mains being photographed as part of a physical audit of water facilities in Burkina Faso (Reproduced in Danert, 2019)

A new initiative by Skat Foundation and *Ask for Water* GmbH under the Rural Water Supply Network (RWSN) strives to find ways to ensure that handpump technologies and spare parts that are installed for drinking water in sub-Saharan Africa are consistently of high quality and can last.

THE OBJECTIVES

- **Documentation:** the scale and extent of the problem of handpump corrosion and poor-quality components in sub-Saharan Africa is documented.
- **Understanding:** as a single country cases study, the handpump supply chains for Zambia1 are mapped out, with their strengths and weaknesses analysed.
- **Awareness:** awareness of handpump corrosion, poor-quality components and related supply chain methods is raised internationally.
- **Action Catalysed:** ongoing engagement of international organisations, national governments, research organisations and other stakeholders to catalyse actions to tackle the problem.

Join Dr Kerstin Danert (Ask for Water) and Sean Furey) by sharing your experiences in the RWSN Sustainable Groundwater community.

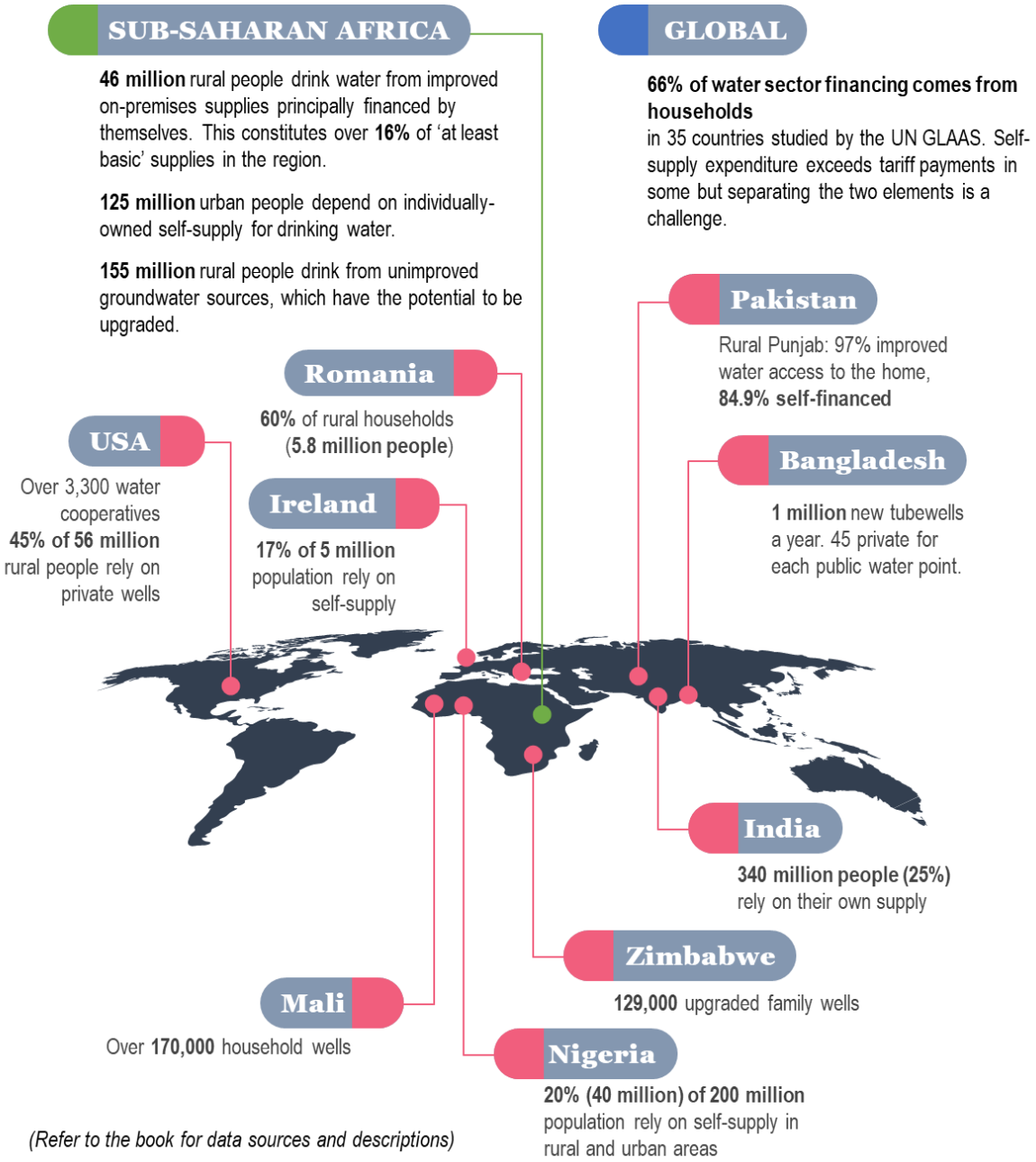
[1] This article first appeared in GeoDrilling International (March 2021).

02 SPECIAL FEATURE

SELF-SUPPLY: FILLING THE GAPS IN PUBLIC WATER SUPPLY PROVISION

A new book by Dr Sally Sutton, with Dr John Butterworth, explores the world of household investment in water access. Sally introduced Self-supply as an RWSN Theme over 15 years ago and it has slowly gained acknowledgement as an overlooked source of investment and effort to improve both urban and rural water access around the world, from the highlands of Scotland to rainforests of Nicaragua.

Buy or download for free from Practical Action Publishing,



02 HOW TO USE (AND NOT USE) THE DIRECTORY

This year we have updated and expanded *Rural Water* and added:

- **Special features** from the RWSN Themes and projects.
- **Blue Pages:** a free listing service for any product or services directly related to rural water supply, plus paid advertising opportunities in the publication and the standalone version of the Blue Pages.
- Short entries from charities and NGOs who were able to provide a bit of data on how they operate or implement **community-based projects.**
- **Country profiles** for selected countries with some key data from the UNICEF-WHO Joint Monitoring Programme (JMP).

We hope you find this useful and will want to be included in the next edition.

Thank you to Dr Philip Deal who since the first edition has gained his PhD and joined Water4. He has once again pulled together this directory, and thank you to all the partners who responded to the call and to Meleesa Naughton for her management and leadership and to Alice Chautard for a wonderful cover picture.

A QUICK OVERVIEW OF LIFE CYCLE COSTING APPROACH

The Life Cycle Cost Approach (LCCA) is way of considering all the direct and indirect costs associated with a product or service over the course of its life, from construction to decommissioning. In the Water, Sanitation and Hygiene (WASH) sector this has been most clearly

Table 1: Life-cycle cost components

Cost components		Brief description
Capital expenditure (CapEx) The costs of providing a service where there was none before; or of substantially increasing the level of services.	Capital Expenditure Hardware (CapExHrd)	Capital investment in fixed assets, such as concrete structures, pumps, pipes and latrines either to develop or to extend a service.
	Capital Expenditure Software (CapExSft)	Expenditure on one-off work with stakeholders prior to construction or implementation, extension, enhancement and augmentation (including one-off capacity building).
Recurrent expenditure Expenditure associated with maintaining an existing service at its intended level.	Operational Expenditure (OpEx)	Recurrent (regular, ongoing) expenditure on labour, fuel, chemicals, materials and purchases of any bulk water and cleaning products for sanitary facilities, energy costs, etc.
	Capital Maintenance Expenditure (CapManEx)	Asset renewal and replacement cost; occasional and lumpy costs that seek to restore the functionality of a system, such as replacing pipes and pumps.
	Cost of Capital (CoC)	Cost of interest payments on micro-finance and any other loans.
	Expenditure on Direct Support (ExpDS)	**Expenditure on support activities for service providers, users or user groups.**
	Expenditure on Indirect Support (ExpIDS)	**Expenditure on macro-level support, including planning and policy making, and support to decentralised service authorities or local government.**

Source: Fonseca et al. 2011.

and thoroughly established by IRC[2] and the main components are summarised in the table below.

WHAT THIS DIRECTORY IS:

A quick reference guide

This Directory is designed to be concise and easy to navigate. Keep a printed version on hand to flick through if you want to get ideas.

A showcase for innovation, successful track records (and failure?)

The intention is to provide an honest overview of innovative new models and service delivery approaches that have a track record of success. The most successful organisations will show improvements and increased sustainability over time. Those organisations that stagnate or even disappear may allow for shared learning from failure.

Inspiration

We hope that this Directory, and future update, will inspire further financial data sharing and dialogue on tariffs, cost recovery and inclusive financing.

We also want raise the visibility and discussion of all Life Cycle Cost components, particularly those that are not often discussed or presented, such as the cost of support and the cost of capital.

Scale and Standardisation

One of the key indicators of success is an organisation that shows evidence of scale. Scale is not just replication or growth, where a model expands at a linear rate. Scale means an exponential increase in safe water provision without substantial increases in resource investment. Look for signs of models that show rapid growth and have the potential to expand to entire regions.

WHAT THIS DIRECTORY IS NOT:

Not a detailed analysis or comparison of models.

We don't offer analysis or judgement on any of the entries presented here. Two recent studies that we recommend are:

WaterAid/Aguaconsult (2018) "Management models for piped water supply services", WaterAid, October 2018.[3]

World Bank Group (2017) "Sustainability Assessment of Rural Water Service Delivery Models: Findings of a Multi-Country Review". World Bank, Washington, DC[4]*.*

Not a database of definitive benchmark costs.

The figures presented in the Directory entries are generalised and often highly context sensitive. Although the authors have done their best to make figures comparable, there are assumptions about populations served, expense allocations, and levels of responsibility that can be interpreted differently. If a model interests you, we encourage communication with the various organizations to learn more.

Not an exhaustive compendium

The 2nd Edition builds upon the established core of service delivery models from 2019. Those that were available to provide updates will be denoted by a 2020 marker. Other organisations that signed up within the RWSN call for submissions were subsequently contacted, and those that responded with sufficient information were included.

Not about where the money comes from

In this edition, we have not included data or analysis of where the money comes from to cover the life cycle costs. However, since the last edition, two interesting new publications have looked at household investment[5] and blended finance[6].

The information and figures provided come directly from the organisations concerned and/or from published documentation and therefore have not been independently verified by RWSN

[2] https://www.ircwash.org/news/costs

[3] https://washmatters.wateraid.org/publications/management-models-for-piped-water-supply

[4] https://openknowledge.worldbank.org/handle/10986/27988

[5] Kerstin Danert, Guy Hutton; Shining the spotlight on household investments for water, sanitation and hygiene (WASH): let us talk about HI and the three 'T's. Journal of Water, Sanitation and Hygiene for Development 1 March 2020; 10 (1): 1–4. doi: https://doi.org/10.2166/washdev.2020.139

[6] Convergence (2021) Blended Finance for Water Infrastructure Maintenance and Fecal Sludge Management

04 THE MANAGEMENT MODEL DIRECTORY

Entries listed alphabetically below. You can find the key to the symbols on the back page.

Name	Type of Model	Type of Service	Operating area(s)
Access Development	PV-1 PV-2		Ghana
AguaClara	CBM-2 LG-1		Honduras, Nicaragua, India
BESIK Program	LG-1 LG-2 LG-3		Timor Leste
EverFlow	CBM-3		Uganda
Fisherman's Rest – Madzi Alipo	CBM-2 PV-2 NGO-2 NGO-3		Malawi
Fix that Pump	CBM-2 PV-2		Ghana
Fundifix	PV-1 CBM-2		Kenya
Inter Aide	CBM-3 LG-2 LG-3 NGO-1 NGO-2		Malawi, Ethiopia, Madagascar, Mozambique, Sierra Leone, Haiti
Maji Milele Ltd.	CBM-3 LG-3 PV-2		Kenya, Uganda
RWSSP	CBM-2 LG-1		Tajikistan, Uzbekistan
Safe Water Network	LG-3 NGO-1 NGO-2		Ghana, India
SISAR	CBM-4		Brazil
SMART Centres	CBM-3 NGO-1		Tanzania, Malawi, Niger, Mozambique, Zambia, South Sudan, Nicaragua, Ethiopia, Ghana, Kenya
Spring Health	PV-2		India
Uduma	PV-1		Burkina Faso
Water Compass	PV-1 NGO-1		Uganda
Water for Good	CBM-2		Central African Republic

Water Mission	CBM-2, NGO-1, NGO-3, LG-3		Haiti, Honduras, Indonesia, Kenya, Malawi, Mexico, Peru, Tanzania, Uganda
Water4	NGO-1, NGO-3, PV-1	PPP	Ghana, DRC, Ethiopia, Zambia, Tanzania, Malawi, Sierra Leone, Burkina Faso, Uganda, Kenya, Togo, Peru
Water4ever	PV-1, PV-2	PPP	Sierra Leone
WaterCredit	NGO-1, other		Kenya, Uganda
Whave Solutions	CBM-3, LG-3, PB-1	PPP	Uganda

Access Development

PV-1 PV-2 PPP

Country/ Countries of operation	Wassa East, Ghana
Context Description	Access Development is currently serving about 96,000 people in 114 communities through 126 public kiosks, 321 household connections, and 69 handpumps. The district is within a tropical climate zone, with 1500 mm of rainfall per year. About 92% of the district is considered rural.
Water System Description	Access Development (AD) is a private service delivery model in the Wassa East District of Ghana. In 2016, the company arranged a formal agreement with the local government to build, own, and operate NUMA piped systems and boreholes in the district. The company maintains their systems using circuit rider methods of operation. Area mechanics regularly visit each managed source to provide maintenance, repairs, and support to vendors stationed at each sales point. Access Development uses modular, solar-powered piped water systems to gradually expand from central kiosks (Nexus or Nano) to additional sales points (Nodes) and institutional or household connections (Nows). Groundwater is treated using microfiltration, UV disinfection, and chlorination. Additional treatment trains, such as iron removal, can be inserted as necessary. Handpumps are also available for communities smaller than 300 people.
Tariffs	Water is priced at 0.20 GHS per 18 litres, or about 1.90 USD/m^3. Customers 'pay-to-fetch' for water from vendors with cash. Cash payments are transferred to AD either by mobile money or during maintenance visits, minus a commission to the vendor. The vendor submits mobile requests for bulk tank fill-ups using pe-paid metering, allowing for less frequent telecom charges.
Tariff Collection and fund management system	Revenue is managed by AD. First, a percentage is allocated to the vendors for payment and to the District Assembly for subsidizing other community efforts. Then, operating expenses are covered. Remaining funds are reinvested into the business, either as savings for future capital maintenance or expansion efforts.
Social inclusion policies	The percentage of revenue allocated to the District Assembly is intended to be used for reaching the smallest communities outside the 90% with access. Hiring vendors and other local workers are intentional efforts to improve district quality of life.
Name(s) of funding/backing organisations (if applicable)	Water4, RVO, World Vision, Vox, Hilton Foundation, Global Communities, Untapped, OneDrop
2020 Updates	AD achieved 90% coverage for the Wassa East district and is looking to begin expanding operations to new locations. The company was able to see a significant increase in demand due to a free water mandate issued by the Ghanaian government, in response to COVID-19. The company partnered with local government to promote good hygiene practices and social distance measures, and target treated water access to health care facilities through their institutional connections.
Further Information / References	http://www.accessdevelopment.co/ https://water4.org/ https://doi.org/10.3390/w12030693 https://doi.org/10.2166/washdev.2020.034

Access Development

Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Not responsible	Responsible and covered	Responsible and partially covered	Responsible and covered	Responsible and partially covered	Responsible and covered

Life Cycle Costs	Access Development is working towards coverage of all recurring life-cycle costs. By integrating the company within an administrative district (about 100,000 people), economies of scale and brand recognition assist in accomplishing this goal. Since 2016, AD has reached a threshold of covering OpEx and components of its support costs, as well as beginning to take on loans for expansion. The company looks to gain greater penetration to cover its projected CapManEx costs for the long-term.
Capital expenditure – hardware and software (CapEx)	Water4 and other partnering organizations are currently providing the initial CapEx, either through grants or loans. Piped system costs range between 7000 – 30,000 USD, depending on context and size, with customization to expand from the central treatment centre. Average cost per person is estimated at 36 USD per person. This includes drilling, materials and construction overhead.
Operating and minor maintenance expenditure (OpEx)	Operating expenses were estimated at 1.63 USD per person per year for the district, which includes vendor commission, district fees, minor repairs, transportation, marketing, monitoring, and operating salaries.
Capital maintenance expenditure (CapManEx)	CapManEx was estimated at 1.22 USD per person per year in 2020. This is a projected value on depreciation of assets with set lifespans ranging from 1 (valves) to 15 years (foundation). This is subsidized by Water4 until AD reaches the necessary sales penetration and scale to cover it.
Cost of capital (CoC)	AD has taken on a loan for household connections (Nows) within communities where Nexus treatment centres have been established. This allows for gradual expansion, and should amount to about 0.26 USD per person per year.
Expenditure on direct support (ExpDS)	The ExpDS is predominantly provided by Water4 through their training and external monitoring programs with each of their enterprise partners. This is estimated at about 0.58 USD per person. Internal development and monitoring functions for AD are included in their operating expenditures.
Expenditure on indirect support (ExpIDS)	The costs for ExpIDS are incorporated into OpEx. Engagement with CWSA, GWCL, and the District Assembly is done by AD staff in order to maintain good stakeholder relationships. Increased investment in groundwater monitoring is planned for 2021 for water resource management.
Total Expenditure (TotEx)	CapEx: 36 USD/person Recurring Costs: 3.69 USD/person/year Included: OpEx, CapManEx, CoC, ExpDS, ExpIDS
	Year: 2020

AguaClara

CBM-2 LG-1

Country/Countries of operation	Honduras, Nicaragua, India
Context Description	In 2015, about 85% of people in India and Honduras had at least "Basic" water services. Even the poorest quintiles are above 79% coverage. However, those sources that are safely managed are drastically reduced in Honduras. Very few communities with populations below 50,000 people have safe water on tap
Water System Description	AguaClara uses a gravity-fed water treatment system to clean water and distribute it through a piped network. No electricity is necessary. The standard treatment path is grit removal, chemical dosage, flocculation, floc blanket, sedimentation, and stacked rapid sand filtration.
Tariffs	Tariffs are 3 – 5 USD per household per month.
Tariff Collection and fund management system	Either a community water board or the municipal government is in charge of tariff collection and money management. Standard community-based collection is practiced.
Social inclusion policies	The community water board may subsidize tariff costs to the elderly and widows unable to pay.
Name(s) of funding/backing organisations (if applicable)	Swiss Agency for Development & Cooperation (SDC), Cornell University, AguaClara Cornell, AguaClara Reach, Agua Para el Pueblo, Agua Para la Vida, Water for People, Gram Vikas
2020 Updates	AguaClara Reach, the NGO branch of AguaClara, has received requests through Agua Para el Pueblo and Gram Vikas for designs of small-scale treatment plants with a capacity ranging from 1 to 5 litres per second. Developing new designs for these small-scale treatment plants is a top priority, as it will enable us to reach smaller communities who need access to safe and affordable drinking water on tap.
Further Information	https://www.aguaclarareach.org/

AguaClara Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Not responsible	Responsible and covered	Responsible and covered	Not responsible	Responsible and covered	Not responsible

Life Cycle Costs	The AguaClara water treatment plant was designed to be a low cost, long-term solution to piped water access. Being gravity powered with few moving parts, the life-cycle of the system is meant to be robust. At present, 18 of 20 treatment plants are covering the recurring costs of operation.
Capital expenditure – hardware and software (CapEx)	The typical costs associated with the design, build, train, and transfer of a treatment plant are estimated at 10,000 USD per L/s of production. Financing is typically derived from the local government or donor partners. Communities, ranging from populations of 1,500 to 12,000 people, have covered between 10% and 100% of the initial CapEx costs.
Operating and minor maintenance expenditure (OpEx)	Operational costs are dominated by labour costs and chemicals, with minor repairs made to the few moving parts (float valves). These costs vary with the size of the treatment plant.
Capital maintenance expenditure (CapManEx)	Capital maintenance is presently not considered for anything but the plant and piping repairs. Being gravity powered with few moving parts, the plant is expected to last 30 years.
Cost of capital (CoC)	CoC is not considered because CapEx has been financed primarily through donors, NGOs, and governments, with the exception of one community financing themselves.
Expenditure on direct support (ExpDS)	Most support costs associated with monitoring and training are covered by the tariff or the local government.
Expenditure on indirect support (ExpIDS)	The Honduran water regulatory agency and health ministry periodically records water quality measurements, taking on the costs of external monitoring and oversight. Other peripheral support for research, program development, and training is provided by NGO partners and Cornell University.
Total Expenditure (TotEx)	Includes: CapEx AguaClara Treatment Plant: 40 USD/person Includes: OpEx, CapManEx, ExpDS Operations: 7 to 13 USD/person/year **These figures vary depending on the size of the community*
	Year: 2018

BESIK Programme

LG-1 LG-2 LG-3

Country/Countries of operation	Timor-Leste
Context Description	As of 2015, in rural Timor-Leste, 60% of people had access to "Basic" water services[7]. Within that, there is disparity between rich and poor, with 72% of the richest quintile having access to a "Basic" water service but only 36% of the poorest quintile having similar access.[8] Piped water systems are typically found in Timor-Leste, powered either by gravity or electricity. There are limited hand pumps or wells near the coastal areas, so water is usually distributed by public tap stands.
Water System Description	The BESIK program attempted to establish water service provider contracts for routine operation and maintenance of the piped water systems. Management contracts were established with either the local government, private operators, or community officers. A study was conducted on the long-term cost requirements associated with CapManEx.
Tariffs	Communities pay monthly tariffs at a rate of 0.50 - 1.00 USD per household.
Tariff Collection and fund management system	Communities collect the tariff and pay to a community management group. As of 2016, they were formulating plans to cluster pump systems to attain economies of scale.
Social inclusion policies	Future plans for cross-subsidies on piped tariffs were in place.
Name(s) of funding/backing organisations (if applicable)	National Directorate of Water Services, Australian Department of Foreign Affairs and Trade (DFAT)
Further Information / References	https://rwsnforum7.files.wordpress.com/2016/11/full_paper_0239_submitter_0294_choksey_jonathan.pdf

[7] https://washdata.org/ (accessed 01.08.19)
[8] https://washdata.org/ (accessed 01.08.19)

BESIK Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExpIDS
Not responsible	Responsible and partially covered	Responsible and partially covered	No information	Not responsible	No information

Life Cycle Costs	In 2016, these piped systems were heavily subsidized and relied on significant financial support. On average, community tariffs alone were estimated at only 600 USD per year. In a detailed analysis of one community, they were only covering 38% of operating costs.
Capital expenditure – hardware and software (CapEx)	Capital expenditures required outside support to fund the high investment costs. A new piped system was estimated at 93,500 USD, and a new borehole was about 15,350 USD.
Operating and minor maintenance expenditure (OpEx)	The annual cost for covering staff salary, office expenses, travel, electricity, materials, and vehicles was estimated at 37,720 USD per year, or roughly 21 USD per person per year.
Capital maintenance expenditure (CapManEx)	A number of large repairs or rehabilitation expenses were tracked historically over three years, including pump replacements, control panels, manifolds, and other mechanical and electrical equipment. In total, they spent 103,100 USD over 73 sites between 2012 and 2015. This equated to about 2.70 USD per person per year. Specific Examples: 8,350 USD per solar pump replacement 3,350 USD per 3-phase control panel 4,350 USD per borehole rehabilitation
Cost of capital (CoC)	-
Expenditure on direct support (ExpDS)	-
Expenditure on indirect support (ExpIDS)	-
Total Expenditure (TotEx)	Included: OpEx, CapManEx Service Contract: 23.70 USD/person/year
	Data year: 2015/16

EverFlow

CBM-3 PPP

Country/Countries of operation	Uganda (Apac and Kwania Districts)
Context Description	In 2015, in rural Uganda, 32.5% of people had access to at least a "Basic" water service.[9] This rate is consistent across most quintiles, with the exception of nearly 50% of the richest households having "Basic" water service.[10]
Water System Description	EverFlow provides a full-time maintenance and repair service for water systems under its care with the aim of maximizing uptime of water points. The company trains and employs technicians that provide regular maintenance, pump performance checks, and scheduled overhauls. They also keep a stock of spare parts, operate a toll-free hotline for emergencies, and will dispatch technicians as needed. EverFlow also employs community caretakers to record daily performance metrics, which inform the administration of any warning signs or issues. This information provides a more comprehensive understanding of handpump health through simple and robust engineering metrics. As of May 2019, EverFlow serves close to 15,000 people who have enjoyed an uptime (continuous pump functionality) of 99.4%. This is possible due to rapid emergency response and good customer behaviour - 33% of issues submitted via the hotline were reported before a full breakdown.
Tariffs	Each community is required to pay UGX 90,000 (roughly 25 USD) per month for EverFlow's services. This equates to about 0.70 USD per person annually to meet domestic water needs.
Tariff Collection and fund management system	The community water committee is responsible for determining the cost per household and collecting tariffs. These funds are deposited into an EverFlow bank account. Once the funds are secured by EverFlow, they are allocated toward various present and future costs, including the payment of local mechanics and caretakers, commonly worn parts, future high-cost repairs, and regular business operations. The system includes a provision for water service disconnection in the event of payment delinquency, as the revenue stream of monthly subscriptions is the foundation of a financially sustainable enterprise.
Social inclusion policies	The responsibility of determining who is able or willing to pay the tariff is delegated to the community water committee.
Name(s) of funding/backing organisations (if applicable)	International Lifeline Fund Thrive Networks George Wolf Memorial Trust Generosity.org
Further Information / References	http://lifelinefund.org/work/uganda/clean-water/ www.everflowafrica.com

[9] https://washdata.org/ (accessed 01.08.19)
[10] https://washdata.org/ (accessed 01.08.19)

EverFlow Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExpIDS
Not responsible	Responsible and covered	Responsible and covered	No information	Responsible and partially covered	Not responsible

Life Cycle Costs	EverFlow service fees are used to cover primarily OpEx and CapManEx costs. In its current form, the enterprise does not take responsibility for initial construction or other support costs. At present, the 300 USD annual fee is divided as follows: 9% mechanic payment 11% caretaker payment 13% business operations 17% routine wear parts 50% reserve fund for high-cost spare parts
Capital expenditure – hardware and software (CapEx)	Any construction costs are delegated to external funders, which can be coordinated by the International Lifeline Fund. Communities are incentivized to be loyal customers, as this can encourage access to these external funds for upgrades.
Operating and minor maintenance expenditure (OpEx)	Half of the required tariff is used for operational expenses and minor repairs. This translates to 150 USD per year per community.
Capital maintenance expenditure (CapManEx)	Half of the required tariff is set aside for major repairs or replacements in the future. This translates to 150 USD per year per community.
Cost of capital (CoC)	-
Expenditure on direct support (ExpDS)	Only direct support expenses, such as the help desk hotline, are covered. Other direct business expenses, such as marketing, monitoring, and program support beyond that of the technicians, are currently externally funded. As EverFlow graduates to a scale of 1,000 communities (or 500,000 people), it is expected that these can be covered using subscription fees.
Expenditure on indirect support (ExpIDS)	Development costs and the overhead required to create the enterprise are externally funded.
Total Expenditure (TotEx)	Included: OpEx, CapManEx, some ExpDS 0.75 USD/person/year
	Data year: 2018

Fisherman's Rest – Madzi Alipo

Country/Countries of operation	Malawi (Blantyre District & country-wide)
Context Description	Fisherman's Rest – Madzi Alipo is currently supporting about 457,500 people and 1,450 communities through 2,150 water sources. An additional 9,369 water sources are supported through the Madzi Alipo online platform in Malawi across the country as well. Malawi generally has a tropical climate and an annual rainfall of 1122 mm/year. In 2017, about 69% of people had access to Basic water services.
Water System Description	Fisherman's Rest utilizes the Madzi Alipo online platform to provide borehole maintenance and repair to community water points within the district. While initial responsibility and ownership of a borehole still falls to community management, borehole functionality is tracked and updated on the Madzi Alipo platform to ensure consistent support. All data is publicly accessible. In the event of a breakdown, communities have the option of fixing the pump themselves, hiring a local mechanic, or reaching out to Fisherman's Rest through the online platform to provide assistance. If the functionality of a water point is not updated on the online platform within at least 3 months, then Fisherman's Rest follows up to ensure functionality through phone calls or personal visits. Other services such as water quality testing, pumping tests, and household treatment are also provided by Fisherman's Rest. Innovative technology such as Afridev remote sensors (ADF-2 provided by charity: water) and In-line handpump chlorinators are being developed to improve water services.
Tariffs	Water is priced at 40 MWK per month per person, or about 0.052 USD, with a 25-40% collection rate.
Tariff Collection and fund management system	The initial tariffs and repair costs are collected by community managers. Borehole committees then pay Fisherman's Rest using mobile credit after repairing a water point in 12-month instalments. Some of these committees may also purchase parts and supplies from field offices. These funds are then used to support operations.
Social inclusion policies	All communities are provided and trained to use this model without discrimination.
Name(s) of funding/backing organisations (if applicable)	The One Foundation, charity: water, University of Dundee, FROM Wales, WSBBA Family Settlement Trust
Further Information / References	www.madzialipoapp.org https://doi.org/10.3390/ijgi7120456

Fisherman's Rest – Madzi Alipo

Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExpIDS
Not responsible	Not responsible	Not responsible	Not responsible	Not responsible	Not responsible

Life Cycle Costs	Fisherman's Rest Community Project and the Madzi Alipo platform are primarily supported by donors. Details were provided for the costs associated with running a business with this structure and focus on remote sensing in handpump maintenance and repair. Overall, it would take about 141,000 USD to maintain this operation per year.
Capital expenditure – hardware and software (CapEx)	Surveys and Mapping: 23,852 USD Salaries and Wages: 13,352 USD Initial construction and sensor costs are not included.
Operating and minor maintenance expenditure (OpEx)	Technical Staff Pay: 50,300 USD Minor Repairs: 2,798 USD Fuel and transportation: 13,978 USD Office Consumables: 5,640 USD
Capital maintenance expenditure (CapManEx)	Borehole parts: 16,039 USD Vehicle Repairs: 18,569 USD Equipment Depreciation: 7,955 USD
Cost of capital (CoC)	-
Expenditure on direct support (ExpDS)	Technical Staff Costs: 13,117 USD Capacity Building: 5,287 USD Administrative: 7,514
Expenditure on indirect support (ExpIDS)	-
Total Expenditure (TotEx)	Recurring Costs: 0.31-0.44 USD/person/year Included: OpEx, CapManEx, ExpDS
	Data year: 2020

Fix that Pump

CBM-2 PV-2

Country/ Countries of operation	Tamale, Ghana
Context Description	Fix that Pump is currently serving about 65 handpumps in 23 communities in the Tamale area. The district is within a tropical savannah climate, with about 1100 mm of rainfall per year. Tamale is the 3rd largest city in Ghana and falls within the Northern Region.
Water System Description	Fix that Pump Enterprise provides maintenance for handpumps in rural communities near Tamale, Ghana. The company builds capacity of local mechanics, promotes a fee-paying service, and employs smart devices (IoT) to track faulty handpumps. Within these communities, riders of tricycles fetch water from the handpumps with jerricans for sale to other communities that lack water.
Tariffs	Water is priced at 0.20 GHS per 20 litres, or about 1.72 USD/m^3.
Tariff Collection and fund management system	Collection of fees will be taken from households who use the handpumps. Fix that Pump has a 90% collection rate. Fees collected from households in each community are saved in the Fix That Pump bank account and utilized only when required. The accumulated monies in the bank will be used to pay the salaries of community mechanics and buy spare parts for the continuous repair and maintenance of handpumps.
Social inclusion policies	A deliberate attempt is made to include and train female mechanics to maintain and repair hand pumps.
Name(s) of funding/backing organisations (if applicable)	Hand in Hand Fund; Rapunsel & Deutsche Umwelthilfe
2020 Updates	-
Further Information / References	www.fixthatpump.com

Fix that Pump Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Not Responsible	Responsible and covered	Responsible and covered	Not Responsible	Responsible and covered	Not Responsible

Life Cycle Costs	Fix that Pump focuses on collecting sufficient tariff payments to cover the recurring costs of pump maintenance and repair. This company represents how a local start-up for pump maintenance and repair would operate.
Capital expenditure – hardware and software (CapEx)	CapEx costs, including equipment and tools, are covered by donors.
Operating and minor maintenance expenditure (OpEx)	The total annual cost for operating expenses were about 5,491 USD. This included salaries, transportation, storage space, rent, and utilities.
Capital maintenance expenditure (CapManEx)	The total costs for CapManEx (handpump repairs, parts, and tools) were about 1,053 USD.
Cost of capital (CoC)	-
Expenditure on direct support (ExpDS)	ExpDS costs were estimated at 702 USD for the year and included costs for training and external consultant support.
Expenditure on indirect support (ExpIDS)	-
Total Expenditure (TotEx)	Recurring Costs: 7,246 USD/year Included: OpEx, CapManEx, ExpDS
	Year: 2020

Fundifix

PV-1 CBM-2 PPP

Country/Countries of operation	Kenya (Kwale County, Kitui County)
Context Description	Overall, in 2015, in rural Kenya, 50% of people had access to a "Basic Water service. Within that, there is disparity between rich and poor, with 70% of the richest quintile having access to a "Basic" water service but only 28% of the poorest quintile having similar access. Kitui County falls in the Arid and Semi-Arid (ASAL) belt of Kenya, and its poverty level was estimated at 47.5 percent, compared to the national average of 36.1 percent in 2016. Kwale County is a semi-arid coastal area and in 2016, 70 percent of the population was living below the poverty line.
Water System Description	FundiFix is a non-profit social enterprise established in 2014 that operates county-based franchises. Each franchise offers preventive maintenance and repair services for existing rural water infrastructure in communities, schools, and health facilities. The FundiFix model is based on the insurance logic of 'scale reduces risk', which is applied to rural water services to reduce the cost of maintenance and improve service delivery. Maintenance contracts with Water Management Committees (WMCs) are based on the performance of FundiFix. The company must provide repairs within three days for handpumps and five days for a piped scheme, or service is free for the month. Sensors fitted on handpump handles are used to remotely monitor handpump usage and functionality.
Tariffs	Payments for the repair and maintenance service are collected monthly from WMCs based on a flat fee for handpumps and volume usage for piped schemes. On average, handpumps pay 10 USD/month. Low-use handpumps, schools, and poor communities pay a subsidised fee - 5 USD/month or 1 USD /month - based on FundiFix's assessment of ability to pay. Tariffs charged to piped schemes are based on volume of water produced and size/complexity of the supply network. Payments to FundiFix range from 30-40 percent of the monthly billing of a piped scheme.
Tariff Collection and fund management system	WMCs pre-pay for repair and maintenance service to FundiFix monthly through M-PESA, a mobile money service in Kenya. Select WMC members are sent notifications and reminders via text messages. WMCs then bill and collect payments from households. Water is supplied through a network of water kiosks, standpipes, or yard connections, with the pay-as-you-fetch system of tariff payment widely adopted. The Maintenance Trust Funds pool financial resources from taxes, transfers, and investors to cover the full cost of the maintenance program.
Social inclusion policies	Observed handpump usage data allow variable tariffs to be designed with provision for regular, low, or special cases. Most communities fall in the former; low users are monitored with a reduced tariff; and 'special' cases,

	including schools, clinics, or other facilities with handpumps benefit from a reduced rate. The latter provides a basis for government support.
Name(s) of funding/backing organisations (if applicable)	Oxford University, UK FCDO, UK Science Councils (UPGro programme / REACH programme), USAID Sustainable WASH Systems programme
Further Information / References	http://fundifix.co.ke/ http://www.oxwater.uk/research.html https://www.smithschool.ox.ac.uk/research/water/report-performance-based-funding.html https://rwsnforum7.files.wordpress.com/2016/11/full_paper_0224_submitter_0276_goodall_susanna1.pdf

FundiFix Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExpIDS
Not responsible	Responsible and partially covered	Shared responsibility	Not responsible	Responsible and partially covered	Responsible and partially covered

Life Cycle Costs	FundiFix focuses on the recurring cost components of OpEx, ExpDS, and ExpIDS. None of these costs are completely covered through WMC payments alone, but County-based Maintenance Trust Funds allow for taxes, transfers, and investors to provide external performance-based financing. User/WMC payments cover 15-20% of FundiFix operating costs. The deficit is financed by the County Maintenance Trust Funds in exchange for social impact, measured through agreed KPIs and targets to be achieved by FundiFix.
Capital expenditure – hardware and software (CapEx)	County Governments in Kenya are legally mandated to provide clean and safe in adequate quantities for all. Therefore, responsibility for CapEx primarily falls under county governments. Other actors involved in financing CapEx include non-governmental organisations, bilateral donors, and national government agencies. Software costs are built-in during the design of new projects.
Operating and minor maintenance expenditure (OpEx)	Operation and maintenance costs for the water infrastructure are covered from tariff payments, usually collected by WMCs. The WMCs pay for operation costs, including the monthly repair and maintenance fee charged by FundiFix, staff wages, fuel, electricity, and other admin costs.
Capital maintenance expenditure (CapManEx)	FundiFix's service provision is governed by a tripartite contract with WMCs and the respective county government. In the contract, the county government is responsible for rehabilitation of broken water infrastructure before signing a contract with FundiFix, providing oversight/governance, and ensuring asset replacement where infrastructure failure is beyond repair.
Cost of capital (CoC)	County/National Governments bear the cost of capital, where rural water infrastructure development is financed through loans.
Expenditure on direct support (ExpDS) and Expenditure on indirect support (ExpIDS)	Costs of performance monitoring, supervision of elections, oversight of operations, technical advice/supervision of capital maintenance/replacement etc. are paid by county governments. It is unlikely that tariffs will fully cover ExpDS and ExpIDS in the medium-term. For signed up WMCs, FundiFix provides training to WMCs and scheme operators for improved data collection/monitoring, management, and to mitigate breakdowns. Within FundiFix, the ExpDS and ExpIDS of providing repair and maintenance services are currently subsidised by the County-based Maintenance Trust Funds.
Total Expenditure (TotEx)	1.5 – 2.0 USD / person / year. Included: FundiFix's OpEx, ExpDS, and ExpIDS.
	Data year: 2018

Inter Aide

CBM-3 LG-2 LG-3 NGO-1 NGO-2 PPP

Country/ Countries of operation	Malawi (15/28 Districts), Ethiopia (SNPPR Region), Madagascar (Vavatenina, Analamanga, Farafangana), Mozambique, Sierra Leone (Bombali, Karene, Tonkolili, Port Loko), Haïti
Context Description	Inter Aide developed and supports private maintenance services that benefit about 35,000 handpumps in Malawi, 3000 in Sierra Leone, and 2000 in Mozambique. Inter Aide is also empowering local actors to conduct biannaul diagnoses and water committee audits for 800 gravity-fed systems in Ethiopia and 600 in Madagascar. In total, these systems aim to be serving a potential 9.45 million people in rural contexts.
Water System Description	Starting in 2002, Inter Aide extended its activities of well and borehole construction in Malawi to include maintenance services. Private area mechanics are trained and organized to serve roughly 50 handpumps each, while a firm supply chain of handpump parts are established in grocery stores throughout the targeted districts. These mechanics proposed contracts to water committees for regular service or repairs. Presently, this system has extended to 15 of 28 districts in Malawi and grown into 175 shops and 430 mechanics servicing an estimated 35,000 handpumps. Former staff of Inter Aide have since created their own entity, BASEDA, which trains and monitors technicians in 7 of the 15 districts. In Mozambique and Sierra Leone, similar private handpump technician arrangements have been established since 2011, with adjustments appropriate to each context. In Sierra Leone, 40 technicians and 11 shops provide for 4 districts. In Mozambique, 30 technicians and 8 shops also provide for 4 districts. Inter Aide is now empowering local institutions (Water Departments or Water Directorate) for a progressive handover of the supervision of the maintenance services (renewal of mechanics' certifications) and the evaluation of handpump functionality. Solutions are also developed for the management of gravity-fed water systems in Madagascar and Ethiopia. Local technicians are trained to visit every system within a territory, diagnose any issues, and work with water committees to prevent breakdowns. In Ethiopia, water associations are supervised by federations, who hire technicians to complete repairs. Users pay a tax to the federations for this service. In Madagascar, public municipalities take on a similar role, but may delegate monitoring to a local NGO, Soakoja, which is supported by Inter Aide.
Tariffs	For handpumps, service contracts can be established for a year at a time. These contracts allow for periodic inspection visits and preventative maintenance on seals or wearing parts. If a repair is required, the area mechanic will inform the water committee of the price for replacement parts and the service fee. For the gravity systems, an annual tax is collected from all users in a territory during the biannual visit of the agent. Service Contract Tariffs (per month per person): Sierra Leone: 50 SLL / Malawi: 3.33 Kw / Madagascar: 83.33 Ar / Ethiopia: 0.05 Birr
Tariff Collection and fund management system	Local water committees collect the funds required to pay for either the service contracts and/or repair costs. Ideally, there are funds saved over time by the committee, but often they are paid only when required. Funds are stored in cash boxes or microfinance accounts. This process is not carried out by Inter Aide mechanics or suppliers.
Social inclusion policies	Periodic inspection visits for service contracts are aimed at harvest periods in the year to allow for seasonal incomes. Local water committees decide who has to contribute to the cost of repairs and maintenance based on their ability.
Name(s) of funding/backing organisations	Agence Française de Développement (AFD), Vitol, Waterloo Foundation, Agences de l'Eau (Seine Normandie, Artois Picardie, Rhône Méditerranée Corse) in partnership with french municipalities*, Ville de Paris, Lyon métropole, Aix-Marseille, Ville de St Omer, Syndicat des Eaux d'Ile-de-France, Fonds Suez Environnement, Charity: water, Stone Foundation, Service de Développement du Liechtenstein, Medicor.
Further Information / References	www.interaide.org www.interaide.org/pratiques

Inter Aide Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Not responsible	Responsible and covered	Responsible and partially covered	Not responsible	Not responsible	No information

Life Cycle Costs	Total reported life cycle costs are estimated to be between 440 – 880 USD per pump per year, when accounting for CapEx, OpEx, CapManEx, and ExpDS. This value is based on the cost of service contracts and repairs for all community handpumps under an area mechanic over ten years.
Capital expenditure – hardware and software (CapEx)	Borehole – 13,000 USD Hand dug well – 8,000 USD Gravity-fed System – 5,000 USD
Operating and minor maintenance expenditure (OpEx)	OpEx for a handpump is estimated at only 15-20 USD per year for a water point, including spare parts, labour, minor committee meeting expenses, cleaning, and slab maintenance. Gravity-fed systems drop to about 12 USD per year.
Capital maintenance expenditure (CapManEx)	Handpump replacement costs have been adjusted to about 30 USD per year, and about 20 USD per year for the gravity-fed system.
Cost of capital (CoC)	-
Expenditure on direct support (ExpDS)	Training and M&E costs are estimated to be about 10 USD per pump per year (2018).
Expenditure on indirect support (ExpIDS)	-
Total Expenditure (TotEx)	Included: CapEx 7 to 52 USD/person Included: OpEx, CapManEx, and ExpDS 42 – 60 USD / year for a given water source
	Year: 2020

Maji Milele Ltd.

CBM-3 LG-3 PV-2 PPP

Country/ Countries of operation	Siaya County, Kenya (Direct); 30 counties in Kenya and Uganda (Indirect)
Context Description	Maji Milele is currently serving about 50,000 people directly through 2 large piped schemes, 69 communal water sources, and 914 household connections in Siaya county. The county is within a tropical monsoon climate, with about 1572 mm of rainfall per year.
Water System Description	Maji Milele Ltd. is a for-profit social enterprise under the umbrella of Water Forever. The company started in 2013. Maji Milele distributes a wide variety of prepaid meters, including communal, household, and ATM configurations, providing indirect service through private products. Clients can use online dashboards to monitor their volumes and payment. Maji Milele also offers direct private management of publicly owned water sources, such as in Siaya county. Professional technicians maintain the piped water supply and kiosks both in rural and urban environments.
Tariffs	Water is priced at 175 KES/m^3 or 1.61 USD/m^3.
Tariff Collection and fund management system	Tariffs are collected both manually through billing and through pe-paid meter connections. Collection rates are estimated at about 82%. Collected funds are used to cover costs associated with the piped scheme, which include production, maintenance, chemicals, repairs, and major replacements.
Social inclusion policies	The scheme hires from the local community a committee board comprises of locals. Maji Milele also give social points to water consumers which can be redeemed for sanitation supplies.
Name(s) of funding/backing organisations (if applicable)	Aqua for All
2020 Updates	Since the outbreak of the pandemic, Maji Milele faces both reduced product sales and water sales in Siaya. Furthermore, performing water services was disrupted by the curfew time set out by the government, making installation works more difficult and expensive.
Further Information / References	https://www.water-forever.com

Maji Milele Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
No Information	No Information	No Information	No Information	No Information	No Information

Life Cycle Costs	No information related to life cycle costs were provided by Maji Milele.

Year: 2020

RWSSP

CBM-2 LG-1

Country/Countries of operation	Tajikistan, Uzbekistan
Context Description	It is estimated that 25% of the rural population in these two countries have access to safe drinking water. The Ferghana valley is one of the most populated areas of this part of the world with population density as high as 500 inhabitants per square km. The needs are therefore very high in terms of access to safe drinking water.
Water System Description	Water is pumped from underground aquifers to a reservoir and then distributed by gravity through piped networks. Consistent electricity for the pump is often a problem. Underground water is of good quality and needs only light chlorination to avoid further contamination. Sanitation is often of very poor quality in public places and is part of the improvement works of the project: installation of eco-san toilets, various systems of water treatment etc.
Tariffs	A tariff covering all costs, including the amortisation of the investment, is charged by a Drinking Water Organisation, or DWO, (non-commercial, non-governmental organisation) managing the system. The standard tariff is around 0.35 USD per cubic meter. Each household connection is metered.
Tariff Collection and fund management system	The DWO is in charge of the management of the water system, the tariff rates, the allocation of subsidies, and of the management of the funds. This DWO may pay an appointed executive committee to perform these tasks in addition to minor maintenance.
Social inclusion policies	The Drinking Water Organisation may subsidize tariff costs to the elderly, widows, or households unable to pay.
Name(s) of funding/backing organisations (if applicable)	International Secretariat for Water, Swiss Agency for Development & Cooperation (SDC)
Further Information	https://www.newsd.admin.ch/newsd/NSBExterneStudien/882/attachment/en/3733.pdf

RWSSP Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExpIDS
Not responsible	Responsible and covered	Responsible and covered	Responsible and covered	Responsible and covered	Responsible and covered

Life Cycle Costs	The life-cycle costs of the RWSSP system is reflective of many community-managed piped schemes. There is a high initial cost to construct the system, with operating expenses focused on the continued supply of piped water through chemical and electrical costs.
Capital expenditure – hardware and software (CapEx)	With a cost far under 100 USD per capita, an average system with private connections would range around 300,000 USD for a village of 5,000 people.
Operating and minor maintenance expenditure (OpEx)	Operational costs are dominated by labour costs, taxes and royalties, but small costs also go toward chemicals and minor repairs. They are estimated at 2,000 to 3,000 USD per month to operate the water system.
Capital maintenance expenditure (CapManEx)	Capital maintenance is part of the tariff and represents 30% to 45% of the costs. Amortisation is calculated over a period of 30 years.
Cost of capital (CoC)	CoC is not considered because CapEx has been financed primarily through donors, NGOs, and governments.
Expenditure on direct support (ExpDS)	Direct support costs are part of the tariff.
Expenditure on indirect support (ExpIDS)	Water quality measurements are made by services of the Ministry of Health and their cost is included in the tariff.
Total Expenditure (TotEx)	Includes: CapEx Piped System: 60 USD/person Includes: OpEx, CapManEx Operations: 4 USD/person/year
	Data year: 2018

Safe Water Network

LG-3 NGO-1 NGO-2

Country/ Countries of operation	**India** – Maharashtra, Telangana, & Uttar Pradesh **Ghana** – Ahafo, Ashanti, Lower Lake Volta, Western, and Greater Accra Regions
Context Description	Safe Water Network (SWN) serves several different contexts and climates. In India, about 329 iJal Safe Water Stations serve up to 1.22 million people in urban and rural towns. In Ghana, about 96 H20ME! Stations, 43 substations, and 1300 household connections serve about 435,000 people in peri-urban and rural communities.
Water System Description	**India** - SWN's social entrepreneur/Self-Help Group/Community driven SWE model is anchored by the iJal Station, a locally-owned and operated treatment plant that sells treated water at prices affordable to the base-of-the-pyramid consumer. The iJal Station uses state of art water treatment technology, equipped with remote monitoring system for parametric monitoring through cloud technology, and dispenses 24x7 water through automatic water ATMs using coin or RFID pre-paid cards. **Ghana** – SWN provides water service to a geographic cluster of H2OME! Water Stations. A cost-effective supply chain of qualified technicians provide 24/7 support and ongoing maintenance to its customers. The H2OME! Water Station is a branded, locally-operated, community-level water treatment facility that produces high-quality water sold at affordable rates. The H2OME! can use three water treatment technologies - Modular Slow Sand Filtration (MSSF), Limited Mechanized Systems (LMS), and Ultraviolet (UV). Our Stations include technology to increase efficiencies and strengthen their financial viability (solar energy-powered pumps, household connections with pre-paid smart meters, water "anytime machines" (ATMs) at standpipes, mobile money payments, mobile monitoring of Station performance, and electronic payment transfers).
Tariffs	**India** - INR 5 per 20 L (3.42 USD/m^3) **Ghana** – GHS 0.12 per 20L (1.03 USD/m^3)
Tariff Collection and fund management system	**India** - Tariff collection is collected through cash (for limited coin dispensers) or RFID cards at Water ATMs. Collection rate: 100% **Ghana** - Tariff collection is either collected through prepaid meters at households or Water ATMs, for which the collection rate is 95% (the 5% is for promotions). At other standpipe stations, the vendors collect tariffs, and the average collection rate is about 75-80%.
Social inclusion policies	Water prices are set at a rate accessible to the poorest customers, while education programs aim to increase penetration by emphasizing the importance of water quality.
Name(s) of funding/backing organisations (if applicable)	3M, Aqua for All, Engineers Without Borders USA, GSMA, Conrad N. Hilton Foundation, Newman's Own Foundation, Osprey Foundation, Oracle, Pentair Foundation, PepsiCo Foundation, Stone Family Foundation, USAID, Vitol Foundation, Watering Minds, Waterloo Foundation, Xylem Watermark
2020 Updates	Since the outbreak of the pandemic, Maji Milele faces both reduced product sales and water sales in Siaya. Furthermore, performing water services was disrupted by the curfew time set out by the government, making installation works more difficult and expensive.
Further Information / References	https://www.water-forever.com

Safe Water Network

Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Not Responsible	Resonsible and covered	Responsible and partially covered	Responsible and covered	Responsible and partially covered	Not Responsible

Life Cycle Costs	Safe Water Network believes that quantifying and planning for life cycle costs is a key activity for sustainability of water systems. For the more than 400 stations operating in Ghana and India, revenues can cover OpEx and contribute toward CapManEx and ExpDS.
Capital expenditure – hardware and software (CapEx)	The typical costs associated with the design and build of treatment technology and water station structure is approximately $100,000 USD in Ghana and $40,000 USD in India. We do not expect stations or the portfolio to cover these costs.
Operating and minor maintenance expenditure (OpEx)	Stations are expected to cover the day-to-day expenses and minor maintenance, and over 95% of SWN stations can do this within the first year.
Capital maintenance expenditure (CapManEx)	In Ghana, stations pay a portion of their water sales into a Maintenance Reserve Fund and Capital Recovery Fund, both of which have successfully been able to cover large repairs (>3,000 GHS), capital replacements, and new capital investments. In India, stations contribute to a Sustainability Fund with a similar function.
Cost of capital (CoC)	SWN has minor experimentation with loans for capital investments, in which case the company has taken responsibility for the cost of capital.
Expenditure on direct support (ExpDS)	Both Ghana and India stations utilize centralized field service teams for community and stakeholder engagement, water quality training and monitoring, and technical support. These fees are only partially covered by revenue.
Expenditure on indirect support (ExpIDS)	Each country office has staff that partake in advocacy, planning, and innovation strategy. These activities indirectly support our station operations, but revenue does not cover these costs.
Total Expenditure (TotEx)	-
	Year: 2020

SISAR

CBM-4

Country/ Countries of operation	Brazil (Cearà)
Context Description	As of 2015, about 86% of rural Brazilians have access to at least "Basic" water service. Urban communities claim that over 97% of people have access to "Safely Managed" services.
Water System Description	The SISAR system is a tiered water management system in the Brazilian state of Cearà. The regional SISAR oversees 8 basin-level SISARs. These SISARs focus on water provision, corrective maintenance, major repairs, training, quality control, and business management based on a cross subsidies approach among member Community Water Supply Organisations (CWSOs). Both levels oversee the water treatment systems of CWSOs, who pay a service fee for their metered consumption. These CWSOs are responsible for piped water system operation, administration, and minor repairs. The CWSO operator is trained and supported by SISAR.
Tariffs	SISAR guides a block tariff structure that each CWSO implements at the local level. Any changes are voted on by the SISAR General Assembly before implementation. The tariffs are composed of a water fee, energy costs, a CWSO fee, and a sanitation fee.
Tariff Collection and fund management system	The revenue is collected at pharmacies, local banks, or through mobile billing and managed by SISAR, which acts as a bank for the regional payments. This method is a relatively recent development to the old practice of CWSO manual collection. CWSOs are then reimbursed with the costs for energy, CWSOs fees, and local support costs. SISAR manages the water fees collected from all member CWSOs.
Social inclusion policies	There is a block tariff structure so that the first 10 cubic meters of water is cheaper. After 10 cubic meters, prices increase per volume. Cross subsidies allow for larger communities to support smaller ones.
Name(s) of funding/backing organisations (if applicable)	Companhia de Àgua e Esgoto do Ceara (CAGECE), State of Cearà, German Bank Kreditanstalt für Wiederaufbau (KfW)
Further Information / References	http://documents.worldbank.org/curated/en/664321506030643918/pdf/119890-WP-PUBLIC-6p-P159188-21-9-2017-10-39-35-W.pdf http://sabersocial.virtual.avina.net/Conocimiento.aspx?documentId=199

SISAR Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Not responsible	Responsible and covered	Responsible and covered	Responsible and covered	Responsible and covered	Responsible and covered

Life Cycle Costs	It took about 15 years for SISAR to cover annual operating costs and work at a surplus. Operational subsidies from both CAGECE (11.5 million USD) and KfW (14.5 million USD) were used for a period to help cover staffing and vehicles, but were phased out over time. Accounting data from eight basin-level SISARs show positive financial records for 2018. On average, they each spent 63,000 USD per month to operate and maintain their piped water systems, while billing 82,000 USD per month in revenue. Service populations range from 39,796 to 127,968 people. Detailed records from two SISARs describe the distribution of these recurring costs below.
Capital expenditure – hardware and software (CapEx)	Capital expenditures are funded either by the State of Ceará or through international development organizations, with the most prominent being KfW. Stipulations for funding include micro- and macro-meters, water treatment, sufficient flow, and a connection for each household in the community.
Operating and minor maintenance expenditure (OpEx)	All recurring costs in SISAR records are considered "Operational Expenditures". However, accounting categories involving minor repairs, personnel expenses, treatment chemicals, administrative costs, and general maintenance amount to 6.24 USD per person per year.
Capital maintenance expenditure (CapManEx)	Accounting categories related to major repairs, system recoveries, and the replacement of equipment and materials were estimated at 3.96 USD per person per year. The level of detail in financial records allows for some trade-off between OpEx and CapManEx costs.
Cost of capital (CoC)	CoC expenses were largely attributed to financial expenses, loan repayments, and banking fees. They were estimated at about 0.85 USD per person per year. This does not account for large loan repayments attributed to the initial CapEx costs and construction, as SISAR is not responsible for these costs.
Expenditure on direct support (ExpDS)	Only one SISAR had a cost that could be directly attributed to monitoring, specifically the cost of water analysis. This cost about 0.12 USD per person per year. Many other direct support costs are likely included in other personnel and travel cost categories.
Expenditure on indirect support (ExpIDS)	Tax expenses and state fees were attributed to the indirect support costs, and were estimated at about 0.13 USD per person per year. As with ExpDS, other costs such as personnel would be difficult to segregate.
Total Expenditure (TotEx)	Included: OpEx, CapManEx, CoC, ExpDS, ExpIDS Recurring Costs: 11.22 USD/person/year Revenue: 12.72 USD/person/year
	Data year: 2018

SMART Centres

CBM-3 NGO-1

Country/ Countries of operation	Established: Tanzania (Njombe), Malawi, Mozambique, Zambia, South Sudan, Niger, Nicaragua Early Stages: Ethiopia, Kenya, Ghana
Context Description	SMART Centres has allowed for over 10,500 hand drilled wells and 20,000 rope pumps to be constructed, among many other SMARTechs. SMART Centres focus on serving extremely rural environments to meet the needs of the 10-20% of people not easily reached by community water supply.
Water System Description	SMART Centres train the local private sector in Simple, Market-based, Affordable, Repairable Technologies for water and sanitation. The centres promote cost-effective products and services that allow for incremental improvement of water supply. Technologies include the SHIPO and Mzuzu drills, Rope pumps, EMAS pumps, manually drilled wells, rainwater harvesting tanks, low pressure drip irrigation systems, Corbelled and SaToPan latrines, and water filters. The institution fosters growth of entrepreneurs and technicians to service and sell these products. With this business, SMART Centres can promote self-supply alternatives to the rural population.
Tariffs	SMART Centres collect revenue from two sources: selling training and contracting. Training is largely subsidized by NGO's looking to grow self-supply. However, entrepreneurs trained by the SMART Centre can then be contracted for welding, repairs, or drilling services to those using the technologies promoted.
Tariff Collection and fund management system	It is common for 15 to 20 people to pool funding for the technology and installation costs. This revenue may go to the local entrepreneurs that were trained by a SMART Centre, rather than the company itself. In this way, a SMART Centre acts as a promotional and supporting entity.
Social inclusion policies	The entire concept of the SMART Centre is to focus on inclusion of households in need of alternative, cheaper water supply solutions.
Name(s) of funding/backing organisations (if applicable)	MetaMeta, Aqua for All, Skat Foundation
Further Information / References	http://smartcentregroup.com/ http://smartcentregroup.com/wp-content/uploads/2017/06/RWSN-SMART-Centre-app.-M-v-D.-Paper.pdf

SMART Centres Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Responsible and covered	Not responsible	Not responsible	No information	Responsible and covered	No information

Life Cycle Costs	A SMART Centre is likely to be subsidized and supported largely through NGO's or the government as a capacity building and support entity. The operational costs of running the SMART Centre in Tanzania are about 45,000 USD per year, on average. This includes the training of 20 to 40 people, quality control and follow-up, and the installation of 50 to 150 wells. The greatest financial benefit is provided through the trained entrepreneurs, businesses, and decreased cost of improved water supply through self-investment. Supported self-supply is estimated to cost 10 USD/capita rather than 40 USD/capita for community water supply.
Capital expenditure – hardware and software (CapEx)	Examples of costs paid by customers: Rope Pump: 100 – 130 USD Drip Irrigation: 15 – 25 USD / 100 sq. m Water Filters: 18 – 100 USD Hand Dug Wells: Up to 500 USD
Operating and minor maintenance expenditure (OpEx)	OpEx costs designated to family units.
Capital maintenance expenditure (CapManEx)	CapManEx costs designated to family units.
Cost of capital (CoC)	-
Expenditure on direct support (ExpDS)	Training for technical crafts (masonry, plumbing), hygiene knowledge, quality control, and the cost of SMARTech products are included in the 45,000 USD/year. Monitoring of installations is not included.
Expenditure on indirect support (ExpIDS)	-
Total Expenditure (TotEx)	Includes: CapEx, ExpDS 45,000 USD/year for institutional support and capital expenditures 10 USD/person/year for improved self-supply
	Year: 2020

Spring Health

PV-2

Country/Countries of operation	India (Orissa)
Context Description	In 2015, 85% of people in rural India had at least "Basic" water service.[11] In 2016, the average income in Orissa was 2.80 USD/day. The climate in Orissa is primarily tropical.
Water System Description	A poly tank is installed near communal wells. The water in the tank is treated by chlorination and microfilters, if necessary. Jerry cans of the treated water are then transported daily by a rickshaw to households paying for Spring Health's service. The volume delivered is usually sufficient to cover drinking water needs.
Tariffs	5 Rupees (0.07 USD) per jerry can (20 L) for home delivery.
Tariff Collection and fund management system	Payment is typically made when water is delivered to the home or upon pick-up. Since the business is run privately, tariff payment translates directly to revenue for the entrepreneur.
Social inclusion policies	Households that do not wish to pay for home delivery can choose to pay just 4 Rupees to pick up their water.
Name(s) of funding/backing organisations (if applicable)	Winrock International, Inc. Antenna Foundation Acumen Fund
Further Information / References	http://www.paulpolak.com/_slide/spring-heath/ https://rwsnforum7.files.wordpress.com/2016/11/full_paper_0175_submitter_0260_heierli_urs-1.pdf

[11] https://washdata.org/ (accessed 01.08.19)

Spring Health Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Responsible and covered	Responsible and covered	Responsible and covered	No information	Responsible and covered	No information

Life Cycle Costs	When accounting for treatment and delivery costs in 2016, it was estimated that a Spring Health entrepreneur would need 85 customers within a village to breakeven on costs. At a rate of 5 R/day, this would equate to about 180 USD per month. This does not include additional marketing and some support costs.
Capital expenditure – hardware and software (CapEx)	Initial capital expenses typically include purchasing and installing the poly tank, plumbing, community engagement, and the initial marketing campaigns conducted by the company. An initial investment is expected to cost around 1,000 USD.
Operating and minor maintenance expenditure (OpEx)	Operating costs typically include entrepreneur commission, overhead costs for executives assigned to four villages, chlorine and filtering costs, and fuel. The majority of the 180 USD is directed towards these costs.
Capital maintenance expenditure (CapManEx)	The only major asset reported for long-term replacement is the poly tank over 20 years. Auto rickshaws are outsourced so Spring Health is not responsible for their maintenance and repairs.
Cost of capital (CoC)	-
Expenditure on direct support (ExpDS)	Direct support costs are typically not separated from the OpEx costs (which include training), but are minimized.
Expenditure on indirect support (ExpIDS)	-
Total Expenditure (TotEx)	Included: CapEx, OpEx, CapManEx, ExpDS 180 – 200 USD/month/installation Home Delivery: 27 USD/person/year
	Data year: 2015

Uduma

PV-1 PPP

Country/Countries of operation	Burkina Faso
Context Description	As of 2015, 67.6% of people in rural Burkina Faso had access to an improved water source (Basic and Limited)[12]. There are 937 piped water schemes in the country, with overall functionality rates not exceeding 84%[13].
Water System Description	Uduma stands for the professionalization of the management of the water supply systems. The private company has been operating piped water schemes in Burkina Faso since 2008 on the basis of contracts with municipalities. In 2018, Uduma managed 27 schemes (partly solar) with 198 tap stands and 281 household connections. The piped systems provide approximately 100,000 people with drinking water services. Half of the schemes are part of a build-operate-transfer model, whereby the operator, Uduma, leads design and construction of the water system. Uduma is then responsible for long-term maintenance of the equipment. All dimensions of the water supply chain are the responsibility of one actor (the operator): construction, maintenance, operations, revenue collection, water quality control, extension works, monitoring. The responsibilities of the operator and the water tariff are set by the contracting authority (the municipality) and recorded in the contract, to which the operator is held liable.
Tariffs	The tariff is established by the local authorities. Users pay 0.85 USD/m^3 at the standpipe and at the household connection.
Tariff Collection and fund management system	For the standpipes and manual pumps, revenues are collected in cash by water point caretakers on a pay-as-you-fetch basis. The household connections are billed post-paid. All collected revenues are centralized by making use of the local banking systems and through mobile money transfers. A cashless electronic payment system is being piloted in 2019.
Social inclusion policies	In the public procurement process for the delegated management of the piped schemes, less profitable systems are grouped with the more profitable systems, to allow for cross-subsidizing and keeping one flat tariff for all users. Communal and national water taxes are paid on all water sales.
Name(s) of funding/backing organisations (if applicable)	Odial Solutions Vergnet-Hydro
Further Information / References	www.uduma.net

[12] https://washdata.org/ (accessed 01.08.19)
[13] Burkina Faso *Programme National d'Approvisionnement en Eau Potable 2016-2030*, available at https://www.pseau.org/outils/ouvrages/mea_PN_AEP_2016_2030.pdf

Uduma Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
No information	Responsible and covered	Responsible and covered	No information	Responsible and covered	Responsible and covered

Life Cycle Costs	Uduma takes responsibility for the OpEx, CapManEx, ExpDS, and ExpIDS costs associated with water treatment and service provision. Their goal is to cover all of these costs solely based on user tariffs, and are not subsidized for operations. Capital expenditures and the associated loans are considered the responsibility of the government. Life-cycle cost calculations were based on 27 piped schemes in Burkina Faso. The total annual expenditure for all systems was estimated to be just over 200,000 USD/year.
Capital expenditure – hardware and software (CapEx)	In case of a build-operate-transfer agreement, Uduma designs and builds the water systems, but the government is responsible for the construction and investment costs. However, Uduma still accounts for other annual capital costs - specifically an average of 414 USD/system/year in 2018 (mainly for software).
Operating and minor maintenance expenditure (OpEx)	OpEx costs include operations, salaries, fuel, revenue collection, water quality testing, and maintenance functions. Operating costs for the piped systems amounted to 5880 USD/system/year in 2018 (includes ExpDS and ExpIDS).
Capital maintenance expenditure (CapManEx)	Major repairs and rehabilitations were calculated to be 1,242 USD/system/year in 2018.
Cost of capital (CoC)	-
Expenditure on direct support (ExpDS)	Grouped under OpEx cost estimates.
Expenditure on indirect support (ExpIDS)	Grouped under OpEx cost estimates.
Total Expenditure (TotEx)	Included: OpEx, CapManEx, ExpDS, ExpIDS, soft CapEx 1.27 USD/person/year
	Data year: 2018

Water Compass

PV-1 NGO-1

Country/Countries of operation	Uganda (Gomba, Sembabule, and Bukomansimbi Districts)
Context Description	Water Compass currently operates 3 solar-powered piped water systems for 7 communities, serving about 2300 users on a consistent basis. The company works within a tropical climate in the Victoria Basin, with a biannual rainy season. When assessing over 1,750 water sources within the target districts from 2017 to 2019, only 52% were functional.
Water System Description	Water Compass builds and operates solar-powered piped water systems in rural communities in Uganda. Water Compass upgrades existing boreholes and replaces handpumps with solar-powered pumping systems which supply public kiosks with multiple taps. A solar-powered digital payment system (Susteq ATM) is used to ensure pre-payment for water by users and all revenue is put towards the operation and maintenance of the water system. Water Compass' aims to operate solar-powered systems at scale within a concentrated area (district clusters) to enable efficient and cost-effective operation and maintenance. A centrally located technician is responsible for preventative and reactive maintenance. A local agent in each community processes users' payments and informs Water Compass of any issue or fault on-site. Water Compass has an MOU with each district, which delineates the responsibilities of each party. The district is responsible for oversight of Water Compass operations and ensuring adherence to government policies, while Water Compass is delegated management authority of the water systems.
Tariffs **Tariff Collection and fund management system**	The price for water is 100 USH per jerry can, or about 1.24 USD/m^3. Customers pre-pay for water using the digital payment system. Credit is purchased from local vendors in each community, after which the vendor loads credits onto each users' token. The physical cash collected by the vendor is then transferred to Water Compass' savings account via mobile money. Funds are only reinvested into the operation and maintenance of the water systems.
Social inclusion policies	-
Name(s) of funding/backing organisations (if applicable)	USAID, Edward H. Butler Foundation, International Foundation, Henry E. Niles Foundation
2020 Updates **Further Information / References**	https://www.watercompass.org/

Water Compass

Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Grants	Responsible and partially covered	Responsible and partially covered	Responsible and covered	Responsible and covered	Not information

Life Cycle Costs	
Capital expenditure – hardware and software (CapEx)	Capital costs for the initial construction of water systems are funded by grants or through Water Compass' individual donor network. The average cost for a solar-powered piped water system is 24,981.72 USD. That equates to 32.58 USD per person. All systems constructed by Water Compass to date have been installed in existing boreholes. Capital costs include pump testing, water quality testing, system construction and payment system installation.
Operating and minor maintenance expenditure (OpEx)	Operating expenses are covered by revenue generated by the water systems. Total OpEx in 2020 was 898.04 USD. That equates to 0.69 USD per person. Costs include local agent commission, payment system online dashboard annual fee, telecom fees, bank fees, and transport costs. Technical staff wages are not currently covered by revenue, but by donor grants.
Capital maintenance expenditure (CapManEx)	CapManEx is covered by revenue generated from the water systems. Total cost in 2020 was 803.76 USD. That equates to 0.62 USD per person. Costs include structural repairs to kiosks, but not depreciation.
Cost of capital (CoC)	Cost of Capital costs are covered by revenue generated by the water systems and effectively included under OpEx. Costs include bank fees and mobile money charges.
Expenditure on direct support (ExpDS)	Performance monitoring through the online dashboard is allocated under OpEx.
Expenditure on indirect support (ExpIDS)	Water Compass maintains strong relationships with ministerial and local government counterparts in an effort to improves rural water supply service provision, but does not calculate the cost towards of this effort.
Total Expenditure (TotEx)	Included: CapEx 32.58 USD/person Included: OpEx, CoC, CapManEx, ExpDS 1.31 USD/person/year
	Year: 2020

Water for Good

CBM-2

Country/Countries of operation	Central African Republic
Context Description	The Central African Republic is ranked 188th – second to last – on the human development index. Only 34% of people have access to at least "Basic" water services[14], with a fairly even distribution across wealth quintiles. A combination of extremely low population density, and few handpump installations creates a challenging environment for service delivery.
Water System Description	Four maintenance teams, each composed of two technicians and one data collector, carry out bi-annual, circuit-rider, preventative maintenance and small repair services across 7 of the 16 prefectures. They service approximately 1,800 hand pumps used by 500,000 to 600,000 people. Two individual technicians are presently servicing hand pumps in Bangui, the capital, and Berberati, the country's second largest city.
Tariffs	Tariff targets are set at 80 USD per well, or about 0.16 USD per person. In 2018, about 500 well committees paid roughly half this amount. Non-payment is primarily attributed to low economic activity and unplanned visits of the maintenance teams, preventing the preparation of funds.
Tariff Collection and fund management system	Until 2019, tariffs were collected by technicians during their bi-annual maintenance visits. When funds were collected, a receipt was issued for the well-committee, and a picture of the receipt was taken, stored, and uploaded to Water for Good's server from the maintenance teams' iPad. Presently, tariffs are collected more systematically, rather than randomly, so communities can more effectively prepare.
Social inclusion policies	Well committees identify households that may require subsidies or exclusion from payment.
Name(s) of funding/backing organisations (if applicable)	charity: water
Further Information / References	https://waterforgood.org/

14 https://washdata.org/ (accessed 01.08.19)

Water for Good Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExpIDS
Not responsible	Responsible and covered	Responsible and partially covered	Not responsible	Not responsible	Not responsible

Life Cycle Costs	Water for Good has deferred their life cycle cost reporting, as they have recognized the present form of their data records would be subjective and conditional. However, assigned responsibilities are shown below.
Capital expenditure – hardware and software (CapEx)	Charity: Water and other donors are typically responsible for capital expenditures and construction costs.
Operating and minor maintenance expenditure (OpEx)	OpEx costs are funded through the tariffs provided by the well committees.
Capital maintenance expenditure (CapManEx)	CapManEx are not yet covered by the tariffs collected, but steps are being made to accomplish this.
Cost of capital (CoC)	Any CoC costs are included within donor funding.
Expenditure on direct support (ExpDS)	ExpDS is provided through Water for Good donor funding.
Expenditure on indirect support (ExpIDS)	ExpIDS is provided through Water for Good donor funding.
Total Expenditure (TotEx)	The service program developed by Water for Good in the Central African Republic is supported by a combination of donor funding and tariff collection.
	Data year: 2018

Water Mission

CBM-2 LG-3 NGO-1 NGO-3

Country/Countries of operation	Haiti, Honduras, Indonesia, Kenya, Malawi, Mexico, Peru, Tanzania, Uganda
Context Description	Water Mission has installed over 2000 central piped schemes in predominantly rural contexts in partnership with local communities and local authorities. Designing and implementing piped systems, Water Mission aims to serve entire communities, including schools, clinics, and other institutions. Water Mission also has experience designing, implementing, and supporting water systems in large refugee camps, and following both man-made and natural disasters.
Water System Description	Water Mission customizes safe water solutions to the unique needs of each community or installation context. Water Mission has the deepest experience with off-grid submersible solar pumping systems for rural communities and growth centres, with population ranges of 500 to 50,000 people. Pumped water is then disinfected as well as filtered to comply with WHO drinking water quality guidelines and national water quality standards. Treated water is then distributed via vehicle delivery systems or piped networks to homes or designated collection points. Water Mission also installs remote monitoring systems to track production and downtime.
Tariffs	Water Mission does not take responsibility for tariff pricing, but rather invests in building the capacity of community-based water committees to set tariffs that are both affordable and sustainable in covering costs. Prices typically fall between 1-2.50 USD/month or 0.02-0.3 USD/20 litres, based on context.
Tariff Collection and fund management system	Tariff collection may occur monthly, seasonally, or by volume, as determined by the community-based water committee. Collected funds are used to pay labour and material operating costs, as well as develop a cash reserve for unexpected repair and replacement costs. On average, Water Mission water systems have 350 USD saved after 1 to 2 years, with 20% of communities having a balance greater than 1,000 USD.
Social inclusion policies	Water committees and other socially-minded entities in the community such as local faith actors identify households that are not able to pay and co-develop customized mechanisms for allotting and tracking reduced price distribution of water to households.
Name(s) of funding/backing organisations (if applicable)	
Further Information / References	https://watermission.org/our-solutions/when-we-work/community-development/ https://watermission.org/our-solutions/when-we-work/disaster-response/

Water Mission Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExpIDS
Grants & Community Contributions	Responsible and covered	Responsible and partially covered	Not responsible	Responsible and partially covered	Grants

Life Cycle Costs	Water Mission primarily utilizes grants to pay for the initial installation of water treatment and distribution equipment. Communities are then responsible for covering the month-to-month operational expenses, and most of the material maintenance costs. Communities may also pay a portion of costs for Water Mission's long-term maintenance program, which ensures functionality and ongoing service for years to come.
Capital expenditure – hardware and software (CapEx)	CapEx costs include engineering design, water source development, yield and quality testing, construction, local committee training, WASH education, and demand generating activities. These are covered by grants and community contributions. (Total estimate: ~50 USD/person).
Operating and minor maintenance expenditure (OpEx)	OpEx Costs include water treatment supplies, water quality monitoring, administration, tariff collection, salaries, and promotion/marketing. These are covered by water tariffs. (~1.50-3.00 USD/person/year).
Capital maintenance expenditure (CapManEx)	CapManEx costs are estimated by considering the useful life and value of the sourcing, treatment, storage, and distribution equipment within a safe water system. These are predominantly covered by water tariffs and sometimes by grants. (~1.00-2.50 USD/person/year).
Cost of capital (CoC)	-
Expenditure on direct support (ExpDS)	ExpDS costs include data collection, monitoring, remote and in-person troubleshooting/support, and preventative maintenance. Communities may contribute up to 400 USD/year for this service with the remainder of costs covered by local governments and/or external donors (~1 USD /pp/year).
Expenditure on indirect support (ExpIDS)	ExpIDS is covered entirely by donor support.
Total Expenditure (TotEx)	Included: CapEx ~50 USD/person Included: OpEx, CapManEx, ExpDS ~4 – 5 USD/person/year
	Year: 2020

Water4

NGO-1 NGO-3 PV-1 PPP

Country/ Countries of operation	Ghana, DRC, Ethiopia, Zambia, Tanzania, Malawi, Sierra Leone, Burkina Faso, Uganda, Kenya, Togo, Peru, Rwanda
Context Description	Water4 and its 19 enterprise partners are currently serving over 360,000 people through about 300 public kiosks, 1,000 household connections, and 575 handpumps under service contracts. Contexts vary widely across the different countries, but most targeted communities are rural or peri-urban environments.
Water System Description	Water4 focuses on rural water supply as a local business. This is done by investing in social enterprises with seed capital and capacity building, while establishing accountability mechanisms and incentives for achieving financial sustainability. Enterprises aim to establish service contracts and public-private partnerships with the local government as water service providers. These enterprises range from wholly-owned subsidiaries to established partnerships. For low density populations, the enterprises enter into pump "iNsurance" contracts to drill boreholes and operate and maintain the handpumps in perpetuity. Small towns and peri-urban communities are served by NUMA piped water supply – solar-powered, water treatment centres with public taps and household connections. Services are directed towards district coverage to establish long-term relationships while attaining economies of scale.
Tariffs	Water tariffs can range from 0.38 - 1.90 USD/m^3. Customers may 'pay-to-fetch' for water from vendors with cash, or pay monthly community tariffs based on the location.
Tariff Collection and fund management system	Water tariffs are managed by the service provider under a contractual arrangement to repair and maintain the water infrastructure. Risk is distributed among district assets, which allows savings and cash flow to be used for operational and capital maintenance expenditures. Enterprises that do not produce sufficient revenue to cover these expenses are subsidized by Water4 until reaching the scale and profitability necessary to be self-sufficient.
Social inclusion policies	Water4 attempts to service appropriate technology according to context. Elevated piped schemes may be affordable for medium-sized towns while handpumps are used for small communities. A portion of net profit is allocated to communities or the district government to target any marginalized community members. Separately, local hiring for kiosk vendor positions and manual labour is encouraged to promote economic growth.
Name(s) of funding/backing organisations (if applicable)	RVO, Vox, Hilton Foundation, Global Communities, Jasco + others
2020 Updates	
Further Information / References	https://water4.org/

Water4 Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Grants & loans	Not Responsible / Declining Subsidy	Not Responsible / Declining Subsidy	Shared Responsibility	Shared Responsibility	Shared Responsibility

Life Cycle Costs	Training in business development, financial stewardship, and sales techniques, guides enterprises towards responsible spending, effective management, and sufficient savings.
Capital expenditure – hardware and software (CapEx)	Water4 and other partnering organizations provide the initial CapEx, either through grants or loans. Piped system costs range between 5,000 – 30,000 USD, depending on context and size, with customization to expand from the central treatment centre. Average cost per person is estimated at 20 - 36 USD per person. This includes drilling, materials and construction overhead. Separately, boreholes can fall below 10 USD per person for manually drilled wells.
Operating and minor maintenance expenditure (OpEx)	Operating expenses are expected to be covered by the revenue produced by the enterprise partner, but it is expected that Water4 will provide seed funding until the enterprise has reached a population of sufficient size.
Capital maintenance expenditure (CapManEx)	CapManEx is expected to be covered by the revenue produced by the enterprise partner, but it is expected that Water4 will provide seed funding until the enterprise has reached a population of sufficient size.
Cost of capital (CoC)	Blended financing is used with enterprise partners to take on loans for equipment, large purchase orders, and capital investment in order to provide assurance to the lender.
Expenditure on direct support (ExpDS)	Funding is allocated to develop leadership and staff, provide accountability through performance monitoring, network across different contexts and promote shared learning, innovate cost-effective technology, and establish a standard template for a successful water service provider. This effort is estimated at about 2.44 USD per person across all enterprises.
Expenditure on indirect support (ExpIDS)	Water4 strongly incentivizes engagement with district and national level actors to establish government contracts. Private water supply faces both support and discouragement in different contexts, so it is critical to influence policy. It is difficult, however, to identify the investment made towards this category.
Total Expenditure (TotEx)	CapEx: 27 USD/person Recurring Costs: 2.44 USD/person/year Included: ExpDS
	Year: 2020

Water4ever

PV-1 PV-2 PPP

Country/ Countries of operation	Western Area Rural District, Sierra Leone
Context Description	Water4ever is currently serving about 122,000 people in 114 communities through 87 public kiosks, 59 household connections, and 175 handpumps under pump insurance. The district is within a tropical climate zone, with at least 3,000 mm of rainfall per year. About 90% of the district is considered urban. Efforts have been concentrated around Waterloo, the district capital.
Water System Description	Water4ever (W4E) is a private service delivery model in the Western Area Rural District of Sierra Leone. Since the company was formed in 2014, W4E has transformed itself from a drilling and manufacturing company into a professional water service company. W4E builds, owns, and operates NUMA piped systems and boreholes in Waterloo, and maintains handpumps throughout the district. The company maintains their systems using circuit rider methods of operation. Area mechanics regularly visit each managed source to provide maintenance, make repairs, and support vendors stationed at each sales point. Water4ever uses modular, solar-powered piped water systems to gradually expand from central kiosks (Nexus or Nano) to additional sales points (Nodes) and institutional or household connections (Nows). Groundwater is treated using microfiltration, UV disinfection, and chlorination. Additional treatment trains, such as iron removal, can be inserted as necessary. Handpumps are also available for communities smaller than 300 people.
Tariffs	Water is priced at 250 SLL per jerry can, or about 1.28 USD/m^3. Customers 'pay-to-fetch' for water from vendors with cash. Cash payments are transferred to W4E either by mobile money or during maintenance visits, minus a commission to the vendor. The vendor submits mobile requests for bulk tank fill-ups using pe-paid metering, allowing for less frequent telecom charges.
Tariff Collection and fund management system	Revenue is managed by W4E. First, a percentage is allocated to the vendors for payment. Then, operating expenses are covered. Remaining funds are reinvested into the business, either as savings for future capital maintenance or expansion efforts.
Social inclusion policies	-
Name(s) of funding/backing organisations (if applicable)	Water4, Willamette International, Stone Family Foundation, Waterloo Foundation
2020 Updates	-
Further Information / References	https://water4.org/

Water4ever Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Not Responsible	Responsible and covered	Responsible and covered	Responsible and covered	Responsible and partially covered	Responsible and covered

Life Cycle Costs	Water4ever has shown to have a clear path towards full life cycle cost coverage. By focusing their operations first in the city of Waterloo, W4E has access to a wealthier demographic and high population density. This allows for cross-subsidization to rural communities outside the urban centres.
Capital expenditure – hardware and software (CapEx)	Water4 and other partnering organizations are currently providing the initial CapEx, through grants. Piped system costs range between 5500 – 26,000 USD, depending on context and size, with customization to expand from the central treatment centre. Average cost per person is estimated at 16 USD per person. This includes drilling, materials and construction overhead.
Operating and minor maintenance expenditure (OpEx)	Operating expenses were estimated at 1.29 USD per person per year for the district, which includes vendor commission, district fees, minor repairs, transportation, marketing, monitoring, and operating salaries.
Capital maintenance expenditure (CapManEx)	CapManEx was estimated at 0.91 USD per person per year in 2020. This is a projected value on depreciation of assets with set lifespans ranging from 1 (valves) to 15 years (foundation). This is subsidized by Water4 until AD reaches the necessary sales penetration and scale to cover it.
Cost of capital (CoC)	W4E has not taken on any loans at present, but is looking into financing alternatives for 2022.
Expenditure on direct support (ExpDS)	The ExpDS is predominantly provided by Water4 through their training and external monitoring programs with each of their enterprise partners. This is estimated at about 0.40 USD per person. Internal development and monitoring functions for AD are included in their operating expenditures.
Expenditure on indirect support (ExpIDS)	The costs for ExpIDS are incorporated into OpEx. Engagement with the Western Area Rural District Council and GUMA Valley Water Company is conducted by W4E staff.
Total Expenditure (TotEx)	CapEx: 16 USD/person Recurring Costs: 2.6 USD/person/year Included: OpEx, CapManEx, CoC, ExpDS, ExpIDS
	Year: 2020

Whave Solutions

Country/Countries of operation	Uganda (Kaabong, Kotido, Karenga, Kumi, Serere, Kamuli, Buyende, Luuka, Nakaseke, Mityana Districts)
Context Description	In 2015, in rural Uganda, 32.5% of people had access to at least a "Basic" water service.[15] This rate is consistent across most quintiles, with the exception of nearly 50% of the richest households having "Basic" water service.[16] All districts are in a tropical climate except Kotido, which has a local steppe climate.
Water System Description	Whave Solutions supports the new installation, rehabilitation, operation and maintenance of both hand-pumps and piped systems by signing a reliability assurance service agreement with each community. These agreements are made under local government regulation. The assurance agreement is like insurance. Communities make regular payments for their sources to be covered for preventive action and immediate repair, when necessary. Whave uses the service fee funds collected to manage and pay technicians. These technicians make routine visits to each water source, carry out preventive maintenance to avoid breakdowns, and conduct immediate repairs. The agreement is called a Preventive Maintenance and Continuous Rehabilitation Agreement (PMCRA) because it covers major and minor part replacements. In this way, the community, and the original CapEx investor of the installation, are assured of indeterminate-life functionality without the prospect of a rehabilitation expense or "end-of-life" expense cropping up in the future.
Tariffs	Whave uses various Hybrid and Pay-as-You-Fetch tariff schemes dependent on the preference of the community. Handpumps and tap-stands have different prices, ranging from 0.005 to 0.014 USD per 20 litres. Similarly, schools and other institutions may have discounts or annual payment plans, while businesses have a higher price for larger consumption. Alternatively, communities can pay annually at a rate of 95 – 162 USD per year, based on the number of collection points. These annual prices are presently discounted, however, to build social consensus while payment normalization is attained.
Tariff Collection and fund management system	Whave collects tariffs in two ways. Primarily, the WSC organizes and collects tariffs. In a secondary trial, the service provider collects through a local representative, with surplus costs taken to the WSC. In both cases, annual community bulk service fee payments are made by the community to the service company, Whave.

[15] https://washdata.org/data#!/dashboard/1445
[16] https://washdata.org/data#!/dashboard/1444

	Preventative maintenance and immediacy of repair are incentivized by imposing deductions on the technician's monthly pay. There are future plans to incorporate ATMs for more efficient payment.
Social inclusion policies	A Water and Sanitation Committee (WSC) represents the institutions, businesses, and households sharing a particular source. This entity collects the bulk user annual service fee and has discretion as to how it charges tariffs – for example, it may charge lifeline rates for basic consumption, tiered tariffs, or institutional rates. Based on welfare circumstances, it exempts or reduces tariffs for some households, so that all members of the community have access to water at all times, and no one is turned away for reason of cash poverty.
Name(s) of funding/backing organisations (if applicable)	Mercy Corps, Siemens Foundation, UNICEF, USAID Sustainable WASH Systems programme, BMZ, Siemens Foundation
2020 Updates	Whave is now servicing 164,327 people over about 510 communities, expanding into new districts in Uganda. COVID-19 brought challenges associated with rate of enrollment and fee collection, with fee exemptions being implemented for essential services in Uganda.
Further Information / References	https://www.whave.org/ Harvey, A. (2020). Rural water service delivery: addressing the hidden development crisis. Waterlines, 39(2), 180-218. https://rwsnforum7.files.wordpress.com/2016/11/full_paper_0194_submitter_0250_goring_emma.pdf

Whave Life Cycle Costs

Capex	Opex	CapManEx	CoC	ExpDS	ExIDS
Not responsible	Responsible and covered	Responsible and covered	Not responsible	Responsible and partially covered	Not responsible

Life Cycle Costs	It is estimated that recovering costs for OpEx, CapManEx, ExpDS, and ExpIDS will require 315 USD annually from communities. As payment is normalized, the price for service will rise to meet this requirement. This payment will not account for new construction or expansion, as this is considered an investment cost for which the government is responsible.
Capital expenditure – hardware and software (CapEx)	Government or foreign development partners are expected to meet initial CapEx costs on the condition that the source is signed into a PMCR Service Agreement, which assures that all future functionality costs are covered. Presently, there is a large push for a gradual transition from handpumps to piped schemes closer to the home. These investment costs will be negotiated between Whave, the community, and CapEx partners as they mature.
Operating and minor maintenance expenditure (OpEx) and Capital maintenance expenditure (CapManEx)	Costs associated with management, administration, salaries, and hardware (both minor and major) are covered by the annual fees or tariffs in each community. These expectations are laid out in the service agreement.
Cost of capital (CoC)	CoC costs are also expected to be covered by government or foreign development partners contingent upon a signed agreement.
Expenditure on direct support (ExpDS) and indirect support (ExpIDS)	As Whave matures, it is expected that both indirect and direct support costs can be supported by tariff revenue. At present, costs associated with contract development and monitoring of performance are expected to be covered by the government. However, training and oversight of technicians is the responsibility of Whave.
Total Expenditure (TotEx)	Included: OpEx, CapManEx, ExpDS, ExpIDS Annual Plan: 1.2 USD/person/year Pay-to-fetch: 5.11 USD/person/year
	Year: 2018

05 NGO/COMMUNITY-BASED RURAL WATER

GENERAL DESCRIPTION

In the 2019 RWSN Directory, there was a focus directly on novel service delivery models looking to provide ongoing operation and maintenance to water infrastructure. However, there are several organizations that follow more traditional patterns of NGOs – an emphasis on new infrastructure maintained by community-based management. This varies from volunteer community members, committees with consistent NGO support, and established entities that delegate service to local private mechanics. As this remains the most common service model, the authors decided to begin creating a reference list with brief descriptions of different organizations in this section. This list is hardly comprehensive but can be built towards a country database in the future. Each is likely to have their own variations and innovations.

Agua del Pueblo

Country/ Countries of operation	Guatemala
Description	Since 1972, Agua del Pueblo (AdP) has helped over 700 communities and 500,000 people complete sustainable, integrated WASH projects. This includes water and sanitation infrastructure, hygiene and community development training, and reforestation. The cornerstone of AdP's approach is to empower the local community to operate and maintain each system independently of external support. Communities supply local materials, labour and some capital investment, while municipalities provide additional labour and a larger share of capital investment. Most water systems are chlorinated and conform with national water quality standards. Agua del Pueblo (AdP) facilitates a contract between the the local water committee, each beneficiary, the Community Council for Urban and Rural Development (COCODE), and AdP. The local water committee and COCODE are sanctioned by the municipal government. The contract includes an estimate of tariffs and the required labour and financial commitment, accounting for operation and maintenance costs for a 30 year project life. AdP also uses "Rural Water Technicians" (RWTs). RWTs are para-engineers who can design and supervise the construction of rural water and sanitation systems. AdP, in conjunction with San Carlos University, trains and grants degrees to RWTs.
Tariff Collection and fund management system	Tariffs are collected and managed by the community water committee or COCODE. The municipal government oversees and audits the finances of all water committees and COCODEs.
Total Expenditure	In 2012, gravity-fed piped systems were estimated to cost 4.56 USD per person in donor funds, excluding municipal and community contributions (CapEx). Recurring expenses were estimated at 1 USD per person per year, including OpEx and CapManEx. Self-financing projects may pay a 3% monthly interest rate for capital expenditures.
Further Information / References	www.AguaDelPueblo.org ; www.PeoplesWater.org DOI: 10.1002/jid.2880 ; DOI:10.1080/15416518.2012.687988

Drink Local Drink Tap

Countries of operation	Uganda
Description	Drink Local Drink Tap (DLDT) has provided rural water services to 65 communities in Uganda over the last 10 years.
Tariff Collection and fund management system	Households pay 1,000-5,000 UGX per month per household. WASH committees collect and manage the fees in a bank account. When maintenance is needed, withdrawals are recorded within a logbook and paid by the account. CapManEx may involve local government or NGO intervention, but OpEx is the responsibility of the community. Circuit rider operations and bi-weekly calls by the NGO aim to maintain functionality of established projects.
Total Expenditure	Limited information provided.
Further Information	https://www.drinklocaldrinktap.org/

Global Aid Network

Countries of operation	Benin, Togo, Tanzania
Description	Global Aid Network has provided over 2,300 boreholes in its history. Regional Repair Representatives are trained to work with community-based managers to keep wells in working conditions. Hygiene and sanitation training and materials are also incorporated into GAiN's program.
Tariff Collection and fund management system	Tariffs are collected by community-managed water committees and saved in local bank accounts.
Total Expenditure	Wells are estimated to cost about 6.65 USD per person. Included: CapEx
Further Information	https://hope2othersinternational.com/

Hope 2 Others International

Countries of operation	The Gambia, Senegal (Casamance)
Description	Hope 2 Others International is an NGO focused on providing manually-drilled wells to families through self-supply. About 2,500 wells have been completed to date.
Tariff Collection and fund management system	Families simply pay for the repairs required each year, coordinating with local drilling teams in the field.
Total Expenditure	Wells typically cost only 150-250 USD using the manually drilled technology and SeGa pump. Repairs and maintenance typically cost 20 USD per year, which is the full responsibility of the family. Included: CapEx
Further Information	https://hope2othersinternational.com/

TajWSS

Countries of operation	Tajikistan (Khation, Sughd)
Description	Oxfam has impacted over 500,000 Tajik lives since 2001. Most recently, Oxfam has recently engaged in Water Trust Funds to establish transparent financing mechanisms. They are focused on building local-level capacity to manage these systems.
Tariff Collection and fund management system	Water User Associations and Community Advisory Boards are developed to collect and manage revenue with the trust fund. Tariffs are roughly 0.09 USD/m^3.
Total Expenditure	Limited information provided.
Further Information	https://asia.oxfam.org/countries/oxfam-tajikistan

The Water Trust

Countries of operation	Uganda (Districts of Kiryandongo & Masindi)
Description	As of December 2020, the Water Trust had established self-help group management institutions for 600 water sources, typically for villages in the range of 200 to 300 people. The Water Trust trains the community savings and credit cooperatives (called self-help groups) to collect fees from water users and manage a reserve fund for maintenance and repair. This helps ensure adequate funds are available to pay for regular servicing as well as self-insure against future repairs. The self-help group also provides access to savings and loans to group members from a separate loan fund, as well as a social fund to help households cope with personal hardships.
Tariff Collection and fund management system	Households pay 10,000-12,000 UGX (2.75-3.25 USD)per year at varying frequencies. The self-help group meets weekly and contributions are made at these meetings. Previously collected funds are visibly accounted as well. A reserve of 300,000 UGX (80 USD) is kept for emergency repairs, which are kept in a lock box (the 'water bag') or a mobile money account.
Total Expenditure	Initial investment for a well ranges from 6,250-10,000 USD per well or rehabilitation. Social programming is an additional 1,000-2,000 USD per initiating the Water Trust program and other sanitation activities. Direct support by the Water Trust ends after 18 months of training, with the exception of semi-annual monitoring visits. 5,000 USD annually is also spent on training and support for local handpump mechanics in the 2 districts. Included: CapEx, ExpDS
Further Information	https://www.watertrust.org/ https://hdl.handle.net/2134/35919

Wells of Life

Countries of operation	Uganda (Districts of Mityana, Mubende, Kasanda, Jinja, Kwania, Bugiri, Bukedea, Kakumiro, Otuke, Kaberamaido, Oyam, Dokolo, Serere, Soroti, Kumi, Ngora, Amuria)
Description	Wells of Life is an NGO focused on drilling new well infrastructure and rehabilitation wells, as well as raising hygiene and sanitation practice in communities and schools through approaches such as Community Led Total Sanitation. After initial construction, Wells of Life partners with Whave, who provide Village Level Operation and Maintenance (VLOM) in rural communities of Uganda. About 40 new wells are constructed per year, and about 50 rehabilitations of non-functional are completed per year, leading to over 550 wells completed by the end of 2020.
Tariff Collection and fund management system	Tariff collection and operational costs are deferred to Whave.
Total Expenditure	Wells typically cost about 6000 USD for a new well or 3000 USD for a rehabilitation. Included: CapEx
Further Information	https://www.wellsoflife.org/

06 HANDPUMP STATISTICS

In 2007 and again in 2009, RWSN produced a table of estimated figures of handpump functionality for Sub-Saharan African countries[17] which has been widely cited in papers, reports and presentations. Since that time, water point data has become available, thanks to water point mapping tools and the Water Point Data Exchange (WPDx). An analysis of available data from sub-Saharan Africa and the Asia-Pacific region was published in March 2019[18] and summarised below:

Table 1. Handpump functionality statistics for sub-Saharan Africa

Country	Year(s)	Scope	Handpumps	Non-functional
Angola	2015	National	4,389	25%
Benin	2016	National[19]	13,003	12%
Burkina Faso	2017	National	52,596	11%
Burundi	2012	National	229	58%
Cameroon	2011-15	189 of 316 communes	6,899	32%
Central African Rep.	2003	National	3,177	25%
Chad	2000	National	3,267	16%
Congo (Brazzaville)	2008	1 of 10 rural depts.	159	50%
Dem. Rep. of Congo	2011	National sample	2,214	25%
Cote d'Ivoire	2016	National	22,807	30%
Eritrea	2006	National	864	43%
Ethiopia	2010-14	2 of 9 regions	4,620	33%
Gabon	2012	National	1,158	47%
Ghana	2014	6 of 10 regions[20]	32,361	26%
Guinea	2012	National	12,815	18%
Guinea-Bissau	2016	Sub-national[21]	3,190	36%
Kenya	2013	9 of 47 counties	2,580	24%
Liberia	2017	National	12,684	20%
Madagascar	2018	National[22]	15,068	20%
Malawi	2007	National[23]	24,769	22%
Mali	2015-16	5 of 8 regions	19,951	29%
Mauritania	2012	1 of 15 regions	71	54%
Mozambique	2011-12	93 of 128 districts	12,180	20%
Namibia	2000	2 of 14 regions	94	54%
Niger	2015	National	10,072	15%
Nigeria	2006	35 of 36 states[24]	26,423	42%
Rwanda	2008-09	6 of 30 districts	279	16%
Senegal	2014	National	2,903	22%
Sierra Leone	2016	National	11,895	25%
South Africa	2000	8 of 44 districts	34,130	27%

[17] RWSN 2009
[18] Foster *et al* 2019
[19] 2014–15 mapping of handpumps in 6 of 11 Departments found a non-functionality rate of 21%
[20] A 2013 service level assessment of 568 handpumps in three districts found a non-functionality rate of 19%
[21] Data refer to boreholes with handpumps, and data collection is ongoing.
[22] A survey of 121 handpumps in 2013 found a non-functionality rate of 29%
[23] A 2015 inventory of handpumps in Chikwawa District found a non-functionality rate of 22%
[24] Data not collected for Borno State due to security concerns. A 2012 inventory of 21,135 handpumps in 661 of 774 local government areas found a non-functionality rate of 36% while a 2015 inventory of 6108 handpumps in 20 local government areas found a non-functionality rate of 29%

Country	Year(s)	Scope	Handpumps	Non-functional
South Sudan	2009-11	5 of 10 states	11,790	20%
Sudan	2009	6 of 18 states	12,058	35%
Swaziland	2013-15	National	801	28%
Tanzania	2011-13	27 of 31 regions	22,021	33%
Togo	2006-7	National	4,550	30%
Uganda	2016	National	58,366	19%
Zambia	2007	National	25,624	27%
Zimbabwe	2014-17	6 of 8 provinces	29,986	28%
TOTAL				**26%**

Table 2. Handpump functionality statistics for the Asia-Pacific region

Country	Year(s)	Scope	Handpumps	Non-functional
Afghanistan	2013-14	194-398 districts	24,504	36%
Bangladesh	2017	National	1,656,695	9%
Cambodia	2008-14	48-163 districts	136,722[25]	7%
India[26]	2013-17	National	5,723,533	6%
Kiribati	2003	4 of 24 councils	187	81%
Laos	2015	2 of 147 districts	720	35%
Philippines	2014	6 of 81 provinces	10,743	10%
Timor-Leste	2007-8	3 of 13 districts	99	47%
Vanuatu	2014-16	60-66 council areas	245	12%

For full details of methods, data sources and limitations please refer to:

Foster T., S. G. Furey, B. Banks & J. Willetts (2019) "Functionality of handpump water supplies: a review of data from sub-Saharan Africa and the Asia-Pacific region", International Journal of Water Resources Development, DOI: 10.1080/07900627.2018.1543117

Also note that the concept of "functionality" as a binary (yes/no) statistic is a simplification of a complex situation, and forthcoming work from the UPGro Hidden Crisis (e.g. Whaley *et al.*)[27] project is anticipated to provide more insights and evidence. Furthermore, work by Oxford University (e.g. McNicholl, D., *et al.* (2019).) emphasises the importance of down-time as an importance service delivery metric.

The figures will be updated in future editions as more data becomes available in the public domain.

[25] Sample includes privately owned handpumps.
[26] In 2009, India's Ministry of Drinking Water and Sanitation reported 4,155,000 handpumps, with 11.8% non-functional
[27] https://upgro-hidden-crisis.org/ and https://upgro.org/consortium/hidden-crisis2/

07 COUNTRY PROFILES

In 2017, the World Bank summarized a multi-country review of rural water service delivery models.[28] This work inspired many of the categories and designations described in this directory. Below you will find a summary and references to recent government water and sanitation policies for countries found in this directory. As shown in the figure below, only countries found in Latin America and Central and Southern Asia are on track to meet the Sustainable Development Goals by 2030.

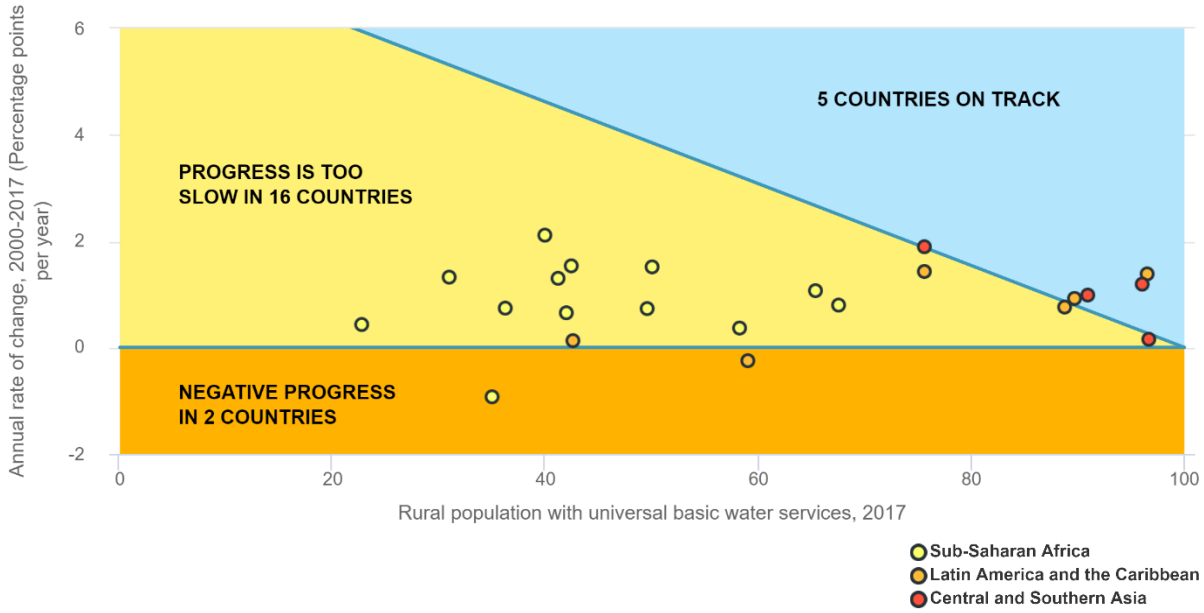


Figure: Country progress towards the SDGs (JMP 2017)

Benin

Total Population	11.8 million
JMP Rural Water Coverage (2017)	58.2% Basic service
Rural Water Policy	Rural Water Policy (2009)
National Authority	Directorate of Drinking Water Supply (Direction Générale de l'Eau) within the Ministry of Energy, Water and Mines and Water Supply National Agency
Service Authority	Decentralized municipal government or communes
Service Provider(s)	Private operators (through lease and subsidized concession contracts) and in rare cases municipalities. Community-based management is gradually being phased out.
Tariff levels	0.68 to 2 USD/m^3
2020 Updates	
Further Information / References	https://www.wsp.org/sites/wsp/files/publications/WSP-Benin-Innovative-Public-Private-Partnerships-Rural-Water-Services.pdf

Brazil (Ceará)

Total Population	211 million
JMP Rural Water Coverage (2017)	89.7% Basic service
Rural Water Policy	PLANSAB
National Authority	Ministry of Cities; Ministry of Health, through the National Health Foundation (FUNASA), the Special Secretariat for Indigenous Health and the Environmental Health Control Secretariat National Water Agency; and Ministry of National Integration
Service Authority	Municipalities

[28] World Bank. 2017. "Sustainability Assessment of Rural Water Service Delivery Models: Findings of a Multi-Country Review." World Bank, Washington, DC.

Brazil (Ceará)

Service Provider(s)	Municipality direct provision, delegated public, private or mixed utility service providers, or community-based cooperative or associations, including Sistema Integrado de Saneamento Rural (SISAR - Integrated Rural Sanitation System); individual self-supply
Tariff levels	0.60 – 1.0 USD/m^3
2020 Updates	
Further Information / References	

Central African Republic

Total Population	4.9 million
JMP Rural Water Coverage (2017)	No Data
Rural Water Policy	National Water and Sanitation Policy (in development)
National Authority	Ministry of Energy Development and Water Resources
Service Authority	-
Service Provider(s)	-
Tariff levels	0.34-0.75 USD/m^3
2020 Updates	Though not finalized, the end of 2020 was marked by an endorsement of a national policy framework through a stakeholder consultation workshop.
Further Information / References	https://www.gwp.org/en/GWP-Central-Africa/WE-ACT/news/the-central-african-republic-government-endorses-the-national-water-and-sanitation-policy/

Ethiopia

Total Population	112.1 million
JMP Rural Water Coverage (2017)	26.5% Basic service 4.6% Safely Managed
Rural Water Policy	National Water Resource Management Policy 1998
National Authority	Ministry of Water, Irrigation and Electricity (MoWIE), The National WASH Steering Committee (NWSC), Ministry of Finance and Economic Cooperation (MoFEC), Ministry of Education, Ministry of Health
Service Authority	The Woreda (local government)
Service Provider(s)	Woreda manage provision, community management, and individual household self-supply
Tariff levels	0.14 – 0.25 USD/m^3
2020 Updates	
Further Information / References	http://www.fao.org/faolex/results/details/en/c/LEX-FAOC165069/

Ghana

Total Population	30.4 million
JMP Rural Water Coverage (2017)	56.1% Basic service 11.5% Safely Managed
Rural Water Policy	National Water Policy (2008)
National Authority	Ministry of Water Resources, Works and Housing (MWRWH), Ministry of Local Government and Rural Development (MLGRD); in 2017, the Ministry of Sanitation and Water Resources Community Water and Sanitation Agency (CWSA); Water Resources Commission; and Ghana Water Company Ltd,
Service Authority	Metropolitan, Municipal and District Assemblies (MMDAs; local government).
Service Provider(s)	Water and Sanitation Management Teams (WSMTs); private sector operators.
Tariff levels	0.2 to 2.9 USD/m^3
2020 Updates	
Further Information / References	https://www.ircwash.org/sites/default/files/Ghana-2007-National_0.pdf

Haiti

Total Population	11.3 million
JMP Rural Water Coverage (2017)	42.6% Basic service
Rural Water Policy	La Cadre
National Authority	Direction Nationale de l'Eau Potable et de l'Assainissement (DINEPA) or the National Water and Sanitation Directorate
Service Authority	140 communes (municipalities) as per the constitution, but in practice, The role falls to DINEPA's regional and departmental offices (OREPAs and URDs) due to ineffective decentralization
Service Provider(s)	Informal and formal community-based organizations (CAEPAs); emerging private operators under lease contracts
Tariff levels	1 to 2 USD per household per month
2020 Updates	-
Further Information / References	

India

Total Population	1.366 billion
JMP Rural Water Coverage (2017)	35.0% Basic service 56.0% Safely Managed
Rural Water Policy	Strategic Plan 2011-22 "Ensuring Drinking Water Security in Rural India"
National Authority	Ministry of Drinking Water and Sanitation Public Health Engineering Departments, Water and Sanitation Support
State Level	Organizations and State Water and Sanitation Missions
Service Authority	Gram Panchayats (village level)
Service Provider(s)	At village level, village water and sanitation committees; state-level agencies are responsible for bulk water supply and large multi-village schemes
Tariff levels	0.53 to 2.69 per household per month
2020 Updates	
Further Information / References	https://tgpg-isb.org/sites/default/files/document/strategy/DW.pdf

Indonesia

Total Population	270.6 million
JMP Rural Water Coverage (2017)	82.0% Basic service
Rural Water Policy	Based on several regulations
National Authority	Ministry of Public Works and Housing or MPWH (lead institution) and National Development Planning Agency (Bappenas, for planning and monitoring)
Service Authority	Districts (second level of local government after provinces) and village governments since the Village Law (passed in 2014)
Service Provider(s)	Village-level community-based organizations (CBOs) predominant; (BPSPAMs under the national program to accelerate rural water supply access -PAMSIMAS)
Tariff levels	0.18 to 0.77 USD/m^3
2020 Updates	
Further Information / References	https://www.adb.org/sites/default/files/institutional-document/183339/ino-water-assessment.pdf http://www.water-alternatives.org/index.php/allabs/111-a3-3-1/file

Kenya

Total Population	52.6 million
JMP Rural Water Coverage (2017)	49.6% Basic service
Rural Water Policy	Water Act 2016; National Water Master Plan 2030
National Authority	Ministry of Water and Irrigation; Water Resources Management Authority (WRMA); Water Services Regulatory Board (WASREB)
Service Authority	Water Services Boards (WSBs); Regional WRMA Office; Catchment Areas Advisory Committees (CAACs)
Service Provider(s)	Water Service Providers (WSPs), including public, private, community and civil society sectors; Water Rersources User Associations (WRUAs)
Tariff levels	35 – 150 KSH/m^3 (0.27-1.36 USD/m^3)
2020 Updates	-
Further Information / References	https://wasreb.go.ke/national-water-master-plan-2030/

Malawi

Total Population	18.6 million
JMP Rural Water Coverage (2017)	65.4% Basic service
Rural Water Policy	National Water Policy of 2005; Water Resources Act of 1969
National Authority	Ministry of Agriculture, irrigation, and Water Development
Service Authority	District Councils; Catchment Management Authorities
Service Provider(s)	Community-based Management, Civil Societies, Private Sector
Tariff levels	0.51-2.25 USD/m^3
2020 Updates	-
Further Information / References	http://extwprlegs1.fao.org/docs/pdf/mlw165858.pdf https://doi.org/10.2166/washdev.2014.087

Nicaragua

Total Population	6.5 million
JMP Rural Water Coverage (2017)	29.6% Basic service 29.5% Safely Managed
Rural Water Policy	PISASH Integrated Sector Program for Human Water and Sanitation
National Authority	Social Emergency Investment Fund or FISE (Water supply infrastructure development), National Drinking Water and Sewerage Commission (policy making), the Nicaraguan Institute for Water Supply and Sewerage (regulation), and the National Water Authority (protecting and managing water resources)
Service Authority	Municipal governments with designated water and sanitation units (UMAS)
Service Provider(s)	Nicaraguan Water and Sewerage Company (ENACAL), municipal providers, drinking water and sanitation committees (CAPS), other community organizations, and management by families.
Tariff levels	0.70 to 2.51 USD
2020 Updates	
Further Information / References	http://documents1.worldbank.org/curated/en/640621586457814995/pdf/Nicaragua-Sustainable-Rural-Water-Supply-and-Sanitation-Sector-Project.pdf

Sierra Leone

Total Population	7.8 million
JMP Rural Water Coverage (2017)	41.8% Basic service 8.4% Safely Managed
Rural Water Policy	National Water and Sanitation Policy - 2010
National Authority	Ministry of Energy and Water Resources, Ministry of Health and Sanitation;
Service Authority	Ministry of Local Government (Local Councils); WATSAN Committees
Service Provider(s)	Community Water Committees, NGOs, Private Sector
Tariff levels	5,000 – 25,000 SLL/m^3 (0.49-2.46 USD/m^3)
2020 Updates	-
Further Information / References	http://www.washlearningsl.org/wp-content/uploads/2015/03/National-WASH-Policy-with-Photos-Sept-2010.pdf

Tanzania

Total Population	58 million
JMP Rural Water Coverage (2017)	56.7% Basic service
Rural Water Policy	National Water Policy 2002
National Authority	Rural Water Supply Department, Ministry of Water and Irrigation (MoWI)
Service Authority	Local government authorities (LGAs)
Service Provider(s)	Community owned water supply organization (COWSO), a generic term for community-based management structures. Examples of COWSO arrangements include direct management; management through a wider association (the Water Facility Service Trust [WSFT]); COWSO delegating aspects of operation, maintenance, or management to the private sector
Tariff levels	0.45 to 2.2 USD/m^3
2020 Updates	-
Further Information / References	https://www.ircwash.org/resources/national-water-policy-tanzania https://core.ac.uk/reader/233615870

Timor-Leste

Total Population	1.3 million
JMP Rural Water Coverage (2017)	69.7% Basic service
Rural Water Policy	Decree Law No. 6.2015
National Authority	Ministry of Public Works, Transport, and Communications; National Directorate of Water Resources Management; National Directorate of Water Supply
Service Authority	Municipal Water, Sanitation, and Environment Services (SMASA)
Service Provider(s)	Public water supply and community water management groups (GMFs)
Tariff levels	-
2020 Updates	-
Further Information / References	http://documents1.worldbank.org/curated/en/433121521173685667/pdf/124329-WP-P163648-PUBLIC-Timor-Leste.pdf

Uganda

Total Population	44.3 million
JMP Rural Water Coverage (2017)	36.8% Basic service 4.5% Safely Managed
Rural Water Policy	National Framework for Operation and Maintenance of Rural Water Infrastructure in Uganda – July 2020
National Authority	Ministry of Water and Environment
Service Authority	District Water Supply Board; Rural Water Supply Regional Centre
Service Provider(s)	Area Service Provider (NGO, HPMA, CBOs)
Tariff levels	1,250 – 10,000 UGX/m^3 (0.34-2.72 USD/m^3)
2020 Updates	Uganda's policy framework has just been updated, and puts a strong emphasis on umbrella authorities and area service providers. Geographical boundaries for service providers are firmly established to provide additional structure to historical arrangements.
Further Information / References	https://www.mwe.go.ug/sites/default/files/library/O%26M%20Framework%20for%20rural%20water%20services_V6_24.07.2020.pdf

Uzbekistan

Total Population	33.6 million
JMP Rural Water Coverage (2017)	65.0% Basic service 31.1% Safely Managed
Rural Water Policy	Water Sector Development Concept of Uzbekistan 2020-2030
National Authority	Ministry of Water Resources of Uzbekistan
Service Authority	Basin Administrations, District Irrigation Departments
Service Provider(s)	Water User Associations (WUAs)
Tariff levels	SUM675-2,100/m^3 (0.06-0.20 USD/m^3); expected to increase significantly
2020 Updates	A new decree has been issued – Water Sector Development Concept of Uzbekistan 2020-2030
Further Information / References	http://www.water.gov.uz/en/posts/1545735855/396 f http://www.cawater-info.net/bk/iwrm/0615_e.htm

Zambia

Total Population	18.4 million
JMP Rural Water Coverage (2017)	60% Basic service
Rural Water Policy	National Water Supply and Sanitation Policy 2020. Sustainable Operation and Maintenance Project for Rural Water Supply (SOMAP) - In 2007, Zambia set a National Water Policy for sustainable water service provision. It was established as a demand-responsive, community-based management approach. Communities would operate and manage water infrastructure, through V-WASHE committees, with technology appropriate to their size and affordability, and make decisions regarding its use.
National Authority	Ministry of Water Development, Sanitation and Environmental Protection
Service Authority	Ministry of Local Government
Service Provider(s)	Community-based management (WDCs, WASHEs, CBEs), government (Rural Water Supply Sector), and private sector
Tariff levels	Community members are required to pay K1,500 (90 USD) as a contribution towards initial CapEx costs. Average tariff contributions per person per month were found to be K2.6 (0.26 USD) in 2018. Funds are stored with the V-WASHE treasurer.
2020 Updates	A 2018 assessment found that only 26% of water committees were active. 40% of handpumps within a district under the SOMAP model took more than 4 weeks to repair. Only 28% of communities made regular payments for O&M, and only half of communities knew where to get spare parts. Area pump mechanics were active, though typically did not repair more than 20 handpumps per year.
Further Information / References	https://www.mwdsep.gov.zm/?wpfb_dl=1217 https://www.rural-water-supply.net/en/resources/details/926

08 BLUE PAGES

WHAT ARE THE RWSN BLUE PAGES?

At RWSN, we have heard times and times again from our members that it would be helpful to know who is active where in the rural water sector. The RWSN Blue Pages is an initiative to list rural water supply service providers, be they vendors and service companies, or drilling, engineering, or consulting services.

The RWSN Directory of Rural Water Supply Services, Tariffs, Management Models, and Lifecycle Costs was first published in 2019. The RWSN Secretariat plans to make this a regular publication, with a business directory (the Blue Pages) added at the back of this publication.

The RWSN Blue Pages is composed of basic listings (free) and paid adverts (1/4 page, ½ page and full page) for rural WASH service providers (individuals and companies).

RWSN does not undertake any accreditation or verification of the listings provided to the RWSN Blue Pages. Entries are based on information provided by the listing organisation or individual. For more information please refer to the Terms and Condition at the back.

WHO IS IT FOR?

Sometimes, internet search engines don't give you want you need.

The RWSN Directory and Blue Pages are for anyone interested in rural water supply, particularly in low and middle-income countries. It will be sent to all RWSN members as a PDF and will be highlighted as a special feature on the RWSN Website.

Being featured in the RWSN Directory and Blue Pages will give your organisation cost-effective access to a targeted audience of more than 13,000 individual members in 169 countries – water sector professionals, including government officials and senior executives directly responsible for procurement and investment decisions. The RWSN Network membership is a unique mix of private sector, researchers and academics, national and local governments, and consultant professionals.

HOW CAN YOU OR YOUR ORGANISATION BE FEATURED?

If you are interested in advertising your Rural Water Supply supplier/business listing and/ or a paid advert in the RWSN Blue Pages, you can submit your listing via this online form: https://forms.gle/dek3aBa9uqPxQbNw7

Paid adverts are available in the following format: full page, ½ page and ¼ page. Please contact us at the RWSN Secretariat [ruralwater@skat.ch] to receive more information on our paid advertising opportunities in the RWSN Blue Pages.

QUE SONT LES PAGES BLEUES DU RWSN ?

Les membres du RWSN nous ont répété maintes fois qu'il serait utile de savoir qui est actif dans le secteur de l'eau en milieu rural. Les Pages Bleues du RWSN visent à répertorier les fournisseurs de services d'approvisionnement en eau en milieu rural, qu'il s'agisse de vendeurs et de sociétés de services de forage, d'ingénierie ou de conseil.

Le repértoire du RWSN sur les services d'approvisionnement en eau en milieu rural, tarifs, modes de gestion et coûts de cycle de vie a été publié pour la première fois en 2019. Le secrétariat du RWSN prévoit d'en faire une publication régulière, avec un annuaire des entreprises (les Pages Bleues) à la fin de cette publication.

Les Pages Bleues du RWSN sont composées de petites annonces (gratuites) et d'annonces payantes (1/4 de page, ½ page et page entière) pour les prestataires de services WASH en milieu rural (particuliers et entreprises).

Le RWSN ne procède à aucune accréditation ou vérification des informations fournies à travers les Pages Bleues du RWSN. Les inscriptions sont basées sur les informations fournies par l'organisation ou l'individu qui figure sur la liste. Pour plus d'informations, veuillez vous reporter aux conditions générales figurant à la fin de cette publication.

POUR QUI SONT LES PAGES BLEUES ?

Parfois, les moteurs de recherche Internet ne vous aident pas à trouver ce que vous cherchez.

L'annuaire et les pages bleues du RWSN s'adressent à toute personne intéressée par l'approvisionnement en eau en milieu rural, en particulier dans les pays à revenus faibles et intermédiaires. Il sera envoyé à tous les membres du RWSN sous forme de PDF et sera mis en valeur l sur le site web du RWSN.

Le fait de figurer dans le repértoire et les pages bleues du RWSN donnera à votre organisation un accès privilégié à un public de plus de 13 000 membres individuels dans 169 pays – principalement des professionnels du secteur de l'eau, y compris des fonctionnaires et des cadres supérieurs directement responsables des décisions d'achat et d'investissement. Les membres du réseau RWSN constituent un mélange unique de professionnels du secteur privé, de chercheurs et d'universitaires, de cadres de gouvernements nationaux et locaux et de consultants.

COMMENT POUVEZ-VOUS EN FAIRE PARTIE ?

Si vous souhaitez que votre entreprise d'approvisionnement en eau en milieu rural figure dans les Pages Bleues du RWSN , vous pouvez soumettre votre annonce via le formulaire en ligne: https://forms.gle/dek3aBa9uqPxQbNw7

Les annonces payantes sont disponibles dans le format suivant : page entière, 1/4 de page, ½ page. Veuillez nous contacter au secrétariat du RWSN [ruralwater@skat.ch] pour recevoir plus d'informations sur les possibilités de publicité payante dans les Pages Bleues du RWSN.

02 LISTING BY COUNTRY / ANNONCES PAR PAYS

Listed alphabetically. Classé par ordre alphabétique.

ANGOLA			
Miguel González Alonso	Product/Service Produit/Service	Hydrogeological survey, project management, quality monitoring, pumping tests, refurbishing boreholes.	Etude hydrogéologique, gestion de projet, suivi de la qualité, tests de pompage, remise en état des forages.
	Areas served Zone de service	Angola, Namibia and SADC Countries	Angola, Namibie et pays de la SADC
	Website, Site web	-	
	Contact	(+244)922387681; geonzalez@hotmail.com	
	Languages/ Langues	English, Spanish and Portuguese.	Anglais, espagnol et portugais.

BELGIUM / BELGIQUE			
Sotrad Water - Pump&Drink	Product/Service Produit/Service	A state-of-the-art solar drinking water production and storage unit for remote populations	Unité solaire de production et de stockage d'eau potable pour les populations isolées
	Areas served Zone de service	Worldwide	Dans le monde entier
	Website, Site web	https://www.sotradwater.be/en-gb/pump-drink-solaire	
	Contact	+32 67 21 44 64; bt@sotradwater.be	
	Languages/ Langues	English and French.	Anglais et français.

BRAZIL / BRÉSIL			
ZM BOMBAS	Product/Service Produit/Service	Water wheel pump manufacturer to pump water from 12 Km and up to 300 meters height, using water force	Un fabricant de pompes à roue hydraulique pour pomper de l'eau à partir de 12 km et jusqu'à 300 mètres de hauteur, en utilisant la force de l'eau
	Areas served Zone de service	Africa; America and Caribbean; North and Central America.	Afrique ; Amérique et Caraïbes ; Amérique du Nord et centrale.
	Website, Site web	http://zmbombas.com/	
	Contact	(+44) 3028-0200; vendas@zmbombas.com.br	
	Languages/ Langues	English and Portuguese.	Anglais et portugais.

CAMBODIA / CAMBODGE			
Cambodian Institute for Urban Studies	Product/Service Produit/Service	CIUS is a leading development research institute with expertise in rural water supply and M&E.	Le CIUS est un institut de recherche en développement de premier plan, spécialisé dans l'approvisionnement en eau des zones rurales et dans le suivi et l'évaluation.
	Areas served	Cambodia, and South East Asia	Cambodge, et Asie du Sud-Est

CAMBODIA / CAMBODGE			
	Zone de service		
	Website, Site web	https://www.facebook.com/Cambodian-Institute-for-Urban-Studies-1469309149992573	
	Contact	(+855)-23-6711-099; cambodian.cius@gmail.com	
	Languages/ Langues	English and Khmer.	Anglais et khmer.

CAMEROUN / CAMEROON			
Centre d'étude et réalisation en environnement, eau et assainissement	Product/Service Produit/Service	Water, sanitation, environmental education	Eau, assainissement, éducation à l'environnement
	Areas served Zone de service	Cameroon	Cameroun
	Website, Site web	-	
	Contact	(+237) 6 75 35 53 22; gervaismomo42@yahoo.com	
	Languages/ Langues	English and French.	Anglais et français.

CANADA			
R.J. Burnside International Limited (Canada)	Product/Service Produit/Service	Engineering/environmental consulting services: water supply, wastewater. Formed in 1970. 360 staff.	Services d'ingénierie/conseil en environnement : approvisionnement en eau, eaux usées. Créé en 1970. 360 personnes.
	Areas served Zone de service	Sub-Saharan Africa; The Caribbean; Latin America	Afrique subsaharienne ; Caraïbes ; Amérique latine
	Website, Site web	www.rjburnside.com	
	Contact	(+1)519-941-5331; norman.looker@rjburnside.com;	
	Languages/ Langues	English, Spanish and Portuguese.	Anglais, espagnol et portugais.

ETHIOPIA/ ÉTHIOPIE			
EWTI SMART Centre	Product/Service Produit/Service	Training in Mzuzu drill, Rope & Afridev pumps, tube recharge, Water filters, CLTS, farm clubs, irrigation..	Formation à la foreuse de Mzuzu, pompes à corde, pompes Afridev, pompes solaires, recharge par tube, filtres à eau.
	Areas served Zone de service	Addis Abeba, Ethiopia	Addis Abeba, Éthiopie.
	Website, Site web	https://www.eweti-ethiopia.com/	
	Contact	Tekle Gochem. t.gochem@yahoo.com	
	Languages/ Langues	English, Amhari	Anglais , Amhari

GHANA			
WASH Worldwide Consult	Product/Service Produit/Service	WCW is a development consultancy committed to providing cutting edge solutions in WASH issues	WCW est un cabinet de conseil en développement qui s'engage à fournir des solutions de pointe dans le secteur WASH
	Areas served Zone de service	Global	Global
	Contact	(+233)208551938; bessiyawa@gmail.com	
	Languages/ Langues	English and French	Anglais et français.
Pumping is life SMART Centre	Product/Service Produit/Service	Training in Mzuzu drill, Rope & Afridev & solar pumps	Formation en forage Mzuzu, à la corde et à l'Afridev et aux pompes solaires.
	Areas served Zone de service	WaleWale, Ghana	WaleWale, Ghana
	Website, Site web	https://www.pumpingislifewash.org/	
	Contact	Yussif Abdul-Rahaman , yussif.abdul@gmail.com	
	Languages/ Langues	English	Anglais

INDONESIA / INDONÉSIE			
Nazava Water Filters	Product/Service Produit/Service	Nazava Water Filter are point of use household water filters that purify well, tap or rain water.	Les filtres à eau Nazava sont des filtres à eau domestiques s'utilisant au point de consommation qui purifient l'eau de puits, du robinet ou de pluie.
	Areas served Zone de service	Indonesia; Ethiopia; Kenya; Mozambique; Burkina Faso; India	Indonésie ; Éthiopie ; Kenya ; Mozambique ; Burkina Faso ; Inde
	Website, Site web	https://www.nazava.com/en/	
	Contact	(+62)81360862522; Lisa@nazava.com	
	Languages/ Langues	English, French, Spanish and Portuguese.	Anglais, français, espagnol et portugais.

KENYA			
Maji Milele Limited	Product/Service Produit/Service	Supply and installation of prepaid water meters solutions	Fourniture et installation de solutions de compteurs d'eau prépayés
	Areas served Zone de service	Kenya; Uganda; Sudan; Rwanda	Kenya ; Ouganda ; Soudan ; Rwanda
	Website, Site web	www.water-forever.com	
	Contact	(+254)708386994; marcer@water-forever.com	
	Languages/ Langues	English and Swahili	Anglais et swahili

KENYA			
AQUA CLARA SMART Centre	Product/Service Produit/Service	Training in SHIPO drill, Mzuzu drill, 3 Rope pump models, solar pumps, latrines, Water filters.	Formation à la foreuse SHIPO, à la foreuse Mzuzu, à 3 modèles de pompes à corde, aux pompes solaires, aux latrines, aux filtres à eau.
	Areas served Zone de service	Kisii, Kenya	Kisii, Kenya
	Website, Site web	https://aquaclarakenya.com/	
	Contact	John Nyagwencha jnyagwencha@aquaclara.org	
	Languages/ Langues	English and Swahili	Anglais et swahili

MALAWI			
CCAP SMART Centre	Product/Service Produit/Service	Training in SHIPO drill, Mzuzu drill, 3 Rope pump models, solar pumps, latrines, Water filters.	Formation du secteur privé local à des technologies WASH simples, basées sur le marché, abordables et réparables.
	Areas served Zone de service	Malawi	Malawi
	Website, Site web	www.smartcentremalawi.com	
	Contact	jamemhango@gmail.com	
	Languages/ Langues	English	Anglais
Mzuzu University, Centre of Excellence in Water and Sanitation	Product/Service Produit/Service	The Centre participates in research, water quality and fecal sludge analysis and outreach programs.	Le Centre participe à des programmes de recherche, d'analyse de la qualité de l'eau et des boues fécales, et de sensibilisation.
	Areas served Zone de service	Malawi, Africa	Malawi, Afrique
	Website, Site web	http://www.mzuniwatsan.com	
	Contact	rochelle@rochelleholm.com	
	Languages/ Langues	English	Anglais

MOZAMBIQUE / MOZAMBIQUE			
GSB SMART Centre	Product/Service Produit/Service	Training in Mzuzu drill, Rope & Afridev pumps, tube recharge, Water filters, CLTS, farm clubs, irrigation..	Formation en forage Mzuzu, pompes à corde et Afridev, recharge de tubes, filtres à eau, ATPC, clubs agricoles, irrigation.
	Areas served Zone de service	Pemba, Mozambique	Pemba, Mozambique
	Website, Site web	www.smartcentrezambia.com	
	Contact	(+34) 676 03 62 46; rik.haanen@jacana.help	
	Languages/ Langues	English, Portuguese	Anglais , Portugais

NETHERLANDS / PAYS-BAS			
SMART Centre Group	Product/Service Produit/Service	Training the local private sector in Simple, Market-based, Affordable, Repairable WASH technologies	Formation du secteur privé local à des technologies WASH simples, basées sur le marché, abordables et réparables.
	Areas served Zone de service	Tanzania, Malawi, Zambia, Mozambique, Ethiopia, South Sudan, Niger, Nicaragua and starting in Kenya and Ghana	Tanzanie, Malawi, Zambie, Mozambique, Éthiopie, Soudan du Sud, Niger, Nicaragua et bientôt au Kenya et au Ghana
	Website, Site web	www.smartcentregroup.com	
	Contact	(+31)642559870; henkholtslag49@gmail.com	
	Languages/ Langues	English and Spanish	Anglais et espagnol.
Practica Foundation	Product/Service Produit/Service	We develop asset management tools, low cost payment systems and optimized piped water supply systems	Nous développons des outils de gestion des actifs, des systèmes de paiement à faible coût et des systèmes optimisés d'approvisionnement en eau par canalisation
	Areas served Zone de service	Africa and Asia (based in the Netherlands and in Madagascar)	Afrique et Asie (basé aux Pays-Bas et à Madagascar)
	Website, Site web	https://www.practica.org/	
	Contact	(+31) 786 150 125; info@practica.org	
	Languages/ Langues	English and French	Anglais et français.

NICARAGUA			
WaterAid SMART Centre	Product/Service Produit/Service	Training in Rotasludge & Mzuzu drill, Rope & solar pumps, Tube recharge, tanks, Water filters, drip irrigation, sanitation	Formation à la boue rotative et au forage de Mzuzu, aux pompes à corde et solaires, à la recharge par tube, aux réservoirs, aux filtres à eau, à l'irrigation au goutte-à-goutte et à l'assainissement.
	Areas served Zone de service	Tipitapa, Nicaragua	Tipitapa, Nicaragua
	Website, Site web	https://www.wateraid.org/us/story/SMARTCenter	
	Contact	Joshua Briemberg. jdbriemberg@gmail.com	
	Languages/ Langues	English, Spanish	Anglais et Espagnol.

NIGER			
EERN SMART Centre	Product/Service Produit/Service	Training in Mzuzu drill, solar pumps	Formation en forage Mzuzu, pompes solaires
	Areas served Zone de service	Niamey, Niger	Niamey, Niger
	Website, Site web	Under construction	
	Contact	Jim McGill , mcgillwatsan@gmail.com	
	Languages/ Langues	English, French	Anglais et français.

SAUDI ARABIA / ARABIE SAOUDITE			
Arabian Water and Environmental Consultancy	Product/Service Produit/Service	Water and wastewater consultancy	Conseil en matière d'eau et d'eaux usées
	Areas served Zone de service	Middle East & North Africa (MENA)	Moyen-Orient et Afrique du Nord
	Website, Site web	-	
	Contact	(+966)507839349; acegulf@gmail.com	
	Languages Langues	English	Anglais

SOUTH SUDAN / SUD SUDAN			
PRDA SMART Centre	Product/Service Produit/Service	Training in Mzuzu drill, Rope & Afridev & solar pumps, Tube recharge, EMAS tanks, Water filters, latrines.	Formation à la foreuse de Mzuzu, pompes à corde, Afridev et solaires, recharge par tube, réservoirs EMAS, filtres à eau, latrines.
	Areas served Zone de service	Juba, South Sudan	Juba, Sud Sudan
	Website, Site web	Under construction	
	Contact	Jim McGill , mcgillwatsan@gmail.com	
	Language/ Langues	English	Anglais

SWITZERLAND / SUISSE			
Skat Consulting Ltd.	Product/Service Produit/Service	International development consultancy and project management.	Conseil en développement international et gestion de projets.
	Areas served Zone de service	Global	Global
	Website, Site web	https://skat.ch/	
	Contact	(+41) 71 228 54 54; info@skat.ch	
	Languages/ Langues	English, French, German, Spanish	Anglais, français, allemand, espagnol
Skat Foundation	Product/Service Produit/Service	Knowledge management, networking and capacity development for development cooperation	Gestion des connaissances, mise en réseau et développement des capacités pour la coopération au développement
	Areas served Zone de service	Global	Global
	Website, Site web	https://skat-foundation.ch/	
	Contact	(+41) 71 227 07 98	
	Languages/ Langues	English, French, German, Spanish,	Anglais, français, allemand, espagnol

TANZANIA / TANZANIE			
SHIPO SMART Centre	Product/Service Produit/Service	This centre trains entrepreneurs in Affordable Technologies like SHIPO drill, Rope pumps etc.	Ce centre forme des entrepreneurs aux technologies abordables comme la foreuse SHIPO, les pompes à corde, etc.
	Areas served Zone de service	Tanzania	Tanzanie
	Website, Site web	www.smartcentretanzania.or.tz	
	Contact	(+34) 676 03 62 46; leire@shipo-tz.org	
	Languages/ Langues	English and Swahili	Anglais et swahili

UNITED KINGDOM / ROYAUME-UNI			
Richard Carter and Associates Ltd	Product/Service Produit/Service	Consultancy in water resources, water supply, sanitation and hygiene	Conseil en matière de ressources en eau, d'approvisionnement en eau, d'assainissement et d'hygiène
	Areas served Zone de service	Sub-Saharan Africa	Afrique subsaharienne
	Website, Site web	http://www.richard-carter.org	
	Contact	(+44)1525405147; richard@richard-carter.org	
	Languages/ Langues	English	Anglais

UNITED STATES OF AMERICA / ÉTATS-UNIS D'AMÉRIQUE			
Drink Local Drink Tap	Product/Service Produit/Service	Providing sustainable, high-quality, community specific WASH systems with long-term monitoring.	Fournir des systèmes WASH durables, de haute qualité, spécifiques à la communauté, avec un suivi à long terme.
	Areas served Zone de service	Uganda	Ouganda
	Website, Site web	https://www.drinklocaldrinktap.org/projects/	
	Contact	(+1) 4404631862/ (+256) 790517389; info@drinklocaldrinktap.org	
	Languages/ Langues	English, Luganda, Lusoga, and other local Ugandan dialects.	Anglais, luganda, lusoga et autres dialectes ougandais locaux.
Ed Bourque, WASH Consultant	Product/Service Produit/Service	Independent WASH consultant with experience with UNICEF, USAID, the World Bank, and numerous NGOs.	Consultant WASH indépendant ayant de l'expérience avec l'UNICEF, l'USAID, la Banque mondiale et de nombreuses ONG
	Areas served Zone de service	USA, Africa	Etats-unis, Afrique
	Website, Site web	www.edbourqueconsulting.com	
	Contact	(+ 1)-617-697-9109; edward.bourque@gmail.com	
	Languages/ Langues	English and French.	Anglais et français.

UNITED STATES OF AMERICA / ÉTATS-UNIS D'AMÉRIQUE			
FLUSH	Product/Service Produit/Service	FLUSH improves management systems via business support, data diagnostics, & knowledge management.	FLUSH améliore les systèmes de gestion par le soutien aux entreprises, le diagnostic des données et la gestion des connaissances.
	Areas served Zone de service	USA, South Asia, Southeast Asia, East Africa, West Africa	États-Unis, Asie du Sud, Asie du Sud-Est, Afrique de l'Est, Afrique de l'Ouest
	Website, Site web	www.flushwash.org	
	Contact	(+1)9179350749	
	Languages/ Langues	English and French.	Anglais et français.
Global Water Center	Product/Service Produit/Service	Global Water Center provides training, equipping, and support services for WASH Implementers.	Le Centre mondial de l'eau offre des services de formation, d'équipement et de soutien aux responsables de la mise en œuvre de programmes WASH.
	Areas served Zone de service	Global	Global
	Website, Site web	https://globalwatercenter.org/	
	Contact	(+1) 843 769 7395; smcswain@watermission.org	
	Languages/ Langues	English	Anglais
Hillaria International	Product/Service Produit/Service	Public health engineering/ Water security/ WASH Programming and Evaluation/ Storytelling	Ingénierie de la santé publique / Sécurité de l'eau / Programmation et évaluation WASH / Mise en récit
	Areas served Zone de service	Afghanistan, Cambodia, Colombia, Democratic Republic of Congo, Ethiopia, Gaza, Ghana, Haiti, India, Indonesia, Jamaica, Jordan, Kenya, Kyrgyzstan, Lebanon, Malawi, Mongolia, Nepal, Nicaragua, Senegal, Tanzania, Thailand, Timor-Leste, Vietnam, Zambia	Afghanistan, Cambodge, Colombie, République démocratique du Congo, Éthiopie, Gaza, Ghana, Haïti, Inde, Indonésie, Jamaïque, Jordanie, Kenya, Kirghizstan, Liban, Malawi, Mongolie, Népal, Nicaragua, Sénégal, Tanzanie, Thaïlande, Timor-Leste, Vietnam, Zambie
	Website, Site web	www.hillaria.online	
	Contact	(+1) 202 549 0064; chris@hillaria.net	
	Languages/ Langues	English and Italian	Anglais et italien
The Aquaya Institute	Product/Service Produit/Service	We answer your hardest water and sanitation questions. We translate knowledge into data into action.	Nous répondons à vos questions les plus difficiles sur l'eau et l'assainissement. Nous traduisons les connaissances en données et en actions.
	Areas served Zone de service	Globally, with a focus on the African continent	Au niveau mondial, avec un accent sur le continent africain
	Website, Site web	https://www.aquaya.org/	
	Contact	(+254) 701 178 714; vanessa@aquaya.org	
	Languages/ Langues	English, French, Swahili, German.	Anglais, français, swahili, allemand.

UNITED STATES OF AMERICA / ÉTATS-UNIS D'AMÉRIQUE			
Well Beyond	Product/Service Produit/Service	Our software is improving clients' water system sustainability, WASH training and impact reporting.	Notre logiciel améliore la durabilité des systèmes d'eau des clients, les formations WASH et les rapports d'impact.
	Areas served Zone de service	Africa, India, South America, or any rural community where this tool could be applicable.	Afrique, Inde, Amérique du Sud, ou toute communauté rurale où cet outil pourrait être applicable.
	Website, Site web	https://www.wellbeyondwater.com/	
	Contact	(+1) 512 431 1679; kathryn@wellbeyondwater.com	
	Languages/ Langues	English	Anglais

ZAMBIA / ZAMBIE			
Jacana SMART Centre	Product/Service Produit/Service	Training; VES, SHIPO & Mzuzu drill, Tube recharge, Rope & EMAS & Solar pumps, Water filters, Beekeeping.	Formation; VES, SHIPO et Mzuzu drill, recharge de tube, corde et EMAS et pompes solaires, filtres à eau, apiculture.
	Areas served Zone de service	Chipata, Lundazi, Zambia	Chipata, Lundazi, Zambie
	Website, Site web	www.smartcentrezambia.com	
	Contact	(+34) 676 03 62 46; rik.haanen@jacana.help	
	Languages/ Langues	English	Anglais

LISTING BY CATEGORY

Listed alphabetically Listed alphabetically. Liste par ordre alphabétique.

CONSULTING, RESEARCH AND TRAINING/ CONSEIL, RECHERCHE ET FORMATION			
The Aquaya Institute	Product/Service Produit/Service	We answer your hardest water and sanitation questions. We translate knowledge into data into action.	Nous répondons à vos questions les plus difficiles sur l'eau et l'assainissement. Nous traduisons les connaissances en données et en actions.
	Areas served Zone de service	Globally, with a focus on the African continent	Au niveau mondial, avec un accent sur le continent africain
	Website, Site web	https://www.aquaya.org/	
	Contact	(+254) 701 178 714; vanessa@aquaya.org	
	Languages/ Langues	English, French, Swahili, German.	Anglais, français, swahili, allemand.
Arabian Water and Environmental Consultancy	Product/Service Produit/Service	Water and wastewater consultancy	Conseil en matière d'eau et d'eaux usées
	Areas served Zone de service	Middle East & North Africa (MENA)	Moyen-Orient et Afrique du Nord
	Website, Site web	-	
	Contact	(+966)507839349; acegulf@gmail.com	
	Languages Langues	English	Anglais
Cambodian Institute for Urban Studies	Product/Service Produit/Service	CIUS is a leading development research institute with expertise in rural water supply and M&E.	Le CIUS est un institut de recherche en développement de premier plan, spécialisé dans l'approvisionnement en eau des zones rurales et dans le suivi et l'évaluation.
	Areas served Zone de service	Cambodia, and South East Asia	Cambodge, et Asie du Sud-Est
	Website, Site web	https://www.facebook.com/Cambodian-Institute-for-Urban-Studies-1469309149992573	
	Contact	(+855)-23-6711-099; cambodian.cius@gmail.com	
	Languages/ Langues	English and Khmer.	Anglais et khmer.
Centre d'étude et réalisation en environnement, eau et assainissement	Product/Service Produit/Service	Water, sanitation, environmental education	Eau, assainissement, éducation à l'environnement
	Areas served Zone de service	Cameroon	Cameroun
	Website, Site web	-	
	Contact	(+237) 6 75 35 53 22; gervaismomo42@yahoo.com	
	Languages/ Langues	English and French.	Anglais et français.

CONSULTING, RESEARCH AND TRAINING/ CONSEIL, RECHERCHE ET FORMATION			
Ed Bourque, WASH Consultant	Product/Service Produit/Service	Independent WASH consultant with experience with UNICEF, USAID, the World Bank, and numerous NGOs.	Consultant WASH indépendant ayant une expérience avec l'UNICEF, l'USAID, la Banque mondiale et de nombreuses ONG
	Areas served Zone de service	USA, Africa	Etats-unis, Afrique
	Website, Site web	www.edbourqueconsulting.com	
	Contact	(+ 1)-617-697-9109; edward.bourque@gmail.com	
	Languages/ Langues	English and French.	Anglais et français.
FLUSH	Product/Service Produit/Service	FLUSH improves management systems via business support, data diagnostics, & knowledge management.	FLUSH améliore les systèmes de gestion par le soutien aux entreprises, le diagnostic des données et la gestion des connaissances.
	Areas served Zone de service	USA, South Asia, Southeast Asia, East Africa, West Africa	États-Unis, Asie du Sud, Asie du Sud-Est, Afrique de l'Est, Afrique de l'Ouest
	Website, Site web	www.flushwash.org	
	Contact	(+1)9179350749	
	Languages/ Langues	English and French.	Anglais et français.
Global Water Center	Product/Service Produit/Service	Global Water Center provides training, equipping, and support services for WASH Implementers.	Le Centre mondial de l'eau offre des services de formation, d'équipement et de soutien aux responsables de la mise en œuvre du programme WASH.
	Areas served Zone de service	Global	Global
	Website, Site web	https://globalwatercenter.org/	
	Contact	(+1) 843 769 7395; smcswain@watermission.org	
	Languages/ Langues	English	Anglais
Hillaria International	Product/Service Produit/Service	Public health engineering/ Water security/ WASH Programming and Evaluation/ Storytelling	Ingénierie de la santé publique / Sécurité de l'eau / Programmation et évaluation WASH / Mise en récit
	Areas served Zone de service	Afghanistan, Cambodia, Colombia, Democratic Republic of Congo, Ethiopia, Gaza, Ghana, Haiti, India, Indonesia, Jamaica, Jordan, Kenya, Kyrgyzstan, Lebanon, Malawi, Mongolia, Nepal, Nicaragua, Senegal, Tanzania, Thailand, Timor-Leste, Vietnam, Zambia	Afghanistan, Cambodge, Colombie, République démocratique du Congo, Éthiopie, Gaza, Ghana, Haïti, Inde, Indonésie, Jamaïque, Jordanie, Kenya, Kirghizstan, Liban, Malawi, Mongolie, Népal, Nicaragua, Sénégal, Tanzanie, Thaïlande, Timor-Leste, Vietnam, Zambie
	Website, Site web	www.hillaria.online	
	Contact	(+1) 202 549 0064; chris@hillaria.net	
	Languages/ Langues	English and Italian	Anglais et italien

CONSULTING, RESEARCH AND TRAINING/ CONSEIL, RECHERCHE ET FORMATION			
Mzuzu University, Centre of Excellence in Water and Sanitation	Product/Service Produit/Service	The Centre participates in research, water quality and fecal sludge analysis and outreach programs.	Le Centre participe à des programmes de recherche, d'analyse de la qualité de l'eau et des boues fécales et de sensibilisation.
	Areas served Zone de service	Malawi, Africa	Malawi, Afrique
	Website, Site web	http://www.mzuniwatsan.com	
	Contact	rochelle@rochelleholm.com	
	Languages/ Langues	English	Anglais
Practica Foundation	Product/Service Produit/Service	We develop asset management tools, low cost payment systems and optimized piped water supply systems	Nous développons des outils de gestion des actifs, des systèmes de paiement à faible coût et des systèmes optimisés d'approvisionnement en eau par canalisation
	Areas served Zone de service	Africa and Asia (based in the Netherlands and in Madagascar)	Afrique et Asie (basé aux Pays-Bas et à Madagascar)
	Website, Site web	https://www.practica.org/	
	Contact	(+31) 786 150 125; info@practica.org	
	Languages/ Langues	English and French	Anglais et français.
Richard Carter and Associates Ltd	Product/Service Produit/Service	Consultancy in water resources, water supply, sanitation and hygiene	Conseil en matière de ressources en eau, d'approvisionnement en eau, d'assainissement et d'hygiène
	Areas served Zone de service	Sub-Saharan Africa	Afrique subsaharienne
	Website, Site web	http://www.richard-carter.org	
	Contact	(+44)1525405147; richard@richard-carter.org	
	Languages/ Langues	English	Anglais
R.J. Burnside International Limited (Canada)	Product/Service Produit/Service	Engineering/environmental consulting services: water supply, wastewater. Formed in 1970. 360 staff.	Services d'ingénierie/conseil en environnement : approvisionnement en eau, eaux usées. Créé en 1970. 360 personnes.
	Areas served Zone de service	Sub-Saharan Africa; The Caribbean; Latin America	Afrique subsaharienne ; Caraïbes ; Amérique latine
	Website, Site web	www.rjburnside.com	
	Contact	(+1)519-941-5331; norman.looker@rjburnside.com;	
	Languages/ Langues	English, Spanish and Portuguese.	Anglais, espagnol et portugais.
SMART Centre Group	Product/Service Produit/Service	Training the local private sector in Simple, Market-based, Affordable, Repairable WASH technologies	Formation du secteur privé local à des technologies WASH simples, basées sur le marché, abordables et réparables.
	Areas served	Tanzania, Malawi, Zambia, Mozambique, Ethiopia, South Sudan, Niger, Nicaragua and	Tanzanie, Malawi, Zambie, Mozambique, Éthiopie, Soudan du Sud, Niger, Nicaragua et à partir du

CONSULTING, RESEARCH AND TRAINING/ CONSEIL, RECHERCHE ET FORMATION			
	Zone de service	starting in Kenya and Ghana	Kenya et du Ghana
	Website, Site web	www.smartcentregroup.com	
	Contact	(+31)642559870; henkholtslag49@gmail.com	
	Languages/ Langues	English and Spanish	Anglais et espagnol.
Skat Consulting Ltd.	Product/Service Produit/Service	International development consultancy and project management.	Conseil en développement international et gestion de projets.
	Areas served Zone de service	Global	Global
	Website, Site web	https://skat.ch/	
	Contact	(+41) 71 228 54 54; info@skat.ch	
	Languages/ Langues	English, French, German, Spanish	Anglais, français, allemand, espagnol
Skat Foundation	Product/Service Produit/Service	Knowledge management, networking and capacity development for development cooperation	Gestion des connaissances, mise en réseau et développement des capacités pour la coopération au développement
	Areas served Zone de service	Global	Global
	Website, Site web	https://skat-foundation.ch/	
	Contact	(+41) 71 227 07 98 foundation@skat.ch	
	Languages/ Langues	English, French, German, Spanish	Anglais, français, allemand, espagnol
WASH Worldwide Consult	Product/Service Produit/Service	WCW is a development consultancy committed to providing cutting edge solutions in WASH issues	WCW est un cabinet de conseil en développement qui s'engage à fournir des solutions de pointe en matière de WASH
	Areas served Zone de service	Global	Global
	Contact	(+233)208551938; bessiyawa@gmail.com	
	Languages/ Langues	English and French	Anglais et français.
Well Beyond	Product/Service Produit/Service	Our software is improving clients' water system sustainability, WASH training and impact reporting.	Notre logiciel améliore la durabilité des systèmes d'eau des clients, la formation WASH et les rapports d'impact.
	Areas served Zone de service	Africa, India, South America, or any rural community where this tool could be applicable.	Afrique, Inde, Amérique du Sud, ou toute communauté rurale où cet outil pourrait être applicable.
	Website, Site web	https://www.wellbeyondwater.com/	
	Contact	(+1) 512 431 1679; kathryn@wellbeyondwater.com	
	Languages/ Langues	English	Anglais

HARDWARE, PRODUCTS/ MATÉRIEL, PRODUITS			
Maji Milele Limited	Product/Service Produit/Service	Supply and installation of prepaid water meters solutions	Fourniture et installation de solutions de compteurs d'eau prépayés
	Areas served Zone de service	Kenya; Uganda; Sudan; Rwanda	Kenya ; Ouganda ; Soudan ; Rwanda
	Website, Site web	www.water-forever.com	
	Contact	(+254)708386994; marcer@water-forever.com	
	Languages/ Langues	English and Swahili	Anglais et swahili
Nazava Water Filters	Product/Service Produit/Service	Nazava Water Filter are point of use household water filters that purify well, tap or rain water.	Les filtres à eau Nazava sont des filtres à eau domestiques s'utilisant au point de consommation qui purifient l'eau de puits, du robinet ou de pluie.
	Areas served Zone de service	Indonesia; Ethiopia; Kenya; Mozambique; Burkina Faso; India	Indonésie ; Éthiopie ; Kenya ; Mozambique ; Burkina Faso ; Inde
	Website, Site web	https://www.nazava.com/en/	
	Contact	(+62)81360862522; Lisa@nazava.com	
	Languages/ Langues	English, French, Spanish and Portuguese.	Anglais, français, espagnol et portugais.
Practica Foundation	Product/Service Produit/Service	We develop asset management tools, low cost payment systems and optimized piped water supply systems	Nous développons des outils de gestion des actifs, des systèmes de paiement à faible coût et des systèmes optimisés d'approvisionnement en eau par canalisation
	Areas served Zone de service	Africa and Asia (based in the Netherlands and in Madagascar)	Afrique et Asie (basé aux Pays-Bas et à Madagascar)
	Website, Site web	https://www.practica.org/	
	Contact	(+31) 786 150 125; info@practica.org	
	Languages/ Langues	English and French	Anglais et français.
Sotrad Water - Pump&Drink	Product/Service Produit/Service	A state-of-the-art solar drinking water production and storage unit for remote populations	Unité solaire de production et de stockage d'eau potable pour les populations isolées
	Areas served Zone de service	Worldwide	Dans le monde entier
	Website, Site web	https://www.sotradwater.be/en-gb/pump-drink-solaire	
	Contact	+32 67 21 44 64; bt@sotradwater.be	
	Languages/ Langues	English and French.	Anglais et français.

HARDWARE, PRODUCTS/ MATÉRIEL, PRODUITS			
ZM BOMBAS	Product/Service Produit/Service	Water wheel pump manufacturer to pump water from 12 Km and up to 300 meters height, using water force	Un fabricant de pompes à roue hydraulique pour pomper de l'eau à partir de 12 km et jusqu'à 300 mètres de hauteur, en utilisant la force de l'eau
	Areas served Zone de service	Africa; America and Caribbean; North and Central America.	Afrique ; Amérique et Caraïbes ; Amérique du Nord et centrale.
	Website, Site web	http://zmbombas.com/	
	Contact	(+44) 3028-0200; vendas@zmbombas.com.br	
	Languages/ Langues	English and Portuguese.	Anglais et portugais.

SERVICES, GENERAL IMPLEMENTATION/ SERVICES, MISE EN ŒUVRE GÉNÉRALE			
Drink Local Drink Tap	Product/Service Produit/Service	Providing sustainable, high-quality, community specific WASH systems with long-term monitoring.	Fournir des systèmes WASH durables, de haute qualité, spécifiques à la communauté, avec un suivi à long terme.
	Areas served Zone de service	Uganda	Ouganda
	Website, Site web	https://www.drinklocaldrinktap.org/projects/	
	Contact	(+1) 4404631862/ (+256) 790517389; info@drinklocaldrinktap.org	
	Languages/ Langues	English, Luganda, Lusoga, and other local Ugandan dialects.	Anglais, luganda, lusoga et autres dialectes ougandais locaux.
FLUSH	Product/Service Produit/Service	FLUSH improves management systems via business support, data diagnostics & knowledge management.	FLUSH améliore les systèmes de gestion par le soutien aux entreprises, le diagnostic des données et la gestion des connaissances.
	Areas served Zone de service	USA, South Asia, Southeast Asia, East Africa, West Africa	États-Unis, Asie du Sud, Asie du Sud-Est, Afrique de l'Est, Afrique de l'Ouest
	Website, Site web	www.flushwash.org	
	Contact	(+1)9179350749	
	Languages/ Langues	English and French.	Anglais et français.
Maji Milele Limited	Product/Service Produit/Service	Supply and installation of prepaid water meters solutions	Fourniture et installation de solutions de compteurs d'eau prépayés
	Areas served Zone de service	Kenya; Uganda; Sudan; Rwanda	Kenya ; Ouganda ; Soudan ; Rwanda
	Website, Site web	www.water-forever.com	
	Contact	(+254)708386994; marcer@water-forever.com	
	Languages/ Langues	English and Swahili	Anglais et swahili

SERVICES, GENERAL IMPLEMENTATION/ SERVICES, MISE EN ŒUVRE GÉNÉRALE			
Well Beyond	Product/Service Produit/Service	Our software is improving clients' water system sustainability, WASH training and impact reporting.	Notre logiciel améliore la durabilité des systèmes d'eau des clients, la formation WASH et les rapports d'impact.
	Areas served Zone de service	Africa, India, South America, or any rural community where this tool could be applicable.	Afrique, Inde, Amérique du Sud, ou toute communauté rurale où cet outil pourrait être applicable.
	Website, Site web	https://www.wellbeyondwater.com/	
	Contact	(+1) 512 431 1679; kathryn@wellbeyondwater.com	
	Languages/ Langues	English	Anglais

09 REFERENCES & FURTHER INFORMATION

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1.1 These terms and conditions apply to all persons and/or entities who have submitted an entry for this document. By submitting, or advertising on our site, you agree to the following terms and conditions and that these prevail over any other terms and conditions.

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4.2.2 you are in our opinion transmitting or otherwise connected with any 'spam' or any other form of unsolicited bulk email or communication;

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IMPRESSUM

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St. Gallen 9001
Switzerland

skatfoundation

Second Edition.

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- *Compiled by Philip T. Deal, Water4*
- *Editing, design and additional content by Sean Furey, RWSN Secretariat/Skat Foundation*
- *Cover Alice Chautard ©2021*
- *Handpump functionality statistics compiled, analysed and presented by Dr Tim Foster, University of Technology Sydney (UTS) (2019)*

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The Rural Water Supply Network (RWSN) is a global network of rural water supply professionals and organisations committed to improving their knowledge, competence and professionalism, to fulfil RWSN's vision of sustainable rural water services for all. Both individuals and organisations participate in the network. The Secretariat is hosted by Skat Foundation. RWSN is governed by an Executive Steering Committee with representatives from SDC, UNICEF, African Development Bank, IRC, WaterAid, World Bank and Skat Foundation.

RWSN's vision is of a world in which all rural people have access to sustainable and reliable water supplies which can be effectively managed to provide sufficient, affordable and safe water within a reasonable distance of the home.

Membership is free and open to all: https://www.rural-water-supply.net/en/about/joining

Keeping RWSN networking and knowledge services free to frontline rural water and WASH practitioners is possible thanks to the long-term support of the Government of Switzerland.

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Swiss Agency for Development and Cooperation SDC

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10 GLOSSARY & KEY

CWSA	Community Water Supply Association
DWO	Drinking Water Organisation
LCCA	Life Cycle Costing Approach
RWSSP	Rural Water Supply and Sanitation Programme
RWSN	Rural Water Supply Network
SDC	Swiss Agency for Development and Cooperation (also known as DEZA, DDC, COSUDE)
SDG	Sustainable Development Goal
SISAR	A regional rural water service provider in Brazil
SMART	Simple, Market-based, Affordable, Repairable Technologies
UNICEF	United Nations Children's' Fund
USAID	United States Agency for International Development
UPGro	Unlocking the Potential of Groundwater for the Poor (UK-funded research programme)
USD	United States Dollar
WASH	Water, Sanitation and Hygiene
WHO	World Health Organisation

Label	Meaning
Name of project or organisation	Either the name of the management model or the organisation who runs or has designed it.
Name(s) of funding/backing organisations	Any major backers.
Country/Countries of operation	Locations where the service is being run
Type of Service Provision	See back cover
Type of Management Model	See back cover
Context Description	A thumbnail sketch of where the service is being used.
Water Service Description	A short description of the service model.

Label	Meaning
Life Cycle Costs[29]	A breakdown of the major costs that need to be covered for a service to be sustainable.
CapEx	Capital expenditure – hardware and software
OpEx	Operating and minor maintenance expenditure
CapManEx	Capital maintenance expenditure: replacement / upgrade of CapEx assets
CoC	Cost of Capital: for example interest on loans.
ExpDS	Expenditure on direct support
ExpIDS	Expenditure on indirect support

Label	Meaning
Tariffs	Typical tariffs that water user pays (in local currency and US dollars)
Tariff Collection and fund management system	Description of how money is collected and managed.
Social inclusion policies	How the service addresses affordability and universal access.

[29] www.ircwash.org/sites/default/files/briefing_note_1a_-_life-cycle_cost_approach.pdf

KEY TO SYMBOLS

Type of Service Provision

Self-supply: households invest in improving their own water supplies (e.g. domestic wells, rainwater harvesting)

Domestic service or programme: the provision of water supplies or services by a locally-driven company or programme.

International humanitarian intervention: the provision of water supplies or services by an internationally-driven humanitarian response or programme.

International development cooperation project: the provision of water supplies or services through the cooperation of international and national entities.

PPP

Public-Private Partnership: a formal agreement between a public entity and a private-sector company that can be used to finance, build, and operate water supply.

Institutional Support: the provision of water supply support systems rather than the services themselves (e.g. training, supply chains, or financing mechanisms).

Pilot/Research project: a small scale water supply or service programme for the purpose of research or to provide a 'proof of concept'.

Type of Management Model

CBM-1 — Community Based Management – with minimal support.

CBM-2 — Community Based Management with external support.

CBM-3 — Community Management with delegation to private operators.

CBM-4 — Grouping of community managed organisations into large association.

LG-1 — Direct management by local government.

LG-2 — Local government with delegation to community operators.

LG-3 — Local government with delegation to private operators.

PB-1 — Public water utility.

PV-1 — Ministry or asset holding entity delegates service provision to private company.

PV-2 — Privately owned and operated scheme.

NGO-1 — International NGO / UN Organisation.

NGO-2 — National / Local NGO.

NGO-3 — Faith-based Organisation.

other — Other.