



WORKING GROUP ON BLENDED FINANCE FOR WATER
INFRASTRUCTURE MAINTENANCE AND FECAL SLUDGE MANAGEMENT

OUTCOME DOCUMENT

JANUARY 2021



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CITATION

Please cite this document as: Convergence ©, 2021 Working Group on Blended Finance for Water Infrastructure Maintenance and Fecal Sludge Management – Outcome Document. Toronto, Canada.

ACKNOWLEDGEMENTS

This Outcome Document was commissioned by the Swedish International Development Cooperation Agency (Sida). Convergence and Sida co-led the Working Group, and Convergence (principal author: Regina Rossmann) drafted the Outcome Document based on inputs from Working Group members. The Working Group brought together over 50 representatives from social enterprises, implementing agencies, Non-Governmental Organizations, donor agencies, development banks, financial intermediaries, and impact investors. Appendix I lists all participating organizations and individuals.



SWEDISH INTERNATIONAL
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DISCLAIMER

This is a working paper and all data and information provided is for informational purposes only. Analytical information is referred to as much as practical, and all sources of information are cited. Further, this working paper focuses on a sub-set of the broadest definition of blended finance, specifically commercial capital mobilization for investment in projects / businesses through the use of concessional public / philanthropic capital. The findings and views expressed in this report are those of Convergence, based on consultations with the members of this Working Group, and do not necessarily reflect the views of Sida, or any of the individuals or organizations which form part of, or are affiliated with, this Working Group or the initiatives mentioned, nor have they been formally endorsed by them. Information in this working paper should not be considered as a recommendation or advice to investors or potential investors.

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ABOUT CONVERGENCE

Convergence is the global network for blended finance. Convergence generates blended finance data, intelligence, and deal flow to increase private sector investment in developing countries and sustainable development. Convergence works to make the SDGs investable through transaction and market building activities:

- **A Global Network:** We have a global membership of over 200 public, private, and philanthropic organizations, many of them represented in this Working Group.
- **Data & Intelligence:** We curate and produce original content that builds the evidence base for blended finance and supports practitioners in their efforts to execute blended transactions.
- **Deal Flow:** We have built an online matchmaking platform for investors and those seeking capital to connect. All deals are screened by our team to ensure that they fit within our mandate.
- **Market Acceleration:** Our Design Funding program offers grants for the design of innovative blended finance vehicles that aim to attract private capital at scale. In 2020, Convergence is also supporting the UN Joint SDG Fund in operationalizing the Call on SDG Financing Component 2: Catalyzing Strategic Investments. So far, USD 4 million in grant funding has been awarded to UN country teams designing investable solutions to finance the SDGs.

Convergence focuses exclusively on blended finance to catalyze private investment. Other important stakeholders and initiatives, such as the DFI Working Group on Blended Concessional Finance for Private Sector Projects (DFI Working Group), focus on a broader scope of blended finance that includes the use of development funding to mobilize commercially oriented public capital (e.g., capital from MDBs and DFIs). Convergence works closely with the OECD, the DFI Working Group, and other key stakeholders to coordinate blended finance activity.

LIST OF ABBREVIATIONS

ADB	Asian Development Bank
CAR	Central African Republic
CEPT	Centre for Environmental Planning and Technology, Ahmedabad, India
CO ₂	Carbon Dioxide
CSR	Corporate Social Responsibility
DFC	United States International Development Finance Corporation
DFID – now FCDO	United Kingdom Department for International Development - now Foreign, Commonwealth and Development Office
DBO	design-build-operate
DBOT	design-build-operate-transfer
IHE Delft	Institute for Water Education in Delft
IWMI	International Water Management Institute
EIB	European Investment Bank
HAM	Hybrid Annuity Model
kWh	kilowatt-hour
KPI	Key Performance Indicator
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
NGO	Non-Governmental Organization
FS	Fecal Sludge
FSM	Fecal Sludge Management
FSSM	Fecal Sludge and Septage Management
FSTP	Fecal Sludge Treatment Plant
OECD	Organisation for Economic Co-operation and Development
PPP	Public Private Partnership
SDG	Sustainable Development Goal
Sida	Swedish International Development Cooperation Agency
SIINC	Social Impact Incentives (SIINC)
SME	Small and medium-sized enterprises
TA	Technical Assistance
UN	United Nations
USAID	United States Agency for International Development
WASH-FIN	Water, Sanitation, and Hygiene Finance
WASH	Water, Sanitation, and Hygiene

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EXECUTIVE SUMMARY

This Working Group examined the potential use of blended finance in (i) Repair and maintenance of water infrastructure in less densely populated areas and (ii) Fecal sludge management. Blended finance is the use of concessional capital from public or philanthropic sources to increase private sector investment in sustainable development.

BLENDED FINANCE FOR WATER INFRASTRUCTURE MAINTENANCE

To mobilize additional funding and financing for water infrastructure maintenance, funders and investors should...

1. **Use design and preparation-stage grants to support data collection and harmonization of performance metrics.** Potential funders need performance data to assess investable opportunities and analyze the financial and operational viability of business models within that sector.
2. **Use Technical Assistance to develop capacity and de-risk investments.** TA is crucial to (i) improve the financial viability of the business/project; (ii) support financial modelling and loan applications; (iii) standardize credit assessments of borrowers.
3. **Deploy flexible debt to account for seasonal variations in operations.** Revenue-based loans, where repayments are linked to a revenues rather than determined by a fixed rate, are one viable approach.

Results-based financing models (e.g. Turkana Water Outcomes Finance Facility, UPTIME Catalyst Facility) hold potential to mobilize additional funding. Pooled vehicles - whether blended debt and/or equity funds, facilities, or bonds - can overcome the ticket size constraint many investors face. Lastly, credit enhancement mechanisms help introduce unfamiliar lenders to the water sector and tap into local capital markets (Examples: InfraCredit Nigeria, Philippines Water Revolving Fund).

BLENDED FINANCE FOR FECAL SLUDGE MANAGEMENT

The Working Group identified the following pathways to scale for businesses and programmatic approaches in the on-site sanitation sector:

1. **Regulate and, where necessary, consolidate the market of FSM service providers.** Formalize operators; merge enterprises; form unions and professional associations. At market level, enlarge boundaries of service districts (Examples: FSM concessions and call centers in Senegal; Hybrid Annuity Model in India).
2. **Integrate various segments of the sanitation chain (emptying, transport, treatment, re-use)** This creates new revenue streams and expands customer bases (Examples: Grupo Alto in Costa Rica; Sanivation and Sanergy in Kenya; SOIL in Haiti).
3. **Combine FSM with solid waste management** - but prepare adequately for marketing, packaging, and standardizing the end-product. Note that none of the emerging resource recovery models are currently independently profitable with resource revenues alone - most rely on transfers from local authorities and donor funding (Example: approach of Dutch NGO WASTE)
4. **Explore waste-to-energy approaches** to generate additional revenues (Example: Safi Sana).
5. **Scale through replication**, for example through franchise set-ups (Examples: Jibu, 1001fontaines).

Blended finance structures can mobilize additional private sector investments in FSM in the following ways:

1. **Grant-funded Technical Assistance** can improve the enabling environment, make FSM providers investor-ready, support project preparation, and familiarize financial institutions with FSM projects/enterprises as a new type of borrower.
2. **Guarantees, concessional debt and equity** can be deployed to finance a portfolio of underlying FSM projects/enterprises through a pooled vehicle. However, precondition is a critical mass of investable

opportunities. To create those, patient capital (from funders and impact investors) will be key, and fund managers need to develop their WASH capacities.

3. **Credit enhancement mechanisms** can incentivize financial institutions to lend to the FSM sector. Loan portfolio guarantees can reduce the financial institution's risk of lending to a new segment of borrowers (Example: USAID WASH-Fin in Senegal).

RECOMMENDATIONS AND CONCLUSIONS

Blended Finance is still a nascent approach for water infrastructure maintenance and fecal sludge management. Currently, there is greater demand for (and hence a greater prevalence of) design and preparation-stage grants, TA, and results-based financing. As business models mature and the enabling environment for water and sanitation services improves, more solutions that make use of guarantees and concessional debt or equity within a blended capital stack will emerge.

For both water infrastructure maintenance and fecal sludge management, the Working Group recommends to...

1. **Use portfolio approaches that bundle a variety of investment opportunities.**
2. **Apply multi-sectoral approaches, where water or sanitation infrastructure projects are bundled together with other services such as energy and transportation.**
3. **Work with crowdfunding marketplaces to mobilize private capital for early stage FSM and infrastructure maintenance businesses.**

Efforts to collect more data on the operational and financial viability of different business models should be stepped up. Transparency around performance data will be just as important as the development of sound financial models, especially if the goal is to eventually take on debt or equity (instead of grant funding).

In other sectors, blended finance is often a bridging solution until business models become fully commercially viable. However, for FSM and water infrastructure maintenance (and many other water and sanitation services), public funding, whether through taxes or transfers, will most likely remain part of the solution. But attracting private capital to investable transactions will allow traditional development aid and government funds to refocus on projects and enterprises that should not or cannot attract private capital.

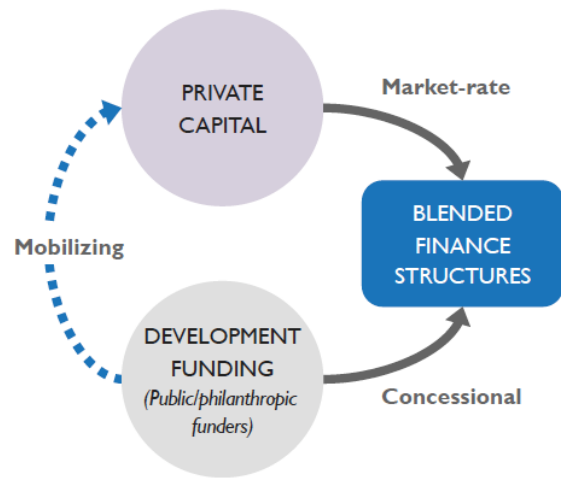
Blended finance solutions promote partnerships between organizations with sector-specific expertise and those with financial expertise. To leverage blended finance effectively, funders and practitioners need to collaborate more closely with private investors who want to set-up vehicles dedicated to WASH.



BACKGROUND

Blended finance is the use of concessional capital from public or philanthropic sources to increase private sector investment in sustainable development. As Figure 1 shows, development funding is deployed on concessional terms, i.e. terms lower than market-rate, in order to mobilize private capital, which is deployed at market-rate. Blended finance solutions can offer attractive risk-return investments to commercial capital providers while also satisfying the impact expectations of development partners. Many blended finance structures exist, such as a funds and facilities that blend concessional debt or equity with commercial capital through a multi-tiered structure; an investment fund that is associated with a grant-funded Technical Assistance (TA) facility; a fund or bond that uses guarantees or insurance as a de-risking mechanism, or results-based financing arrangements (such as development impact bonds) whereby the up-front capital provider gets repaid once the pre-agreed results are achieved.¹ Structured appropriately, blended finance transactions not only increase the funding and financing available for a particular project or enterprise but set an example for replication.

Figure 1: Defining Blended Finance (Source: Convergence)



Although interest from public and private actors has increased, blended finance for water and sanitation still remains nascent.² OECD's data on the amounts mobilized from the private sector by official development finance shows that USD 2.1 billion have been mobilized in the water and sanitation sector from 2012-17.³ This represents a 1.36% share of private finance mobilized into all sectors. Convergence's historical deals database records 28 blended finance transactions for the water and sanitation sector, representing only 5% of over 560 transactions overall.

This Working Group examined the potential use of blended finance in two important segments of sustainable water service delivery and sanitation:

1. **Repair and maintenance of water infrastructure in less densely populated areas.** Rather than looking at large water and sanitation utilities, this segment solely focuses on projects and business cases for repairing water pumps and pipes timely and cost effectively.
2. **Fecal sludge management,** comprising emptying, transport, treatment, and re-use of fecal sludge, with a particular focus on nature-based solutions. It explicitly excludes projects and business models that only concern the user interface and containment of human waste, i.e. latrines/toilets and septic tanks.

Figure 2 depicts the variety of financing and funding options available for water and sanitation projects and enterprises. Because this paper focuses on two segments with high credit risk (or no credit rating at all), the right side of this graph is more relevant than the left side. This Outcome Document aims to describe the right side of

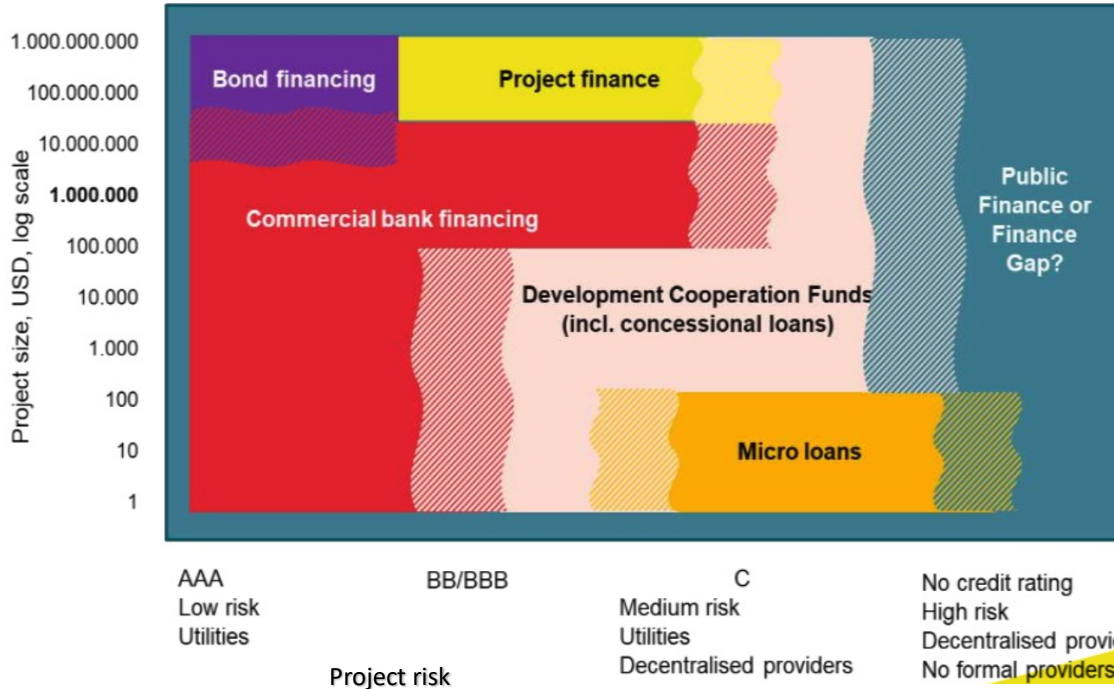
¹ Convergence (2020): Blended Finance Primer <https://www.convergence.finance/blended-finance>

² Convergence (2019) Data Brief: Blended Finance for Water and Sanitation. Available [here](#).

³ OECD (2019) Making Blended Finance work for water and sanitation. Available [here](#).

this graph more clearly (adding other forms of capital that are not depicted here such as impact investments and philanthropic funding) while also explaining what needs to happen to move opportunities upwards and to the left.

Figure 2: A simplified framework for discussing blended finance (Source: Gietema, van Oppenraaj and Fonseca, 2017, for the 2017 International Amsterdam Water Week)



While the context for each sub-group is different, the **underlying hypotheses** towards accelerating the use of blended finance to mobilize additional investment are similar for both segments. Hypotheses 1 and 2 relate to operational improvements intended to generate larger and more predictable cash flows for service providers. Hypotheses 3 and 4 relate to financial structuring options:

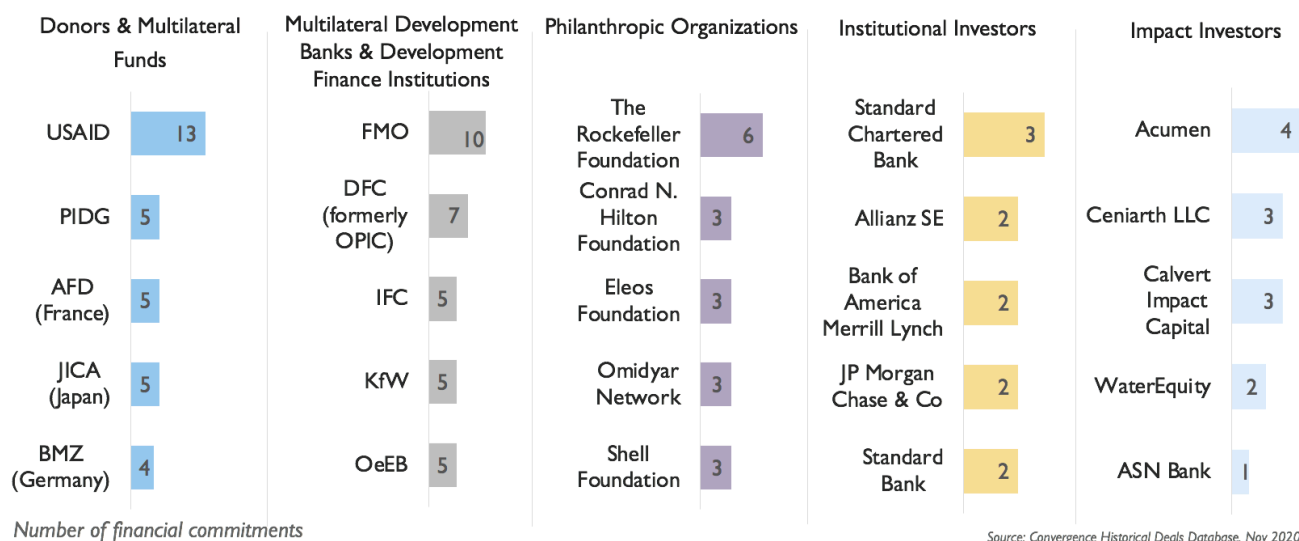
1. Fecal sludge management and water maintenance services can be delivered cost-effectively when **customers in a larger area are pooled together**. This demand aggregation can be done in many ways, including through technology platforms (i.e. call centers, or mobile phone applications) or through performance-based contracts with specific service providers.
2. With sufficient demand, a steady legal and regulatory environment, and a secure mandate (ideally, long-term service contracts), businesses can introduce **fixed operating schedules** with more predictable cash flows.
3. Once the investment size is large enough and the business model allows for regular and secure cash flows, results-based finance, guarantees and other **blended finance instruments can be deployed** to mobilize capital from private investors.⁴
4. **Pooling investments** into several service providers operating in different contexts diversifies the risk for investors.

⁴ Some forms of blended finance (results-based financing in particular) can be deployed even earlier to help investees get to the point of regular and secure cash flows. However, most blended structures provide repayable capital, and thus require cash flows already in place prior to financial close.

Providers of grant funding have different objectives than providers of capital in the form of debt or equity. Donors, philanthropic foundations and governments seek environmental and societal impact. Impact investors seek both societal/environmental impact and financial returns. They typically accept financial returns below what a commercial investor demands and/or financial risks above what a commercial investor will tolerate. On the other end of the scale are commercial investors, some of which are purely looking for financial returns over different time horizons. The allocation of commercial capital is driven by two main considerations – financial risk and rate of return.⁵

Figure 3 lists providers of grant funding, debt and equity to blended finance transactions in the water and sanitation sector at large. The transactions underlying this graph include very few examples for rural water maintenance and FSM. Most of the deals focus on urban large-scale water supply infrastructure (for example, the Kigali Bulk Water Supply Project and Meridiam Infrastructure Africa Fund) as well as microfinance for improved access to water and sanitation (for example, the WaterCredit Investment Fund 3, and the World Bank’s Output-Based Aid Sanitation Microfinance Program).

Figure 3: Investors in blended finance transactions targeting water and sanitation (Source: Convergence 2020)



Before exploring the potential of blended finance, it is important to recognize the **limitations** of blended finance:

Blended finance will not magically close the financing gap for SDG 6. Blended Finance cannot “fix” a business model that does not work. The availability of finance depends on predictable cash flows to repay investors, which in turn is based on the fundamentals of assured revenues, controlled costs, high quality management, good regulatory climate, reasonable national and local governance, etc. Blended finance can shift risks and enhance returns, but it cannot turn an excessively risky and/or a loss-making project/enterprise into an attractive opportunity for commercial finance.⁶

⁵ For a primer on the basics of finance for WASH practitioners, see Louis Boorstin (2018) “A framework for expanding WASH finance” published as OECD – GIZ Conference Perspectives, available [here](#).

⁶ To be sure, a project/ enterprise that is making losses today may have the potential to be a profit-generating one tomorrow, and some capital providers will be willing to take on more risks than others. For further explanation, see Louis Boorstin (2018): “A framework for expanding WASH finance” [here](#) and Joan M. Larrea (2019) “Key ingredient in the blended-finance blend: revenues” available [here](#)

Given that water and sanitation are merit goods, their provision will continue to depend on some extent of public funding.⁷ Water and sanitation are services with significant social benefits (health, environment, economic, gender), thus there are good reasons for government to fund or subsidize these services *where needed*. This is where the challenge lies: to make public funds available for the services and populations in need while at the same time encouraging efficient service delivery to all. In other sectors, blended finance is often a bridging solution - in the end the business models become fully commercially viable, and there is no more need for blending. However, for FSM and water infrastructure maintenance (and many other water and sanitation services), public funding, whether through taxes or transfers, will most likely remain part of the solution.⁸ This is because the basic economics make it hard to provide affordable, accessible services while also meeting the financial expectations of commercial funders. But attracting private capital to investable transactions will allow traditional development aid and government funds to refocus on projects and enterprises that should not or cannot attract private capital.⁹

The local regulatory and institutional enabling environment is absolutely crucial, but blended finance can be deployed while simultaneously strengthening the enabling environment. Perhaps the most important contribution a government can make to the water and sanitation sector is to provide a clear and predictable legal and regulatory structure, including long-term concessions for service providers, as that will increase the ability of those service providers to make their own investments and to access non-government funding sources. Blended fund structures that are associated with a TA facility, a project preparation facility, or other capacity building measures can help build the capacity of local regulators, financial institutions, and businesses, while also deploying capital.¹⁰

The long-term goal has to be progress towards sustainable water and sanitation services for all, as stipulated in Sustainable Development Goal 6. Neither of the following is an impactful use of blended financing: (1) capital expenditure-oriented investment that delivers water or sanitation infrastructure whose functionality is not sustained over time; (2) blended finance that maintains infrastructure functionality effectively over time (for example, via a concession), but where pricing forces a majority of consumers to alternative, unsafe water sources or sanitation disposal practices. These examples point to two fundamental tensions that all service providers must contend with:

- 1) Providing safe, sustainable and affordable water and sanitation services that reach the poor while also maintaining financial viability. Evidentially, it is possible to make money selling water or offering sanitation services to those with sufficient means. The challenge is to provide quality services to people with very limited means across a wide range of locations - and to do so with sustainable funding.
- 2) Providing incentives for service providers that encourage them to reach everybody in their service areas while also continuously increasing the efficiency of their operations.

The following reflects the discussions within the two separate groups on water infrastructure maintenance and FSM, structured by the respective four guiding questions. Thereafter, the recommendations that hold for both groups are summarized.

⁷ Merit goods have two characteristics: (1) their net private benefit to the consumer is not fully recognised at the time of consumption, and (2) their consumption generates an external benefit to others, from which society gains. Because people tend to under-consume merit goods, governments often subsidise them so that consumption does not depend primarily on ability/willingness to pay for them.

⁸ Even in the US and Europe, governments continue to subsidize water and sanitation services.

⁹ World Bank (2017): Easing the Transition to Commercial Finance for Sustainable Water and Sanitation. Available [here](#)

¹⁰ Pories, L., Fonseca, C., Delmon, V. (2019): "Mobilising finance for WASH: Getting the foundations right". Available [here](#)



GROUP I: BLENDED FINANCE FOR WATER INFRASTRUCTURE MAINTENANCE

Reliable and safe water service delivery requires regular maintenance of the water infrastructure. For centralized water supply services, these maintenance services are performed by a mandated service provider such as a water utility, with a dedicated budget for maintenance expenditures. In less densely populated areas, where service provision is decentralized and many people collect their water from unregulated water pumps, maintenance services are commonly under-resourced. However, the cost benefit analysis is simple: maintaining water pumps and pipes regularly is significantly cheaper than constructing new infrastructure from scratch. Expanding the reach of an existing system by connecting more users to the same system (through densification and/or extension) is also more cost-effective than building a new pump or an independent pipe system.

1.1 Which business models and programmatic approaches include (preventive) maintenance? To what extent are they operational and financially viable?

Providing maintenance services to rural and remote populations is not financially viable on its own in many contexts.¹¹ Where such services are provided, the operators are small and often rely on government subsidies and grant funding from donors in addition to the user fees they charge. However, several NGOs and businesses have adopted maintenance models based on performance contracts with a large pool of customers, municipalities, regional, national governments, or a combination of these.¹² Those enterprises offer regular maintenance services for water infrastructure (sometimes preventive, sometimes rapid-response, sometimes both) for a fee that may or may not be fully recovered from user charges. The larger the business area, the greater the economies of scale.

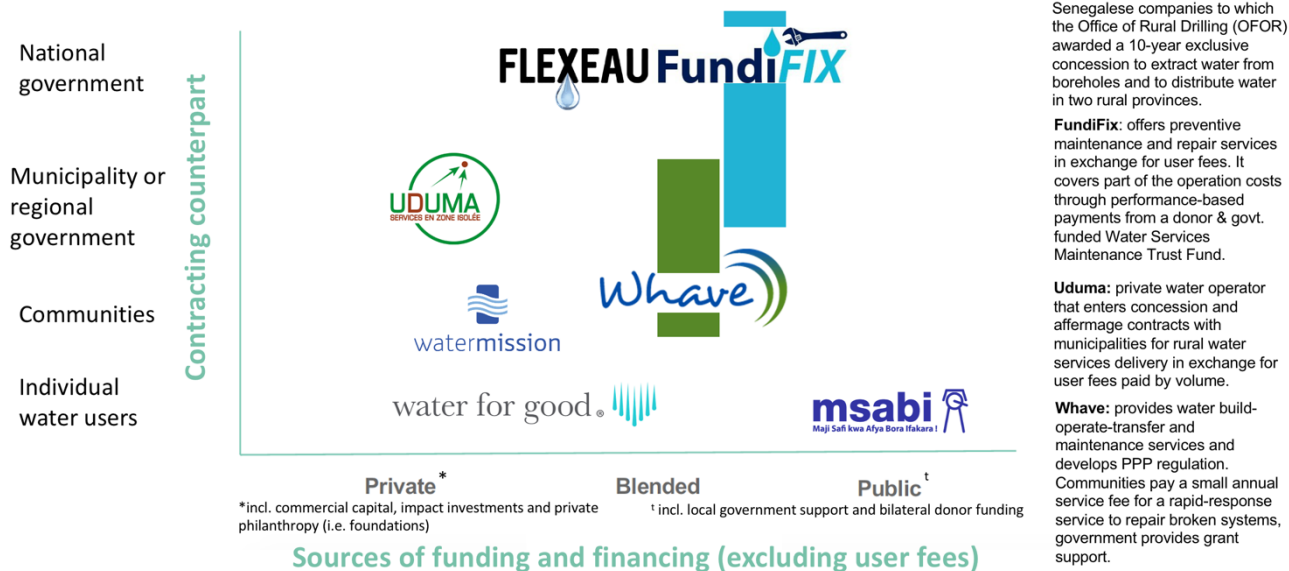
Figure 4 introduces the seven examples described thereafter.¹³ It is important to recognize that most of the models below are currently still very dependent on external donor contributions in the form of grants, whether from development agencies or philanthropy. Further, one service provider often enters into contractual relationships with several entities at once - for example, with the community it provides the services to, and with the county government or a trust fund that provides funding. Therefore, the graph plots the business models closest to their main (not their only) source(s) of revenue, i.e. closest to their most important contract (for FundiFix and Whave, these are two parties, hence the bars). Note that all models presented charge user fees, even if they are plotted higher on the y-axis. Additional examples can be found in appendix 2.

¹¹ McNicholl et al (2019): *Performance-based funding for reliable rural water services in Africa*. Uptime consortium, Working paper 1. Available [here](#)

¹² McNicholl et al (2020). *Results-Based Contracts for Rural Water Services*. Uptime consortium, Working Paper 2. Available [here](#)

¹³ Original graph created by Social Finance, 2019, Presentation during IRC All Systems Go! Symposium. The focus is on low-income countries.

Figure 4: Water infrastructure maintenance business models (Source: Authors)



Msabi Pump for Life: Customers receive proactive maintenance and reactive repair services in exchange for a monthly or annual subscription premium. This subscription-based system for water point maintenance and repair in rural Tanzania is reported to be financially sustainable.

WaterMission: Rural Water Cooperatives either directly manage solar powered piped water systems or provide technical and administrative support for communities to manage the systems. Revenue is generated through pre-paid tariffs and core funding comes from donations to the US-based charitable organization.

Water for good: performs preventive circuit-rider maintenance services across rural water points (hand pumps). It collects private donations from US-based institutions and individuals and collects payments from rural water users.

Example 1¹⁴: FundiFix (Kenya)

Legal structure: Private company with 100% Kenyan ownership and staff

Parent: FundiFix Ltd; Subsidiaries: Miambani Ltd. Kwale Handpump Services Ltd.

FundiFix is a not for profit social enterprise and operates county-based franchises that offer preventive maintenance and repair service for existing rural water infrastructure serving communities, schools, and health facilities. The FundiFix model is guided by an insurance logic to pool financial and operational risks at scale. The model has four components: a) professional services, b) smart monitoring, c) financial sustainability and d) institutional coordination. Incubated in collaboration with the University of Oxford, it has led to the establishment of Water Services Maintenance Trust Funds providing performance-based payments supported through research and financial support by Kenyan companies. Web: www.fundifix.co.ke

Example 2: UDUMA (Burkina Faso, Mali)

Legal structure: Private company, a simplified joint stock company, with national subsidiaries and 100% local staff in each operating country

Parent: Odial Solutions; Sister Company: Vergnet Hydro

UDUMA is a private operator managing concession and so-called *affermage* contracts (see section 1.2 for explanation) officially delegated by municipalities for rural water services delivery in exchange for user fees paid by volume. The UDUMA model sees profitability as a key factor in achieving sustainability, even for isolated and vulnerable populations. Harnessing technology, including flow meters and cashless payment systems, helps revenue collection, improves transparency and efficiency, and reduces operational costs in order to keep affordability for users and decent remuneration for operators. The stated goal is to cover Operational Expenditures and Capital

¹⁴Examples 1 to 5 are part of the [Uptime consortium](#).

Maintenance Expenditures to ensure long-term operations and eventually to target returns to attract private funding for Capital Expenditures. Web: www.uduma.net; www.vergnet-hydro.com

Example 3: Water for Good (Central African Republic)

Legal structure: US-based NGO with cost-recovery service programme

Water for Good employs local technicians to provide preventive circuit-rider maintenance services across a network of over 1700 unique rural water points (hand pumps) in CAR and collects payments from rural water users for the services. The technicians complete electronic reports on-site during each visit, verifying functionality, location, user payment, part usage, and other indicators. Water for Good also has borehole drilling capacity, and has drilled and installed over 775 new water points in CAR. Web: www.waterforgood.org

Example 4: Water Mission (Kenya, Uganda)

Legal Structure: US-based NGO with cost-recovery service programme

Water Mission has supported projects and programs in over 56 countries through emergency response and permanent solar-powered piped water systems. This analysis focuses on operational units called Rural Water Cooperatives in Kenya and Uganda. These cooperatives either directly manage solar powered piped water systems or provide professionalized long-term technical and administrative support for communities managing the systems. Revenue is generated through pre-paid tariffs, with cash handled manually or by prepaid water meters. Performance data are obtained via satellite-based remote monitoring systems. Financial analysis considers the fully-burdened cost of service delivery and support services, both direct and indirect. Web: www.watermission.org

Example 5: Whave Solutions Ltd. (Uganda)

Legal structure: Ugandan private company with a non-profit resolution.

Whave provides water build-operate-transfer and maintenance services and develops practical Public-Private Partnership regulation in rural water supply. Whave's technicians perform regular checks and respond immediately when worn parts threaten a breakdown. Communities pay a small annual service fee, and government provides regulation and support. At the moment, Whave's model is dependent on external donor funds both to establish the preventive maintenance system, and to top up current community payments for recurring expenses.¹⁵ Whave's long-term goal is to cover the recurring service costs with recurrent tariff revenue. Web: www.whave.org

Example 6: Flexeau S.A. (Senegal)

Legal structure: Senegalese private company (S.A.)

The Office of Rural Drilling awarded Flexeau S.A. a 10-year, renewable, exclusive concession to extract water from boreholes and to distribute water in rural areas in the provinces of Kaffrine and Kaolack. The concession includes 271 operational boreholes and an additional 116 boreholes under construction. Under the affermage (lease) structure, Flexeau will switch the aging diesel-fuel pumping equipment at the concession sites to modern solar-powered, remote-controlled equipment. In addition, the Government of Senegal will invest in a water chlorination system on every production site to improve the quality of the water. The move to modern solar powered remote controlled equipment will allow Flexeau to increase profit margins (by removing fuel expenses and improving reliability) while lowering significantly the price of water for rural populations. The project will improve and expand the water distribution system for a portion of a rural population of approximately 1.5 million

¹⁵ University of Colorado Boulder, Whave (Dec 2019): "Sustainable WASH Systems Learning Partnership: Emerging Lessons on Sustaining Rural Water Services in Uganda: A Case Study of Whave's Preventive Maintenance Model" available [here](#)

people in the combined two concession regions, while seeking to reduce the cost of water by 1/3. The introduction of solar pumping will save CO₂ for a 17.5GWh per annum energy production from existing pumping stations (saving 4 million litres of fuel per annum) and avoid CO₂ emissions for 115 new sites. Web: <https://flexeauafrique.com/>

Example 7: MSABI Pump For Life Programme (Tanzania)

Legal Structure: Non-profit organization based in Tanzania

A subscription-based system for water point maintenance and repair in rural Tanzania. Customers receive proactive maintenance and reactive repair services in exchange for a monthly subscription premium of 5 USD. The premium can be paid through mobile phone money transfer services, making it accessible to people in remote areas with no access to conventional banking. A decentralized network of private-sector mechanics, who are situated in hub locations to maximize operational efficiency, maintain and repair the water points. Using a locally available ICT platform, Pump For Life monitors premium payments, the distribution and functionality of water points, spare part usage and water point history. The platform tracks customer satisfaction, service reliability and life-cycle costs, thereby allowing for continuous monitoring of all components of the business model. According to a report from 2016, the premiums paid by water users cover all field costs, including mechanic labour and spare parts. Support costs, including management, mechanic training and startup costs are covered by international donors. The organization predicted however that the initiative could be financially viable through economies of scale. Web: <http://www.msabi.org/>

1.2. What types of performance contract models exist?

While the first section looked at the business models at the individual operator level, this section examines three types of performance-based contracting models that bundle service areas and/or service providers together. Private sector participation contracts are not new to the water sector; other reports have elaborated on different models, including Management/O&M Contracts, Affermage Contracts, Lease Contracts, Design-Build-Operate and Design-Build-Lease contracts.¹⁶ What distinguishes the models below from others is the ambition of scaling and standardizing service delivery, and linking it to payments for results.

Model 1: Senegal's performance-based lease agreements (*affermages*)

With the support of the World Bank, the Government of Senegal has undertaken major reforms of the water supply and sanitation sector in both rural and urban areas. Among these reforms is the implementation of performance-based lease agreements (*affermages*) to private operators.¹⁷ Previously these rural concessions were operated by local non-profit committees (called "ASUFOR"). Under the new *affermages*, ownership of water resources remains with the state but operation and maintenance is handled by private operators. Revenue comes from tariffs and the operator's fee is paid out of revenues. *Affermage* contracts can typically stretch over a ten-year period, during which the operators must maintain the infrastructure and are obliged to invest in the renewal of equipment and assets with a lifespan cycle shorter than the contract period. Flexeau S.A., introduced in the previous section, was one of the operators that received a 10-year, renewable, exclusive concession to serve two rural provinces. According to the World Bank, the project demonstrated that the private sector was ready to

¹⁶ See World Bank Toolkit: Structuring Private-Sector Participation (PSP) Contracts for Small Scale Water Projects. Available [here](#).

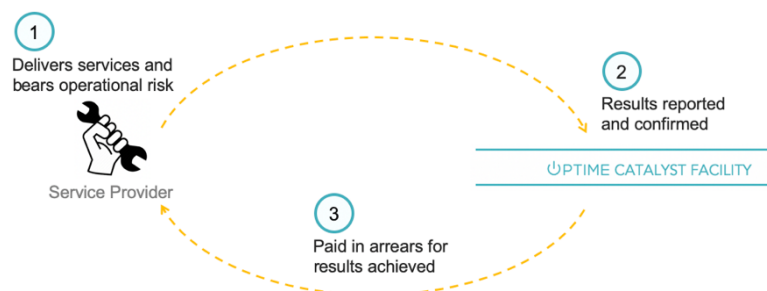
¹⁷ See World Bank Project Appraisal for Senegal Rural Water and Sanitation Project. Available [here](#).

engage in rural areas. Moving forward, two follow-up projects in the urban and rural areas are currently being implemented, including the bidding for new affermage contracts.¹⁸

Model 2: UPTIME results-based funding mechanism

UPTIME, a consortium of five service providers and the University of Oxford, are designing a multi-country funding model for reliable water service delivery using results-based contracts (see Figure 5). The model is designed to optimize the use of concessionary funding (whether from development agencies, philanthropy, or corporate social responsibility) for sustainable water service delivery. Experiences with the Kenya Water

Figure 5: Conceptual illustration of Uptime Catalyst Facility (Source: UPTIME, 2021)



Services Maintenance Trust Fund informed its design.¹⁹ The model builds on three performance metrics²⁰:

1. **Reliable waterpoints** – The number of waterpoints with operational rates satisfying the need for daily water access, measured by uptime as a metric of the % days a waterpoint is operating when needed.
2. **Water volume** – Independent, objective and verifiable measure of the volume of water provided using meters or sensors.
3. **Local revenue** – Payment from waterpoint users as a measure of financial performance and perceived user value.

These metrics can be used to calculate funding for service providers after they have delivered verifiable results. Modelling this approach against 2019 performance data suggests that a common contract design can work across different countries, contexts and service types.

Uptime has launched an independent Uptime Catalyst Facility as a Charitable Incorporated Organisation in the UK to pilot this contract design. This facility will test the results-based model while funding water services for an estimated 1 million people and capturing standardized performance data on rural services. Initial pilot countries include Kenya, Uganda, Burkina Faso and the Central African Republic. The pilot will also test how potential transparent performance data might unlock new sources of funding at scale with a goal of funding services for 100 million rural people by 2030.

Model 3: Turkana Water Outcomes Finance Facility

This outcomes-based funding framework incentivises improved water access outcomes for vulnerable populations in northern Kenya.²¹ It is currently being set up by Social Finance, Oxfam and the Turkana County Government. Donors’ funds in. the Facility will repay Turkana County when – and only when – there are reliable and sustained water services that people are prepared to pay for. The ambition is to establish the viability of the model in Turkana, and then replicate it in other locations with poor water access.

¹⁸ Benin provides another example for a PPP model that uses affermage contracts for rural water services. See World Bank & IFC (2015): Benin – Innovative public private partnerships for rural water sustainability – A Case Study. Available [here](#).

¹⁹ See UNICEF, University of Oxford (2016): “The FundiFix Model: Maintaining rural water services” available [here](#).

²⁰ McNicholl et al (2020): Results-Based Contracts for Rural Water Services. Uptime consortium, Working Paper 2. Available [here](#).

²¹ See <https://www.socialfinance.org.uk/resources/publications/outcomes-based-approach-addressing-human-impact-climate-change-kenya>

Performance metrics, to be measured over a two-year period, are centered on **infrastructure reliability**:

1. Total uptime of a water point (measured as total time that infrastructure is functional, as a percentage of the total time possible) is greater than or equal to 95%;
2. Days required to repair a break down are less or equal to 3; and
3. Systems deliver at least a minimum quantity of water, measured as a proportion of the water system’s technical capacity (e.g. 80%+ of the system’s nameplate capacity at all times).

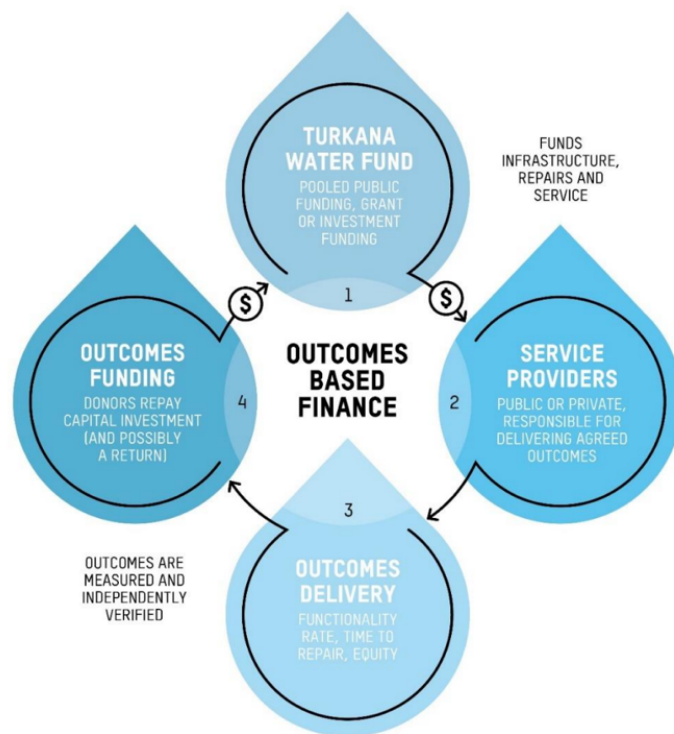
The three models introduced all rely on non-repayable grant funding from a party (whether a national government, foundation, or development agency) that is interested in the positive social externalities that are generated by a high-impact project/enterprise, but which cannot be monetized by the enterprise/project itself. The models strive towards the most efficient use of grant funding, where funds are deployed with the ambition to scale up successful business models and move them towards financial viability.

1.3 What can funders and investors do to mobilize additional funding and financing for rural water infrastructure maintenance services?

In areas of the world where NGOs, bilateral and multilateral funders have historically been paying for infrastructure construction and maintenance, there is little incentive for users and/or the government to pay for repairs - it is likely that another NGO or donor-funded project will come along and fix it for free.²² Moreover, NGOs, whose cost per beneficiary budget is often capped (e.g. around USD 30 per head), may consider hardware rehabilitation quicker, cheaper, and more transparent and more visible than investing in institutional capacity building or contributing to a blended fund or facility. In aid-dependent contexts, comparatively inexpensive money in the form of (non-repayable) grants and concessional loans encroaches on the space where blended finance solutions can be deployed.

The concept of mobilizing private capital into SDG-aligned projects is still new to many actors involved in WASH service delivery. Blended finance is one structuring tool that can be applied to mobilize additional capital that would not, otherwise, be deployed in the water and sanitation sector. But the idea to mobilize private capital for SDG 6 frequently encounters scepticism, not least from the NGO community. However, NGOs should recognize blended finance can align the interests of funders and investors around sustainable development. While some investors that participate in blended transactions are indeed primarily looking for financial returns, the spectrum

Figure 6: Turkana Water Outcomes Finance Facility (Source: Social Finance)



²²A related problem is that outside funders often only pay for the capital expenditure and assume that operational expenditures will be covered somehow – whether from user fees or local government subsidies.

of capital providers also includes many impact-first investors such as Calvert Impact Capital and WaterEquity (see Figure 3). Practitioners should look to partner with Impact-first investors who can provide patient capital, while still bringing financial rigor to the table.

Funders and investors involved in the WASH sector can accelerate the mobilization of additional funding and financing into water infrastructure maintenance, and blended finance is one tool towards this end. This Working Group brings forward the following set of recommendations.

1.3.1 Use design and preparation-stage grants to support data collection and harmonization of performance metrics

The implementation of blended finance instruments in any sector is underlined by a strong demand for data which allows potential funders to assess investable opportunities and analyze the financial and operational viability of business models within that sector. The water infrastructure maintenance sector is no exception. Therefore, a dialogue between operators and funders to develop common metrics for performance measurement can improve the underlying conditions required for blended finance instruments. Funders and investors could initiate this dialogue and support operators to achieve data harmonization. Key items to harmonize could include:

- a. **Defining key metrics of performance contracts** (as pointed out under (2) above - % reliable water points, water volume, % local revenue). Additional ones may include e.g. deployment speed / growth, failure rates (non-earning installations), capital intensity, cost efficiency;
- b. **Common accounting standards** for the water provider / the project / the borrower, as well as rules on non-accounting data disclosure (e.g. % of reliable water points). This is mostly about classification of accounting items (how to group what) and transparency of the most important credit risk drivers;
- c. **A global collection of performance data** (harmonized data points as above, but also actual credit performance, i.e. default rates) can help benchmarking proposed individual projects.

Furthermore, it is essential to emphasize the inclusion of indicators in areas beyond operational and financial management, such as corporate governance as well as metrics related to the institutional environment and transparency of operators. Improving governance and transparency can de-risk the companies, thereby making them more attractive to investors.

Finally, donors can play an important role in data harmonization by providing an environment which enables operators to collect data in a systemic and sustainable way. Rather than collecting data themselves without any synchronization with operators, donors should seek opportunities to provide incentives to operators to collect the data. This could also include supporting the institutionalization of data collection platforms at more central levels.

1.3.2 Use Technical Assistance to develop capacity and de-risk investments

Technical Assistance (TA) can be delivered either as a stand-alone initiative, for example USAID's WASH-FIN program, or as a side-car to a blended fund.²³ TA can be crucial on the demand and supply side of infrastructure maintenance services. For example, awareness campaigns targeting end customers can help increase the demand for maintenance services, and the willingness to contribute to the associated costs. On the other hand, providing technical expertise to streamline maintenance services can result in lower operational costs, thus improving the

²³ USAID WASH-FIN is a global program that provides technical assistance and services to help municipalities, utilities, and service providers track and mobilize greater financial resources for improved service delivery. Initiated by USAID in 2016, its implementing partners are Tetra Tech, Segura Consulting LLC, Global Credit Rating Co. and Open Capital Advisors. <https://www.globalwaters.org/wash-fin>

financial viability of the business or project. TA can also support financial modelling and loan applications, important groundwork for a business or project to obtain financing. TA is also needed to standardize credit assessments of borrowers as well as to build the capacity of local providers of credit assessments, because credible credit assessments instill confidence among investors.

One example for a blended model that deploys TA strategically is Azure, an initiative by Catholic Relief Services, managed by Total Impact Capital²⁴. Azure aims to mobilize technical support and financial capital for water service providers to upgrade and expand water and sanitation services in under-served communities in El Salvador.²⁵ Azure consists of two entities - one being Azure Source Capital, a blended fund that provides capital to credit cooperatives and local banks via a trust, FideAgua. The other entity is Azure Technical Services, the facility that provides TA to the water service providers, the credit cooperatives and local banks. Since inception, Azure has completed over 100 assessments plus technical designs and delivered training to service providers on management and operation. Since 2015 Azure technical services enabled more than 30 service providers to obtain loans with international financial institutions for more than USD 2.7 million.

1.3.3 Deploy flexible debt to take into account seasonal variations in operations

Demand for water services is very seasonal. During rainy periods, for example, pumps and pipes remain unused as households use rain water free-of-charge instead. Revenue-based loans, where repayments are linked to a revenues rather than determined by a fixed rate, allow operators to service their debt despite seasonal variations.²⁶ The Cambodia Revenue Finance Facility, set up by the Stone Family Foundation in partnership with the French NGO GRET/iSEA and the Bank for Investment and Development of Cambodia, provides such revenue-based loans to private water operators. The operator repays the loan as a percentage of water sales (~13% to 25%) over an estimated 9 to 15 years. The goal of the investment is to achieve a multiple (ranging between x 1.3 and 1.6) of the principle sum provided— rather than using a standard fixed interest rate.²⁷ In addition, the facility also provides business support for technical drawings and feasibility studies, financial modelling and systems, sales and marketing, and development of new products e.g. internal plumbing.²⁸

1.4. How can blended finance instruments be deployed to mobilize additional private sector investments for rural water infrastructure maintenance?

Results-based financing is one step towards mobilizing additional private sector investments for water infrastructure maintenance. The Turkana Water Outcomes Facility, the Uptime Catalyst Fund, and other results-based financing models such as Development Impact Bonds all aim to optimize the use of scarce grant funding for sustainable impact. And while they are unlikely to attract institutional investors (whether in the WASH sector or elsewhere), they can, if designed smartly, increase the financial viability of the underlying enterprises and projects over time.

Pooled vehicles (whether outcome funds, blended debt and/or equity funds, facilities, or bonds) can overcome the ticket size constraint many investors face. While the financing requirement of a single operator is too small to attract private sector investment, these vehicles aggregate individual projects/enterprises for scale. They thereby offer a sizeable investment opportunity to funders and investors while deploying small

²⁴ See Appendix 3 and <http://www.azure.com.sv/en/about>

²⁵ El Salvador uses USD as its currency. It remains to be seen whether Azure can be replicated in countries with foreign exchange risks.

²⁶ Stone Family Foundation (2020): "Scaling for impact: Lessons learnt from funding water and sanitation enterprises". Available [here](#).

²⁷ Stone Family Foundation (2019): "Piped water sector in Cambodia: An innovative finance model". Available [here](#).

²⁸ See <https://www.thesff.com/water-and-sanitation/enterprises-in-safe-water/gret/>

amounts of capital into individual enterprises/projects. One example currently underway is the Take-a-stake fund, an investment fund that is being set up in a collaboration involving the Dutch not-for-profit organization WASTE and the Swedish International Development Cooperation Agency (Sida).²⁹ Another example, also still in early stages, is the Water Access Acceleration Fund initiated by Danone and managed by Incofin Investment Management. The fund will invest in innovative water businesses that provide affordable and safe drinking water to underserved populations. In addition to providing capital, Water Access Acceleration Fund will provide assistance to the various portfolio companies through an independent TA facility.

Credit enhancement mechanisms are crucial to introduce unfamiliar lenders to the water sector and tap into local capital markets. Given all water service revenues are in local currency, reducing exposure to foreign exchange risks is highly beneficial. The Philippines Water Revolving Fund is an example for the use of credit enhancement to accelerate private sector lending.³⁰ Capital provided by private finance institutions was backed by guarantees from the Local Government Unit Guarantee Corporation (up to 85%), which in turn was backed by USAID (now the United States International Development Finance Corporation, DFC) through a partial credit risk guarantee (up to 50%). The Japan International Cooperation Agency provided a concessional loan, backed by a sovereign guarantee from the government of the Philippines, to the Development Bank of Philippines. The Development Bank of Philippines in turn provided an additional credit line to cover liquidity risk of the financial institutions.

Another example in point is InfraCredit Nigeria.³¹ InfraCredit provides local currency guarantees to enhance the credit quality of debt instruments issued to finance creditworthy infrastructure assets in Nigeria. This entity is necessary because long-term capital required by infrastructure entities/projects to be commercially successful is not available from the domestic banking market. InfraCredit's guarantees act as a catalyst to attract the investment interest from pension funds, insurance firms and other long term investors, thereby deepening the Nigerian debt capital markets.³²

²⁹ See Appendix 3 and <http://takeastakefund.org/>

³⁰ See USAID (2019) Philippine Water Revolving Fund Follow-on program Final Report [here](#).

³¹ See <https://infracredit.ng/>

³² See case study in [USAID Case Studies of Bankable Water and Sewerage Utilities, Vol. II](#). Other examples for credit-enhanced funds include the Tamil Nadu Water and Sanitation Pooled Fund and the Karnataka Pooled Water Fund.



GROUP 2: BLENDED FINANCE FOR FECAL SLUDGE MANAGEMENT

2.1. Which business models and programmatic approaches are currently deployed for off-grid fecal sludge management? To what extent are they financially viable?

Although the safe treatment of human waste brings significant health and environmental benefits, these benefits are not directly felt by the users or municipalities until very widespread usage is realized.³³ In many developing countries, the status quo is that private truck operators dump fecal sludge into water bodies or public lands.³⁴ Given that safely managed sanitation is a public good, the government plays an important role in ensuring its provision. Any viable FSM business model that achieves safely managed sanitation will rely, at least partially, on subsidies from the government, which, in turn, are influenced by national policies on FSM.³⁵ Among the biggest challenges in the FSM sector are the perceived lack of need and low willingness to pay for these services among users. Government departments, which juggle competing priorities, often do not see investments in FSM as a priority, either.³⁶

The off-grid FSM sector is characterized by small entities operating in small areas, offering often high-priced services. Because the sector has not attracted serious interest from public nor private investors, yet, investment in technology has remained limited. Non-sewered FSM systems suffer from high counterparty risk (i.e. municipality does not pay), low demand and collection risk (users do not pay). Due to the lack of reliable revenue streams and scale, off-grid FSM does not attract private capital easily.

FSM business models distinguish between³⁷:

- Models for toilet access and *in-situ* energy and / or nutrient recovery (not discussed in this Working Group)
- Models for emptying and transport of fecal sludge
- Models linking emptying, transport and treatment
- Models emphasizing reuse at the end of the service chain
- Models covering the entire sanitation service chain from toilet access to reuse

Underlying the business models are several financial flow models, which distinguish between the flow streams to different stakeholders:

- Discrete collection and treatment
- Integrated emptying, transport and treatment

³³ These benefits include, among others, diminishing waterborne diseases, decreases in infant mortality rates, improvement of the living environment, preservation of underground water quality, etc. See [UNICEF](#), [WHO](#), and [ADB](#).

³⁴ Private companies, however informal they may be, cater to the demand but do not necessarily follow the rules and regulations that enable safely managed sanitation. The sludge is discarded at the least cost with detrimental environmental and public health impacts.

³⁵ In developed countries alike, the government continues to fund the bulk of investments in sanitation services.

³⁶ In the Philippines, for example, the federal government enacted the National Sewerage and Sanitation Management Program (NSSMP), offering a 50% capital subsidy for eligible sanitation projects. Lack of user willingness to pay for sanitation is cited as one reason for the limited uptake from local government units.

³⁷ Many publications provide an overview of FSM business models in different countries. See Annex 3, and in particular CEPT University (2019) "Business Models for Fecal Sludge and Septage Management (FSSM) A landscape study of four Indian states" available [here](#).

- Parallel tax and discharge fee
- Dual licensing and sanitation tax
- Incentivised discharge

Revenue streams include tipping fees (where waste collectors must pay to dump their waste in an approved location) or ‘reverse tipping fees’ where waste collectors are paid to bring their waste to an approved location. Revenues may also come from concession agreement or service level agreements, and from the sale of final products (these could be multiple).³⁸ Municipal government procurement contracts for desludging and FS treatment can provide stable long-term revenue streams.

While many resource recovery models are emerging, none of them are (at their current scale) independently profitable with resource revenues alone. Most models are relying on transfers from local authorities and donor funding to cover costs.³⁹ Since people are more willing to pay for safe drinking water, many utilities and service providers that offer both services charge a combined fee for water supply and sanitation services. As local government property taxes and sanitation taxes are meant for ensuring service provision in their jurisdiction, these are also reliable and predictable revenue sources. When sanitation taxes are linked to property taxes and levied as a percentage of property tax, those with higher property values pay a higher sanitation tax.⁴⁰

In most areas, desludging services are offered on-demand and often as an emergency service because of septic tank overflow. Scheduled desludging (as opposed to on-demand desludging) promises more predictable throughput and cash flows, resulting in lower sludge transportation cost, which in turn reduces the price of desludging services. The example of a Public Private Partnership (PPP) with scheduled desludging in India (see box 1) illustrates this.⁴¹

BOX 1: SCHEDULED DESLUDGING IN THE CITIES OF WAI AND SINNAR, INDIA

The cities of Wai and Sinnar in India built fecal sludge treatment plants and introduced scheduled desludging as a municipal service to all properties, including both residential and non-residential. Under the newly developed performance-based contract for desludging, private service providers receive payments against the number of septic tanks emptied and safe discharge at the designated treatment site. While the private service providers make investments in trucks, they get a fixed business and assurance of monthly payments.

The private service provider in each city was competitively selected through a standard government e-tender process. In both cities, the bid price for desludging a tank was lower than the charges levied for on-demand desludging. Both cities decided to levy a sanitation tax to fund this activity. The risk of late payment by local governments was raised by several private service providers in pre-bid meetings. To mitigate this, an escrow account mechanism—a tripartite agreement between the local government, private sector, and a local bank—was introduced. The local government is required to keep three months of contract payment as a reserve fund to safeguard against risk of non-payment.

Center for Water and Sanitation (CWAS) at CEPT University is supporting the cities of Wai and Sinnar as well as the State Government of Maharashtra in India under projects funded by the Bill and Melinda Gates Foundation.

³⁸ OECD (2019) Making Blended Finance Work for Water and Sanitation. Available [here](#).

³⁹ See Malloy et al (2020): “Evaluating the circular economy for sanitation: Findings from a multi-case approach”, Science of the Total Environment, Vol. 744, available at <https://www.sciencedirect.com/science/article/pii/S0048969720344004>

⁴⁰ See CEPT University (2020) “Sanitation Tax - An innovative way to finance sanitation services” available [here](#).

⁴¹ See Frontiers in Environmental Science (2019) “Citywide Inclusive Sanitation Through Scheduled Desludging Services: Emerging Experience From India” available [here](#) and Case Study in OECD (2019) Making Blended Finance Work for Water and Sanitation [here](#).

2.2 What are the pathways to scale for businesses and programmatic approaches in the on-site sanitation sector?

Off-grid FSM service providers are currently operating at very small scales in a fragmented market.⁴² Scaling operations promises cost reductions on several fronts. For example, once larger areas are linked to a FSM plant, the cost of treatment goes down. Once enterprises and projects reach scale, they are also more likely to attract private capital. Many sanitation enterprises have different starting points within the sanitation service and value chain. Scaling pathways must be tailored to the local sanitation context and consider user demand, value proposition, supply chain, integration, market development, and replication, amongst other factors. The following discusses approaches to making on-site sanitation business models more viable, with a view to scaling them and attracting private capital.

One pathway to scale is to regulate and, where necessary, consolidate the market of FSM service providers. This can be achieved by formalizing FSM operators, or by merging small enterprises into larger companies. The formation of unions and professional associations can be an intermediate step towards this goal. At the market level, the boundaries of service districts can be enlarged to provide a larger market for a single service provider. In all these, the regulator plays a key role. For example, Senegal leveraged its experience in PPPs for water supply to develop FSM concessions, which a national agency awards to operators. These contracts created a market for sanitation service providers to invest equity and access local capital. In Dakar, desludging services are coordinated through call centers.⁴³ Users benefit from increased transparency as they are able to compare the services and fees offered by different providers. The introduction of the call centers has resulted in a downward trend in prices, while transferred sludge volumes at stations have increased. Call centers are one way to aggregate demand without merging or consolidating operators.

In the Indian provinces of Andhra Pradesh and Telangana, the state government has introduced the **Hybrid Annuity Model (HAM)**, a form of public private partnership where a private developer is tasked with building and operating fecal sludge treatment plants.⁴⁴ The State Government pays the developer 40%-60% of the capital cost of the project during the construction period and the remainder as half-yearly annuities along with interest over the Operation and Maintenance period (of 10 years). Once constructed, the private developer operates the FSM plants, and is paid operational costs at periodic intervals on the basis of bid estimates. Septic tank emptying is funded by user charges collected at the time of emptying.⁴⁵ This model reduces the financial risks on the concessionaire during project implementation.⁴⁶

⁴² OECD (2019) Making Blended Finance Work for Water and Sanitation. Available [here](#).

⁴³ See, for example, <https://www.onasbv.sn/en/psmbv-innovations/call-center/>

⁴⁴ See CEPT University (2018) "Hybrid Annuity Model for Sanitation" available [here](#).

⁴⁵ Administrative Staff College of India (ASCI), under a Bill & Melinda Gates Foundation grant has supported the application of the HAM for development of FSTPs in two states in India. As a part of this, WaterEquity has financed 21 FSTPs in Andhra Pradesh and Telangana that are being constructed and will be operated by a private operator. The HAM approach can also be deployed for municipal wastewater treatment and for bulk water supply. See IFC (2018) Public-Private Partnership Stories - Clean Ganges PPP available [here](#); and USTDA (2019) "Indo-Pacific Resource Guide" available [here](#).

⁴⁶ It is also possible to provide desludging services to citizens through a contract between the local government and a private service provider. The private contractor may be paid on basis of performance in terms of number of septic tanks emptied and safely delivered at the treatment site. This payment by an urban local government can be through taxes, either property taxes, or a special sanitation tax. Such a sanitation tax is also equitable when levied as a percentage of property tax. This approach is being used in the cities of Wai and Sinnar in the state of Maharashtra in India (see Box 1).

Integration across various segments of the sanitation chain (emptying, transport, treatment, re-use) is another approach to scale. Isolated non-chain solutions are less likely to deliver high gross margins and therefore struggle to scale in the long-term. Integrated value chain approaches can create new revenue streams and expand customer bases. The company Grupo Alto in Costa Rica is a good example. Since its founding in 1982, the company's business model has evolved significantly and now includes fecal sludge collection, transport, and treatment services, amongst others. Its subsidiary Suelos Fértiles Orgánico SA processes fecal sludge into biofertilizer for agriculture.⁴⁷ Another example is Sanivation, a social enterprise operating in Kenya. Sanivation develops and operates fecal sludge treatment plants in partnership with the government. The treatment plants take in fecal sludge from pit latrines and septic tanks. From the treated fecal sludge, Sanivation produces non-carbonized briquettes which it sells to local industries to replace firewood in their boilers. The revenue from the reuse products covers the operational costs while government contracts provide money for capital expenditures. SOIL in Haiti and Sanergy in Kenya are further examples of such integrated approaches to container-based sanitation.⁴⁸

Combining FSM with solid waste management can make the business model more viable.⁴⁹ In the Indian state of Maharashtra, over 100 new FSTPs have been built by colocating with solid waste treatment sites in these cities. The sludge from the FSTPs will be co-composted with solid waste. A specially branded product is planned for use as farming manure. Business models developed by the Dutch NGO WASTE, for example, combine FSM with organic solid waste treatment and re-use, whereby the resulting product co-compost is sold to farmers. These models can eventually reach break-even though prior to that they require adequate technical and institutional support. Similarly, through its support to a municipal FSM effort in Nepal, USAID's Water, Sanitation, and Hygiene Finance (WASH-Fin) project found that pro-forma cash flow models for FSM only (i.e. transportation to the site & treatment) were not commercially viable, but adding in municipal solid waste management increased revenue and the resource recovery potential. The marketing of end-products in itself can often be more expensive than anticipated. Marketing costs to increase customer demand are one reason, because people are often hesitant to buy products made from human waste. Secondly, in selling enriched compost, the operator has to compete with an entire industry that specializes in producing similar products - without the human waste component, and sometimes subsidized by the government.⁵⁰ Any FSM operator venturing into re-use therefore will have to adequately plan for marketing, packaging, and standardizing the end-product.⁵¹

Waste-to-energy approaches are also promising additional revenues for FSM business models. Safi Sana, a Dutch holding enterprise that designs, constructs and operates waste-to-energy factories in developing countries, is one example. Its business model is based on the sale of turnkey factories, servicing fees and operational revenue of commercially-run waste re-use factories. At factory level, the business objectives are to receive tipping fees for waste intake, to sell energy and agri input products from the waste treatment process, and to cover cost of treatment, sourcing and maintenance.

⁴⁷ See <https://www.fumigadoraalto.com/historia-suelos-fertiles/>

⁴⁸ See World Bank (2019) "Evaluating the Potential of Container-Based Sanitation" available [here](#).

⁴⁹ As noted above, while some combined models can cover their operational costs, they currently do not make profits.

⁵⁰ Some FSM enterprises choose to sell their compost to fertilizer companies for onward distribution and sales.

⁵¹ This is true for FSM operators worldwide. In the United States, the water utility of Washington DC, DC Water, has set an example with its fertilizer Bloom, which is sold on site and online: <https://bloomsoil.com/about-bloom-soil-amendment/> Additional costs arise from test on (absence of) pathogens in the end products: due to presence of pathogens in the raw material, additional tests are necessary, besides the typical tests for organic carbon, nutrients and heavy metals.

Scale through replication is another way forward, for example through franchise set-ups. The franchise-holder can take on responsibility for quality control including lab testing, high level contacts, research and development, etc. The franchisee works on sourcing raw materials (fecal sludge) and other waste materials and on the production. NGOs like WASTE are actively exploring these models. Examples for franchise models in the water supply sector are the social enterprise Jibu and the French NGO 1001fontaines.⁵²

BOX 2: CARBON CREDITS AS ADDITIONAL REVENUE STREAMS FOR FSM ENTERPRISES

Carbon credits can offer an additional revenue source for sanitation enterprises. Organizations such as Aqua for All, Toilets4All, and WASTE, are researching this topic. Sanitation interventions can reduce greenhouse gas emissions in various ways: faecal sludge treatment that prevents harmful methane from entering the environment; production of renewable energy products from faecal sludge such as biogas or briquettes; or production of co-compost that restores carbon into the soil (carbon sequestration) and reduces the need for chemical fertilizer which has a high carbon footprint. However, standardized methodologies for carbon credit certification for such interventions/projects do not exist yet. Further, volumes of greenhouse gases avoided through these interventions (compared to baseline) may not be large enough for generating sufficient amount of carbon credits to make a business case. Carbon credit schemes could become more attractive for FSM businesses if carbon emission reductions are aggregated. Aggregation will be important as only large volumes of treated sludge can generate carbon credit amounts that can outweigh costs of carbon certification and yearly monitoring.

While the market for carbon credits is already under development, new offset markets could emerge in the future. For example, in a “water credit” market, a company based in the Netherlands could pay for water treatment somewhere in Africa to offset its water usage and achieve a “zero water impact” target.

2.3 What can governments, funders and investors do to accelerate the use of blended finance for fecal sludge management?

A coherent system for FSM comprises a range of investments - households invest in toilets and septic tanks, operators invest in trucks and machinery to collect and transport fecal sludge, and public authorities invest in the construction and operation of fecal sludge treatment plants. The following describes the role each group of actors plays in the FSM sector, with a view to mobilizing additional funding and financing for FSM through blended finance.

All actors can help increase demand for FSM services by funding awareness campaigns, advocacy for behaviour change, and education campaigns. These are crucial to confront misconceptions related to FS and especially resource recovery. In Mwanza city, Tanzania, in the hilly informal areas, EIB supported an incumbent water and wastewater operator to develop simplified sewer networks. In order to facilitate the operation of these sewers, the incumbent operator decided to run a water connection campaign to ensure that the households also have a water connection. Through a collaboration with UN Habitat, a population consultation generated strong support from the community for the project.⁵³

⁵²For Jibu, see <https://jibuco.com/>; for 1001fontaines, see <https://www.1001fontaines.com/en/>

⁵³ See UN-Habitat Website [here](#). Another example is the Alandur sewerage project, the first municipal water Public Private Partnership (PPP) in India. Here, a vigorous campaign was launched to explain the project’s benefits, costs, and tariff system to local residents. Local cable TV networks were roped in, pamphlets were distributed, and municipal sanitary workers and senior municipal officials went from door to door. This campaign convinced the community that paying sewerage charges in exchange for the services was a worthy investment. See ACCESSanitation Case Study (2012) Alandur Municipality, Tamil Nadu, available [here](#)

2.3.1 The role of the (national and regional) government

The government and in particular local authorities and the public utilities are key players in ensuring safe FSM. Public authorities are responsible for funding part of the sanitation value chain and for creating the institutional and regulatory environment in which FSM services can be delivered effectively – whether through public or private models. FSM requires greenfield investment at a massive scale across entire countries, often with little existing know-how or systems to build from at the local level. It requires higher order government commitment backed by sufficient funding and a coherent enabling environment, from planning and legal framework development to institutional arrangements, capacity development, and public relations. National policies can set guidelines and standards for FSM and for reuse to advance the FSM sector, laying the foundations for involvement of private sector providers and mobilization of private capital. Within blended structures, the largest contributions will often be public money. However local governments by and large do not have sufficient own source resources or means to generate it. As India has shown, national programmes such as the “Swachh Bharat Mission” (Clean India Mission) can give a push to sanitation if these are backed by adequate budget allocations. Given the local nature of FSM, local governments have an even greater role than the national government.⁵⁴ The following gives a (non-exhaustive) overview of the most important roles of the government:

Institutional and legal:

- Set regulations and system for collecting and disposing fecal sludge, whether public, private or mixed, including Key Performance Indicators (KPIs) for truck operators and FSM plant operators and specifying penalties for non-compliance.⁵⁵ This may include regulations for Public Private Partnerships in sanitation (and solid waste management). For example, in Zambia’s capital city, Lusaka, the economic regulator drove the formalization of the sanitation sector, resulting in the utility structuring contracts to incentivize private service providers to increase efficiencies and access private finance.⁵⁶
- Organize informal to formal fecal sludge collectors to ensure safety and quality service, clearer procedure and encourage information sharing among fecal sludge emptiers. Sanergy’s Mtaa Fresh program is one example.⁵⁷
- Establish clear processes for environmental impact assessment of a disposal site and setting up disposal site publicly, privately or a combination (decide on locations, demarcate boundaries, allocate land for FSM plants, subsidize construction, etc.).
- Monitor disposal including setting, collection and enforcement of payment tipping (disposal) fees (whereby reverse tipping fees can provide incentives for correct disposal). Simultaneously, monitor the movement of transport to avoid disposal of FS at unauthorized sites (using fines etc.).
- Develop national policy (guidelines) that allows for safe reuse of FS, setting minimum environmental, health and product specific standards for the final products made from FS.⁵⁸

⁵⁴ Important responsibilities such as managing sewerage systems and wastewater treatment plants are sometimes shared between local governments and utilities and/or service providers.

⁵⁵ In the first case lead times for collection need to be short (standard, implying that sufficient vehicles need to be available) or collections frequency may need to be set. In the case of (partial) private collection, licences for private operators that are transparent and hassle free. Licences should ideally be longer term so as to allow for private investment in fecal sludge emptying and transport.

⁵⁶ See Water and Sanitation for the Urban Poor (2018) “Towards citywide sanitation in Lusaka: The next phase of non-sewered sanitation” available [here](#).

⁵⁷ See Sam Kungu (2020): “Tackling challenges of pit latrine emptying in urban slums – lessons from Sanergy’s Mtaa Fresh Project” available [here](#).

⁵⁸ Instituting the standards and regulations on the usage of co-compost for agriculture is important to give FSM providers clarity on the product standards of co-compost that need to be achieved. Establishing that fecal sludge re-use products are lawfully recognised for usage in agriculture will help increase people’s willingness to buy the product as well.

- Provide a level playing field for fertilizers - Chemical fertilisers are often subsidized whilst co-compost hardly ever is.⁵⁹
- Align the policies and coordination between FSM and solid waste management departments, so that both can support circular economy innovations such as co-compost and its agricultural reuse.⁶⁰

Financial:

- Creating a budget for investment into (or subsidy to) a FSM plant or supportive (solid waste management) projects and businesses. Allocate budget for awareness creation and policy enforcement on FSM and solid waste source segregation.
- Setting up a legal basis and a tariff system for (the public parts of the) FSM, possibly in combination with the tariffs for water provision (+waste water treatment) or other local household taxes.
- Imposing sanitation tax or paying operators from general municipal tax collection or specifying user charges. The cities of Wai and Sinnar (India), for example, use the sanitation and property tax mechanism to fund a results-based mechanism for scheduled desludging (see Box 1).⁶¹
- Address issues related to delayed payments from state or local governments.⁶²

Many pilot projects operate outside an institutional framework, partly because the effort required to create or operationalize the institutional framework often goes beyond the purpose of the pilot project. Some innovative models (such as Catholic Relief Service’s Azure, see appendix 3) can be piloted without government involvement from the start. However, any model that strives to scale will eventually require a partnership with the government as the key funder of FSM and with the citizen as a polluter, user, customer, beneficiary and tax payer recognizing the benefits obtained by safe FSM.

2.3.2 The role of development agencies and development finance institutions

The most common role of public funders is to provide concessional loans to support capital expenditure of FSM projects.⁶³ Building the market for private sector investment in water and sanitation will take time and it will require ongoing support from the public sector (i.e., concessional finance from development agencies and other development funders). These concessional loans can finance the construction of the backbone infrastructure which enables the sanitation service providers to operate effectively. For example, in Mwanza, Tanzania, the European Investment Bank (EIB) supported the construction of a discharging point for FS trucks at the wastewater treatment plant. The desludging trucks now have to travel smaller distances (and no longer discharge outside towns in agriculture fields without control or, worse, illegally in the sewers) and can discharge the effluent in a safe and controlled manner. In blended funds and facilities, development banks frequently play the

⁵⁹ Another practice with chemical fertilisers that could be extended to co-compost made of fecal sludge is long-term purchase agreement of co-compost to ensure sales.

⁶⁰ This has been demonstrated in the Indian state of Maharashtra, where the land for the FS treatment plants was made available from the solid waste treatment sites.

⁶¹ This also suggests the need to focus on improving the levying and collection of city level taxes. See for example, CWAS (2020), “Strengthening municipal finances” as a contribution to a forthcoming White Paper by the NFSSM Alliance on ‘Strengthening Municipal Governments for Improved Urban Services’.

⁶² See CEPT University (2020): “Addressing Risk of Delayed Payments” available [here](#).

⁶³ As argued in [this blog](#) by Justice Johnston, Convergence, ‘public on public’ blending is key to building a solid track record of investment: According to Convergence’s historical deals database, the lion’s share of commercial capital was provided by development finance institutions like the U.S. DFC (formerly OPIC) and the Development Bank of Southern Africa, and multilateral development banks.

role of anchor investors. As first-movers, their participation then attracts institutional investors such as asset managers, pension funds and insurance companies.

Through Technical Assistance, public funders can support the long list of responsibilities of the government outlined above. The establishment of trust funds enables development banks to deliver TA and to make investments that are deemed risky. These trust funds benefit from off-balance sheet funding from bilateral donors and private foundations. Examples include the World Bank's Global Water Security and Sanitation Partnership⁶⁴, the EIB Water Sector Trust Fund⁶⁵, and the African Development Bank's African Water Facility⁶⁶. The importance of these trust funds cannot be overstated. Development finance institutions such as ADB, AFD, and KfW have developed specific lending modalities that combine infrastructure investments and institutional capacity building and reforms (sector development programs, results-based lending, etc.) where payments are linked to the government approval of laws and institutional reforms.⁶⁷ In Rajasthan, for example, ADB provided TA grant funding to develop the Fecal Sludge and Septage Management (FSSM) guidelines for urban local bodies in the State, which the government has approved.⁶⁸ The World Bank's Citywide Inclusive Sanitation (CWIS) initiative also embeds TA in its programs.⁶⁹

Public funders can also use grant funding to make enterprises and projects investor-ready. At the moment, few donor-funded programs specifically provide investor-readiness TA. USAID WASH-Fin is a noteworthy example. In Kenya, USAID WASH-Fin supported Sanivation in tightening up its financial model and analyzing different cash flow scenarios. This helped Sanivation access new sources of capital. USAID WASH-Fin has also supported Delvic⁷⁰, a Senegalese-owned and operated company, in its efforts to commercialize the Janicki Omni Processor. The nascent development and application of sophisticated technological innovations in decentralized FS treatment could benefit immensely from focused and sustained local advisory services to help entrepreneurs cross the so-called innovation valley of death.⁷¹ While USAID WASH-Fin provides investor-readiness TA on a stand-alone basis, Asian Development Bank (ADB) Ventures is an example for TA provided in conjunction with investment capital.⁷² The fund invests in companies with technologies that solve critical infrastructure and market gaps in Asia Pacific.⁷³ ADB adds value to invested companies by facilitating access to expertise, operations, and networks, thereby increasing the possibility that companies can attract additional financing.

Development finance institutions, along with line ministries and sub-national jurisdictions, should adopt whole life cycle approaches in their tenders to allow more sustainable infrastructure to be procured. Public funders often support governments with procurement and contracting, and the contracting modalities applied to build and operate FSM infrastructure should always consider long-term sustainability. For example, design-build-operate (DBO) and design-build-operate-transfer (DBOT) models can ensure that the private operator has skin in the game right from the start. Similarly, concessions that put the concessionaire in

⁶⁴ See <https://www.worldbank.org/en/programs/global-water-security-sanitation-partnership>

⁶⁵ See <https://www.eib.org/en/products/mandates-partnerships/donor-partnerships/trust-funds/water-sector-fund>

⁶⁶ See <https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/african-water-facility>

⁶⁷ For ADB, see [here](#); for AFD and KfW, see the so-called [Sector Policy Loans](#).

⁶⁸ See <https://www.adb.org/multimedia/partnership-report2019/stories/raising-the-quality-of-urban-service-delivery/>

⁶⁹ See <https://www.worldbank.org/en/topic/sanitation/brief/citywide-inclusive-sanitation>

⁷⁰ See <https://www.delvic-si.com/>. See SteP (2019) "Preparing for Commercial Field Testing of the Janicki Omni Processor" available [here](#).

⁷¹ See <https://blogs.worldbank.org/water/innovating-through-valley-death>

⁷² For an overview of different types of blended finance, see Convergence's Blended Finance Primer [here](#).

⁷³ See <https://ventures.adb.org/investment/>

charge of transportation as well as operation and maintenance of the FS treatment plant can ensure that the trucks actually deliver the FS to these plants (and do not dump it elsewhere). In Rajasthan, India, for example, ADB supported a contracting model whereby the same operator that is responsible for the operation and maintenance of the FSTP is also operating vacuum trucks for emptying septic tanks. While it is important to design tenders within the local context, sharing models for the required documents publicly is one step towards more sustainable FSM infrastructure.⁷⁴

Development banks can also use results-based financing to build a bridge to future public and private sector financing. Container-based sanitation models, such as SOIL in Haiti, require lower capital investment but higher operational maintenance costs than traditional FSM approaches.⁷⁵ For these enterprises, reliable cash flows from results-based payments can be key to reach a scale where they are cost effective and attractive to governments and investors. Rather than making large upfront infrastructure investments, development banks can use results-based financing instruments to help these enterprises cover the gap between costs and revenues (from reuse products) for ongoing operations to enable economies of scale and cost efficiencies over time.

BOX 3: CREATING PREDICTABLE REVENUE STREAMS: OFF-TAKE AGREEMENTS AND FEED-IN TARIFFS

Because off-take agreements and feed-in tariffs create predictable cash flows for operators, they can be critical in attracting private finance. One of the many examples from the renewable energy sector is the Global Energy Transition Feed-in-Tariff (GET FiT) Premium Payment Mechanism. In 2012, the Government of Uganda (in particular, the Electricity Regulatory Authority) the German Development Bank KfW, and the German commercial bank Deutsche Bank Group designed this mechanism to make small-scale renewable energy generation projects financially viable.⁷⁶ GET FiT Premium Payments are additional payments per kWh, above and beyond the regulated REFiT tariff levels as published by ERA. Payments are availed on a grant basis, following an open and transparent Request-for-Proposal process. Since the model proved effective in attracting private finance into the energy sector, it has since been rolled out in other African countries, with support from multiple funders.⁷⁷

Such feed-in tariffs could be envisaged for FSM as well, especially when designed to target large industrial and institutional consumers, and accompanied by institutional reforms.

2.3.3 The role of foundations

Philanthropic foundations have multiple roles to play in the development of the FSM sector: advocacy, technical assistance and grant funding for projects. Decentralized FSM is a new concept for most municipalities in the developing world, which are more used to centralized sanitation solutions. It takes a lot of resources to create awareness of the efficacy of decentralized FSM solutions, and to present viable alternatives in terms of technologies and financing models. Foundations are well-placed to fund such support services. With respect to grant funding, philanthropic foundations have demonstrated that aligning and joining forces in supporting social enterprises can reduce transaction costs for all parties involved. Exchanging investment opportunities amongst themselves and sharing their due-diligence can be a cost effective strategy. This collaboration could go even further - for example by joining forces when evaluating proposals by the same social enterprises and within countries to leverage on existing contacts and networks.

⁷⁴ CEPT University published a model DBOT tender for FSTP based on the experience in Sinnar, India, [here](#).

⁷⁵ SOIL's model of composting human waste, for example, features low-tech and low-cost infrastructure, but ongoing operations are more costly than drying beds due to additional labor.

⁷⁶ See GET FiT Uganda Annual Report 2019 <https://www.getfit-uganda.org/annual-reports/>

⁷⁷ See <https://www.getfit-uganda.org/partners/>

The Bill & Melinda Gates Foundation has elevated the focus on non-sewered sanitation in the WASH sector.⁷⁸ Not only has the Gates Foundation provided grant support to improve regulation in India, Zambia, and other countries. It has also raised awareness for the importance of safely managed sanitation and the challenges many cities worldwide face. Because the Gates Foundation is limiting its interventions to a few topic areas relative to the amount of funding it disburses, it yields important leverage vis-a-vis national governments, but also other donors. Its activities have drawn much-needed attention to the sanitation sector globally and in focus countries such as India.⁷⁹ For example, the Reinvent the Toilet Challenge in 2011 and the Gates Foundation's 'Omni-Processor' portfolio have been effective at spurring innovation and generating dialogue in the field. By funding the FSM Alliance, the FSM conferences, and the Sustainable Sanitation Alliance, the Gates Foundation has also contributed to faster knowledge sharing in the field globally.⁸⁰

Smaller foundations have played an important role in the development of the FSM sector, and in the introduction of blended finance. The Stone Family Foundation, the Vitol Foundation, and the Osprey Foundation, for example, have been providing grant funding to a number of sanitation enterprises, primarily container-based sanitation. This patient capital allows enterprises to reach a scale where they can raise their first rounds of equity, and bring on board other funders and investors.

2.3.4 The role of impact investors

While commercial finance from banks or investments from asset managers is largely absent from FSM, there is potential to engage impact investors more closely.⁸¹ Looking at the fragmented market of private non-sewered sanitation service providers, the small size of each investment is a big impediment for impact investors.⁸² Furthermore, impact investors often need to show an exit strategy (e.g. after a 4-year project). Over the past years, impact investors and impact investment managers have shown increased interest in the WASH sector, though investments thus far have concentrated on water supply rather than sanitation services.⁸³ However, oftentimes, impact investors' expectations regarding levels of returns within tight time frames are well beyond what FSM business models can deliver. In short, the majority of FSM business models, at the moment, cannot be expected to reach break-even point within, say, three to five years (i.e. the usual time span of a project or an investment period). In fact, many enterprises that have been around for 10 or more years still do not break even from earned revenues – and even in developed countries sanitation service providers receive subsidies from municipalities and federal government budgets as well as cross-subsidies from other utility services. Therefore, FSM needs impact-first, patient capital.⁸⁴ Blended finance can help introduce impact investors - and commercial investors - to the FSM sector by creating risk-return profiles that are acceptable to them. De-risking and return enhancement mechanisms can increase engagement from impact investors that may otherwise turn away and invest in other, more mature sectors instead.

⁷⁸ See <https://www.gatesfoundation.org/what-we-do/global-growth-and-opportunity/water-sanitation-and-hygiene>

⁷⁹ In India, the Gates Foundation funded the uptake of innovations in FSM sector, funded research and studies in innovative finance and supported the much needed experience sharing among practitioners.

⁸⁰ See <https://fsm-alliance.org/fsm6/>

⁸¹ OECD (2019) Making Blended Finance Work for Water and Sanitation. Available [here](#).

⁸² Most impact investors do not (by policy or instrument) invest in public utilities or lend to municipalities responsible for service delivery.

⁸³ According to Convergence's historical deals database, 70% of WASH deals are focused on water supply. See J. Johnston (2019): Water and sanitation, blended finance's new frontier?" available [here](#).

⁸⁴ See Stone Family Foundation (2020): Scaling for impact: Lessons learnt from funding water and sanitation enterprises" available [here](#).

BOX 4: CORPORATE SOCIAL RESPONSIBILITY (CSR)

The strong impact narrative of WASH investments can be compelling for corporations and commercially-oriented investors looking to fulfill their CSR or ESG mandates. Respective legal and regulatory requirements can increase the share of CSR funding that flows to sanitation-related activities. For example, in India, the Government of India requires all corporates above a specified threshold to spend 2% of their average net profits of the previous three years on corporate social responsibility. Sanitation is one of the applicable activities. Many corporates, such as the HSBC Bank and Housing Development Finance Corporation through its HT Parekh Foundation, have funded FSM related activities under these CSR requirements.

2.4. In which ways can blended finance instruments be deployed to mobilize additional private sector investments in fecal sludge management?

The use of blended finance for FSM is very limited at the moment. However, this should not keep practitioners from developing a vision as to what the sector should evolve into, say, ten years from now. This vision, according to the Working Group, includes more viable FSM business models and additional investments for FSM - from public and private sources. The following outlines how blended finance can be used as a tool to achieve both of those goals. Readers are encouraged to consult the relevant case studies and reports in the footnotes and the appendix.

2.4.1 Grant-funded instruments

Given that FSM is still a relatively young sector, there is a great need for grant-funded Technical Assistance to improve the enabling environment, make FSM providers investor-ready, and support project preparation for FSM. This grant funding is catalytic, because it simultaneously strengthens the capacity of actors involved in FSM and de-risks investments in the sanitation sector. The following outlines the types of grant funding required to mobilize additional investments in FSM through blended finance.

Technical Assistance is necessary to improve the regulatory and institutional environment for FSM in general, and to structure blended finance transactions in FSM in particular. Because public funders have strong relations with recipient governments, they are well positioned to support governments in this regard, but foundations and NGOs can also do more in this field. In Ghana, the International Water Management Institute (IWMI), Tema Metropolitan Assembly, Jekora Ventures Limited and Trends, a WASH related NGO, entered into a Public Private Partnership to construct and operationalise a plant that processes FS, food waste and sawdust into compost manure.⁸⁵ The project received funding from the Bill and Melinda Gates Foundation, Grand Challenges Canada and from the government of the United Kingdom. In this case, TA provided by IWMI was crucial to help formalize government standards and approval processes for reuse. The main barriers were access to land as well as structuring and navigating government permissions (rather than access to finance).

Technical Assistance will be most effective in situations where the government is already driving developments in sanitation. Consider Nepal, where government engineers lacked understanding of non-

⁸⁵ See <https://jekoraventures.com/> and The Finder (2017) "Ghanaian Public Private Partnership turns waste to asset" available [here](#).

networked sanitation systems to utilize the budget allocated for these systems.⁸⁶ The government made a request to USAID WASH-Fin to develop a curriculum to incorporate FSM and FSTP into professional development of government engineers. In Senegal, USAID WASH-Fin investment readiness TA to sanitation service providers builds on a strong foundation of government leadership and development partner support resulting in access to local commercial bank capital.⁸⁷

Technical Assistance is also needed to support FSM service providers in preparing the financial models and documentation necessary to effectively engage with private investors. Compared with other sectors, the amount of such TA available to FSM providers is very limited. There is a huge opportunity for public funders to build up local networks of TA providers who can improve the investment readiness of FSM enterprises. In the renewable energy sector, for example, specialized programs like GET.Invest and Energy4Impact provide project developers and energy enterprises with advisory services on how to access finance.⁸⁸ Besides TA at enterprise level, formal education programs are crucial to increase the capacity of individuals working on FSM. An example is the Master of Science Sanitation program (part of the Global Sanitation Graduate School) of the Institute for Water Education in Delft, Netherlands, (IHE Delft) developed with funding from the Bill & Melinda Gates Foundation. This program builds participants' knowledge and understanding of non-networked sanitation systems and includes topics such as financing and business development for FSM.

Early stage grant funding can be catalytic in enabling an FSM enterprise or project to grow and develop up to a stage where it is ready to take on equity and/or debt. In this case, the blending happens at the individual enterprise/project level, and over time. One example is Sanergy, a social enterprise that received design-stage funding from the Massachusetts Institute of Technology and USAID.⁸⁹ The company went on to raise growth-stage investments in the form of grants and equity from Acumen, Grand Challenges Canada, SpringHill Equity Partners, and Eleos Foundation.

Financial institutions require TA to get familiar with FSM projects/enterprises as a new type of borrower. While microfinance for the construction of household toilets is becoming increasingly common, not least through the efforts of Water.org and FINISH Mondial, lending to FSM enterprises is still nascent.⁹⁰ TA can build the capacities of financial institutions to assess the creditworthiness of FSM enterprises. When such TA is combined with credit enhancement instruments such as guarantees, public funders can incentivize financial institutions to build a credit line for FSM enterprises. Between 2003-2015, the Dutch NGO WASTE set up various guarantee schemes with local banks to encourage them to lend to FS emptying businesses and solid waste management businesses.⁹¹ Funded by grants, NGO partners provided TA to these banks. Once the local banks had built up expertise in assessing the credit risk in this sector, they became less dependent on guarantees. Practitioners who aim to partner with financial institutions to increase lending to FSM enterprises should

⁸⁶ Nepal has a blended finance institution called the Town Development Fund which finances water supply and networked sanitation systems in small towns and is moving towards financing non-networked systems.

⁸⁷ See <https://medium.com/usaaid-global-waters/scaling-up-financing-for-urban-sanitation-in-senegal-a85f518764d9>

⁸⁸ For GET.Invest, see <https://www.get-invest.eu/about-recp/how-we-work/>; for Energy4Impact see <https://energy4impact.org/>

⁸⁹ Sanergy has both a non-profit entity (toilets, waste collection and transport to central points) and a for profit entity (which processes human waste and sells the end products). While the non-profit continues to get significant grant funding from foundations and, recently, some bilaterals, the for-profit entity has attracted capital from impact investors.

⁹⁰ See, for example, <https://water.org/> and CEPT University & MAVIM (2018): "Mobilizing sanitation credit through urban self-help groups" available [here](#).

⁹¹ See <https://www.waste.nl/wp-content/uploads/2020/11/Waste-Ventures-Fund.pdf>

incorporate relevant learnings from the water sector, such as Water.org's experience with providing TA to banks and microfinance institutions.

Grants for feasibility studies and project preparation are needed to structure blended funds and viable/bankable projects. Project developers and FSM service providers seldom have readily accessible funds for this early stage work. Public funders can bridge this gap by providing project feasibility support for private and public partners. Whether it is a Development Impact Bond, a new FS treatment plant construction project, or an investment fund with a parallel TA facility, early stage grant funding is crucial to get these transactions off the ground. The United Nations Joint SDG Fund, for example, awards grant funding for the development of solutions that facilitate public and private investments towards the SDGs.⁹²

Results-based funding can also help prepare enterprises for later-stage commercial investment. For example, Roots of Impact and Aqua for All are implementing the Social Impact Incentives (SIINC) for WASH Program, a funding mechanism that rewards high-impact enterprises with premium payments for achieving additional social outcomes (targeting bottom of the pyramid, more rural, gender focus etc.).⁹³ The additional revenues coming from non-repayable outcome-based payments enable them to improve profitability and attract investment to scale their operations. Eligible candidates have to be preparing for, or already in the midst of, raising repayable investment of at minimum EUR 500,000. This example shows how public or philanthropic funds can catalyze private investments in underserved markets with high potential for social impact.

2.4.2 Concessional debt, equity, and guarantees

De-risking mechanisms can create acceptable risk-return profiles for commercial investors. Both public and private capital providers should make greater use of guarantees and concessional capital deployed in subordinate or junior tranches of blended funds.⁹⁴ One example from the sustainable agriculture and forestry sector is the Land Degradation Neutrality Fund. This fund leveraged first-loss contributions from the government of Luxembourg and the French Development Agency (AFD) to provide a risk-cushion for senior tranches, crowding in institutional investors such as the Canadian pension fund FondAction and BNP Paribas. The fund further benefitted from a USD 15 million partial guarantee extended by IDB Invest, specifically for investments in Latin America and the Caribbean. Another example for a layered fund is the Water Unite Impact Fund. It is currently being developed by Water Unite and the fund manager Wellers Impact.⁹⁵ It aims to provide risk-tolerant capital to small and medium-sized enterprises in the water, sanitation and plastics recycling sectors. Water Unite Impact is structured such that micro-levies (from sales of bottled water in select grocery stores) and philanthropic money will act as a risk cushion, protecting the capital in the senior tranche.

However, gathering a critical mass of investable FSM projects/enterprises is a precondition for setting up a pooled vehicle. Fund managers play an important role in the development of such portfolios. While there are many fund managers for sectors such as renewable energy, only few fund managers have sectoral capacities related to water, sanitation, and FSM in particular. The good news is that impact investment managers

⁹² See <https://www.jointsdgfund.org/sdg-financing>

⁹³ See <https://www.roots-of-impact.org/wp-content/uploads/2020/08/SIINC-FOR-WASH-Leaflet.pdf>

⁹⁴ A guarantee provides investors a secondary level of comfort that the investment will be repaid if the obligor is not able to fulfill contractual obligations (payments). See Justice Johnston (2019): "Are guarantees stuck in the "comfort zone"?" available [here](#).

⁹⁵ See <https://www.waterunite.org/water-unite-impact/>

such as Developing World Markets, Total Impact Capital, Wellers Impact, Incofin Investment Management, and Triple Jump are building up their WASH sector capacities.

Credit enhancement mechanisms can be applied to incentivize financial institutions to lend to the FSM sector. Loan portfolio guarantees can reduce the financial institution’s risk of lending to a new segment of borrowers. Accompanying TA is often necessary to support the commercial bank in implementing a FSM-credit line. For example, USAID WASH-Fin engaged with local banks in Senegal for lending to sanitation providers, including a Fleet Renewal Program that would help replace aging trucks under affordable financing conditions.⁹⁶ Practitioners, funders, and investors working with FSM enterprises should cooperate more closely with domestic small and medium-sized enterprises (SME) development and finance programs. While few of these programs include FSM businesses in their portfolios at the moment, they provide an opportunity for local, sustained support.

Ultimately, because safe management of FS is a public health objective, funding from institutions that include the indirect returns on improved health in their cost benefit analysis will remain critical.

RECOMMENDATIONS THAT APPLY TO WATER INFRASTRUCTURE MAINTENANCE AND FECAL SLUDGE MANAGEMENT

Portfolio approaches that bundle a variety of investment opportunities can mobilise private investment.⁹⁷ Pooling capital into larger vehicles, whether funds or facilities, can help to bridge the gap between investors seeking large investment opportunities and individual enterprises needing small injections of capital. Moreover, aggregating investment opportunities with different risk profiles can yield a diversified portfolio that is more attractive to risk-averse investors. Take WaterEquity’s WaterCredit Investment Fund 3 (WCIF3) for example.⁹⁸ Approximately 90% of WCIF3’s USD 50 million disburseable capital was earmarked for 20-25 financial institutions. While microfinance is a relatively well established asset class, lending to water and sanitation enterprises is often seen as more risky. The fund integrated a small percentage of direct investments in enterprises that provide water and sanitation loans, products, or services into its portfolio. Thereby, the fund introduced investors to a field they may not have been active in before. The fund has thus far made two investments in sanitation enterprises that operate in FSM.

A multi-sectoral approach, where water or sanitation infrastructure projects are bundled together with other services such as energy and transportation, is beneficial. This approach allows for cross-subsidization of the (less profitable) water/sanitation component from other, revenue-generating project components. This approach was applied in the Bugala Island Kalangala Project in Lake Victoria in Uganda, developed by the Private Infrastructure Development Group (PIDG).⁹⁹ Here the CapEx and O&M for water connections (mostly standpipes) is cross subsidized by revenues from electricity supply (solar) and transportation (ferry/roads).

⁹⁶ See <https://medium.com/usaaid-global-waters/scaling-up-financing-for-urban-sanitation-in-senegal-a85f518764d9>

⁹⁷ OECD (2019): “Making Blended Finance Work for Water and Sanitation” available [here](#).

⁹⁸ See Convergence (2019): “WaterCredit Investment Fund 3 Case Study” available [here](#).

⁹⁹ See <https://www.pidg.org/project/kalangala-infrastructure-services/> and <https://infracofrica.com/kis-brings-clean-water-fishing-communities-bugala-island/>

The water component of the project on its own would not have been commercially viable. A joint guarantee between USAID DCA (now USDFC) and GuarantCo helped to secure a USD 7 million loan from Nedbank.¹⁰⁰

Crowdfunding marketplaces have potential to mobilize private capital for early stage FSM and infrastructure maintenance businesses. Several crowdfunding platforms make use of credit enhancement using donor funds, philanthropic, and impact-first capital. The platform Trine, for example, focuses on solar energy markets and received a first-loss guarantee from the Swedish international development cooperation agency (Sida) and funding from the British government.¹⁰¹ Trine fully guarantees the first EUR 100 loan of each new investor. The solar business focused crowdfunding platform EnergiseAfrica applies a similar model, where each first EUR 100 investment is guaranteed.¹⁰² The joint venture between Lendahand and Ethex received support from the British government and Good Energies Foundation, amongst others. Lastly, CharmImpact, a crowdfunding platform for early stage clean energy entrepreneurs, guarantees of 35% of each investment with catalytic concessionary capital from donors.¹⁰³ Catalytic capital providers could work with existing crowdfunding platforms to expand their services to water and FSM enterprises, for example by providing guarantees for loans in these markets.

Standardizing blended finance vehicles will reduce transaction costs. At the moment, blended finance funds tend to be highly tailor-made and often take several years to structure, which increases transaction costs. Just like data harmonization is crucial at the operator level, blended finance instruments would equally benefit from the use of more standardized documentation, whether for guarantee contracts or investment fund structures. Public partners in blended finance structures tend to have very long processing times, unclear requirements on the structuring of a blended finance facility at the beginning, and complex (and thus very costly) legal requirements. Often, other parties than the public partner need to shoulder legal costs in case projects are eventually not closed. Funders and investors need to build internal capacity on blended finance and work closely with asset managers to reduce transaction costs.

CONCLUSIONS

Blended Finance is still a nascent approach for infrastructure maintenance and fecal sludge management. Some scepticism still prevails around the introduction of private capital in the WASH sector - some fear that social and environmental sustainability will be lost when financial returns come to the front. Although few models are close to viability, and most are subsidized and grant-funded, the examples mentioned above show that blended finance, as a structuring approach, holds potential to mobilize additional financing for water infrastructure maintenance and FSM. The Document features examples for the five archetypes of blended finance solutions depicted in Figure 7. Currently, there is greater demand for (and hence a greater prevalence of) design and preparation-stage grants, TA, and results-based financing. As business models mature and the enabling environment for water and sanitation services improves, more solutions that make use of guarantees and concessional debt or equity within a blended capital stack will emerge.

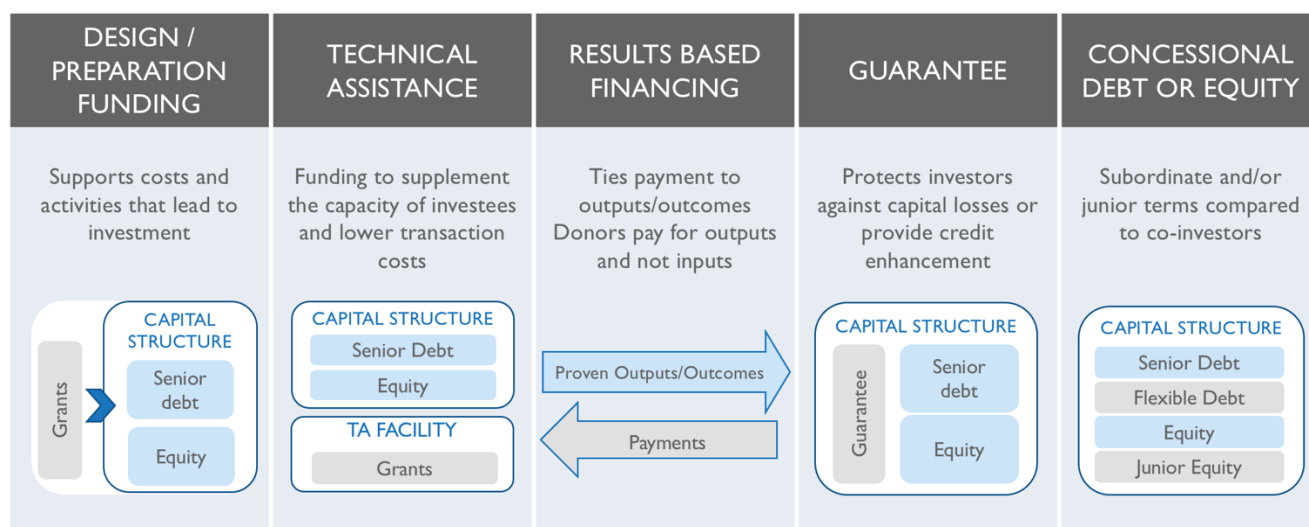
¹⁰⁰ See <https://www.usaid.gov/news-information/videos/connecting-private-sector-global-development>

¹⁰¹ See <http://help.trine.com/en/articles/4163370-what-is-the-first-investment-guarantee> and Sida factsheet [here](#).

¹⁰² See www.energiseafrica.com

¹⁰³ See <https://charmimpact.com/faq>

Figure 7: Blended Finance Archetypes (Source: Convergence 2020)



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Efforts to collect more data on the operational and financial viability of different business models should be stepped up. Transparency around performance data will be just as important as the development of sound financial models, especially if the goal is to eventually take on debt or equity (instead of grant funding). Governments, in conjunction with donors, can create a positive enabling environment that incentivises effective, equitable and sustainable service delivery.

There is a need for greater coordination between public budget authorities, development banks, investors and donors/foundations. Even the most holistic programmes and initiatives cannot address all issues at once. A development finance institution, for example, can provide a sovereign loan but may not be able to provide loans directly to small and medium-sized enterprises in the same region. Coordination efforts need to be endorsed by the (local) government.

Blended finance solutions promote partnerships between organizations with sector-specific expertise (NGOs, for example) and those with financial expertise (fund managers, impact investment managers, etc.). Finance practitioners and WASH experts both need to understand each other better. Because blended finance solutions involve actors from both groups, these solutions promote learning by doing. Blended finance can be a stepping stone to familiarize investors with a sector they have not, previously, invested in. Tools such as guarantees and concessional capital deployed in junior (or subordinate) tranches can shift the financial risks onto funders and investors that can bear them. This yields structures with risk-return profiles that are acceptable to investors.

To leverage blended finance effectively, funders and practitioners need to collaborate closely with private investors who want to set-up vehicles dedicated to WASH. This will help funders to identify how to most effectively support pipeline generation (through grant-funded TA, for example), and it will help investors to understand which opportunities are ready for them. By partnering with impact-first investors who are able to provide patient capital, practitioners can produce showcases and draw lessons that can then be scaled. A growing number of case studies and reports focus on financing WASH, on different business models, and on blended finance. The reading list in appendix 4 covers the most relevant publications. To turn more FSM practitioners into finance-literates, sector-specific knowledge hubs such as the Sustainable Sanitation Alliance, SuSanA, need to grow their content on financing WASH.



APPENDIX

Appendix I: List of participating organizations

No.	Organization	Primary contact person(s)
Group I: Infrastructure Maintenance		
1	African Development Bank (AfDB)	Osward Chanda
2	Bechtel Corporation	Tam Nguyen
3	Deetken Impact	Alexa Blain
4	FundiFix	Jacob Katuva; Cliff Nyaga
5	Inter-American Development Bank (IDB)	Lucio J. Garcia Merino; Maria E. Gouvea Berto
6	Incofin	Beryl Shanyisa; Mischa Liang
7	IRC WASH	Stef Smits
8	Osprey Foundation	Louis Boorstin
9	Oxford University, SSEE	Alex Money
10	Private Infrastructure Development Group	Emilio Cattaneo
11	responsAbility	Martin Heimes
12	Rural Water Supply Network	Sean Furey
13	Safe Water Network	Nisha Chakravarty
14	Social Finance	Rob Mills
15	Stone Family Foundation	Souraya Chenguelly
16	Swedish Agency for Int. Dev. Cooperation (Sida)	Karin Lindblad; Ylva Schwinn; Nawar Al Ebadi
17	TapEffect	Nick Boerema
18	Total Impact Capital	John Simon, Chantarella De Blois
19	Treehouse Investments LLC	Anne Amanada Bangasser
20	UDUMA	Mikael Dupuis
21	UNICEF	Liang Zhao; Kinley Penjor
22	Sanitation and Water for All (UNICEF)	Joost Kooijmans
23	UNCDF	Jaffer Machano
24	Uptime Consortium	Duncan McNicholl
25	USAID	Ella Lazarte, Ryan Mahoney
26	Vitol Foundation	Regis Garandeau
27	Water for Good	David De Armey
28	Water Mission	Lara Lambert
29	Waterloo Foundation	Tabitha Ndiaye
30	Whave	Adam Harvey
31	WHO/UN-Water	Fiona Gore

Group 2: Fecal Sludge Management		
1	Asian Development Bank	Christian Walder
2	African Development Bank (AfDB)	Omari Ramadhani Mwinjaka
3	Aqua for All	Shabana Abbas
4	Bill & Melinda Gates Foundation	Alyse Schrecongost
5	BORDA	Shobana Srinivasan
6	Catholic Relief Services	Paul Hicks, Carlos Aguilar Delfin
7	CEPT University (India)	Meera Mehta; Dinesh Mehta; Upasana Yadav
8	Convergence	Regina Rossmann
9	Developing World Markets	Courtland Walker
10	Dutch Ministry of Foreign Affairs	Hannah van der Bles
11	European Investment Bank	Roel Martens, Emmanuel Chaponniere
12	GuarantCo	James Miller
13	Japan International Cooperation Agency (JICA)	Atsushi Takahashi; Mitsuo Kitagawa
14	Lion's Head Global Partners	Gaia de Battista
15	Lendahand	Tobias Grinwis
16	OECD	Kathleen Dominique
17	Safi Sana	Aart van den Beukel
18	Sanergy	Hellen Kariuki
19	Sanivation	Kate Bohnert
20	Swiss Agency for Development Cooperation (SDC)	Isabella Pagotto
21	SOIL	Sasha Kramer
22	Swedish Agency for Int. Dev. Cooperation (Sida)	Johan Sundberg; Gustav Isaksson
23	Stone Family Foundation	Sarah Hedley
24	Toilets for All	Reto Wey
25	USAID WASH-Fin	Stephen Sena
26	WASTE (Netherlands)	Valentin Post; Kajetan Hetzer
27	WASH Institute (India)	Krishna Rao
28	WaterEquity	Sridhar Sampath
29	Wellers Impact	Jeremy Gorelick; Roopal Kanabar
30	World Bank GWSP	Martin Gambrill

Appendix 2: Additional examples for water infrastructure maintenance models

The following examples are captured in “[The 2019 RWSN Directory of Rural Water Supply Services, Tariffs Management Models & Lifecycle Costs](#)”:

Name/Org	Where	Type of Model	Type of Service
AguaCara	Honduras, Nicaragua, India	Community Based Management – with minimal support. Direct management by local government. Public water utility.	International development cooperation project Domestic service or programme
BESIK Program	Timor Leste	Direct management by local government. Local government with delegation to community operators. Local government with delegation to private operators.	International development cooperation project Pilot/Research
EverFlow	Uganda (Apac and Kwania Districts)	Community Management with delegation to private operators.	Public-Private Partnership: Pilot/Research
Inter Aide	Malawi, Ethiopia, Madagascar, Mozambique, Sierra Leone, Haiti	Various, large scale maintenance programmes through local mechanics and local authorities. The mechanics make a small profit on repairs but the whole programme is not financially sustainable, yet.	Various
RWSSP	Tajikistan, Uzbekistan	Community Based Management with external support. Direct management by local government.	International development cooperation project
SISAR	Brazil	Grouping of community managed organisations into large association	Domestic service or programme
SMART Centres	Established: Tanzania, Malawi, Mozambique, Zambia, Early Stages: Ethiopia, Kenya, Nicaragua	Training of water entrepreneur-artesians who provide self-supply services	Institutional Support Self-supply International development cooperation project
Spring Health	India (Orissa)	Privately owned and operated scheme.	Domestic service or programme
WaterCredit	Kenya, Uganda	International NGO / UN Organisation Other	Institutional Support Self-supply International development cooperation project

Others relevant examples include Water Access Rwanda (see [RWSN webinar presentation 2019](#)), AGIR - Agência Intermunicipal de Regulação do Médio Vale do Itajaí (Brazil), District Development Fund (Zimbabwe), ANISA (Nicaragua), Agua del Pueblo (Guatemala), The Water Trust (Uganda), and AquaTrust (Uganda). A collection of examples for private sector participation in water supply services in the Pacific is captured in [this ADB briefing note](#).

Appendix 3: Overview of blended projects/funds/facilities

MOST RELEVANT FOR INFRASTRUCTURE MAINTENANCE

Azure - combines technical expertise with impact investing to upgrade and expand water services for rural and small urban communities in El Salvador

Blending approach: Blended capital structure & grant-funded TA facility

Implementer: Catholic Relief Services (CRS), Administración Nacional de Acueductos y Alcantarillados (ANDA) - <http://www.azure.com.sv/en/about>

Fund manager: Total Impact Capital

Investors: IDB Lab, DFC, Calvert Foundation, Mercy Inv. Services Inc., Rotary Club

Contacts: Paul Hicks, CRS, Paul.Hicks@crs.org; John Simon, Total Impact Capital, jsimon@totalimpactcapital.com

Cambodia Revenue Finance Facility – Facility that provides revenue-based loans to support capital expenditure investments and connections. Further, the facility provides support in four key business areas (technical drawings and feasibility studies, financial modelling and systems, sales and marketing, development of new products) - <https://www.thesff.com/water-and-sanitation/enterprises-in-safe-water/gret/>

Blending approach: Revenue-based loans, coupled with Technical Assistance

Implementer: GRET/iSEA

Investors: Stone Family Foundation, Bank for Investment and Development of Cambodia (BIDC)

Contact: Souraya Chenguely, Stone Family Foundation, schenguely@thesff.com

Investing In Infrastructure - A five-year program to expand the reach of essential infrastructure to a million Cambodians. It provides investment subsidies to local infrastructure companies, from an investment fund of AUD 27 million (around USD 20 million).

Blending approach: Viability gap funding

Implementer: <http://3icambodia.org/>

Fund manager: Palladium

Investors: DFAT

Turkana Water Outcomes Finance Facility – funding framework that incentivises improved water reliability outcomes for vulnerable populations in rural Kenya, using performance contracts

Blending approach: Results-based financing

Implementer: Oxfam International, Social Finance UK -

<https://www.socialfinance.org.uk/resources/publications/outcomes-based-approach-addressing-human-impact-climate-change-kenya>

Investors: tbc, alongside Turkana County's own Water Fund

Contacts: Rob Mills, Social Finance UK, rob.mills@socialfinance.org.uk

Uptime Catalyst Facility - Multi-country funding mechanism to manage results-based contracts for water supply and maintenance services, mainly in Africa. - <https://www.uptimewater.org/>

Blending approach: Results-based financing

Implementer: Uptime Consortium (Fundifix, Whave, Uduma, Water for Good, Water Mission, Oxford University)

Investors: Vitol Foundation, Osprey Foundation, GIZ/BMZ, Waterloo Foundation, others tbc

Contacts: Duncan McNicholl, UPTIME, dmcnicholl@uptimewater.org; catalystfacility@uptimewater.org

MOST RELEVANT FOR FECAL SLUDGE MANAGEMENT

City Climate Finance Gap Fund - supports cities and local governments in preparing and prioritizing climate-smart plans and investments with the goal of attracting more financing and support for implementation. Covers strategic planning up to the pre-feasibility stage (including Climate strategy development/enabling environment, Project definition/concept, and Pre-feasibility). [Eligibility criteria](#) indicates that public (potentially including

parastatal) or private entities can apply for both mitigation and adaptation projects. Relevant FSM sectoral themes include: Solid waste management and circular economy activities; Water and wastewater management; Greening of urban areas, nature-based solutions, blue/green infrastructure, ecosystem restoration, and centered urban planning; Multi-sector, area-based investment programs, including slum/informal settlement upgrading, brownfield redevelopments, urban extensions or corridor development

Blending approach: Project preparation facility

Implementers and Investors: two pools of funds, one managed by EIB in partnership with GIZ, the other managed by the World Bank

More Information: <https://www.citygapfund.org/contact>

Senegal small and medium-sized enterprises (SME) Fund - *in preparation* - 100 million Euro fund for a variety of sectors including WASH. Expected to be a source of finance for SMEs in the sanitation space with government contracts and sludge haulers. Agreement recently signed.

Blending approach: Technical Assistance and blended capital

Implementer: FONSI

Investors: KfW, possibly other bi-laterals

SOIL – *in preparation* - using results-based financing in partnership with the Haitian sanitation authority and the Inter-American Development Bank to bring container-based sanitation to scale in urban Haiti.

Blending approach: Results-based financing (currently no private investment component)

Implementer: SOIL

Disbursement and verification: DINEPA (Central Haitian Sanitation Authority), OREPA Nord (Regional Sanitation Authority for Northern Haiti)

Investors: IDB, Vitol Foundation

Design support: Social Finance UK

Contacts: Sasha Kramer, SOIL, skramer@oursoil.org, Sergio Perez, IDB, sperez@iadb.org

Take-a-stake Fund – *in preparation* - initiative working on a new impact investment fund that will provide medium- to long-term capital (debt and equity) to small and growing businesses (those too large for MFIs, but also still too small for conventional FIs/banks - the missing middle) in water, sanitation, hygiene, and waste sectors globally, and also provide TA to investees pre- and post-investment.

Blending approach: blended capital structure & grant-funded; Technical Assistance facility

Implementer: WASTE Netherlands - <http://takeastakefund.org/>

Investors: Sida, KIFFWA, Aqua for All, others tbc

Contact: Kajetan Hetzer, kheter@take-a-stake.com; and Valentin Post, WASTE, vpost@waste.nl

Water Unite Impact – *in preparation* - fund that provides risk-tolerant capital to small and medium-sized enterprises in the water, sanitation and plastics recycling sectors globally

Blending approach: Blended capital structure

Implementer: Water Unite - <https://www.waterunite.org/water-unite-impact/>

Fund manager: Wellers Impact

Investors: tbc

Contact: Jeremy Gorelick, Wellers Impact, Jeremy.Gorelick@wellersimpact.com

RELEVANT FOR BOTH INFRASTRUCTURE MAINTENANCE AND FECAL SLUDGE MANAGEMENT

Cap-Bleu - Cap Bleu enables private and public companies under Moroccan law to finance investment projects in the water and sanitation sector. Cap Bleu offers: financing up to 100% of eligible investment costs; interest rate subsidy; free technical assistance provided by an expert firm. Eligible projects in the water and sanitation sector including, water saving, desalination and wastewater treatment plant projects creations; and projects in compliance with national and international laws in the social and environmental fields. Euro 20 million corpus with Euro 300k in technical assistance.

Blending approach: Interest rate subsidy, finance and Technical Assistance

Implementer: Bank of Africa BMCE group

Investors: AFD, EIB (line of credit)

More Info: <https://www.bankofafrica.ma/en/entreprise/investment-funding/financement-de-lefficacite-energetique/cap-bleu>; <https://www.afrik21.africa/en/morocco-bmce-bank-launches-cap-bleu-for-intelligent-water-resource-management/>

Cambodia Rural Sanitation Development Impact Bond - USD9.99M impact bond to develop rural sanitation markets in six Cambodian provinces.

Blending approach: Results-based financing/impact bond

Implementer: International Development Enterprises (iDE) - <https://www.ideglobal.org/press/cambodia-rural-sanitation-dib>

Investor: Stone Family Foundation

Outcome payer: USAID

Advisor: Social Finance

Contacts: Sarah Hedley, Stone Family Foundation, shedley@theSFF.com

CityTaps - Private limited liability company incorporated under the laws of France operating in Paris, Niger, Kenya, Burkina Faso, Senegal, Ecuador. CityTaps develops PAYGO and smart water metering solutions for water utilities to better serve their subscribers, especially the urban poor, and expand services to guarantee the human right to water for everyone. These solutions provide a win-win for both water utilities and their subscribers. Switching to PAYGO means that people pay when they have the money, utilities always get paid, and debts can be recovered slowly but surely. By improving the overall financials of the water utility, they are finally able to access commercial financing and expand their network to serve everyone.

Blending approach: design-stage grant recipient

Investors: Global Innovation Fund, World Bank, UK government (via M4D Utilities Innovation Fund), Vitol Foundation

More info: <https://www.citytaps.org/>

Financing for Healthier Lives: An SDG-based 150m USD Social Bond to fund loans to companies active in health, wash, energy, agriculture and financial inclusion in developing countries

Blending approach: Guarantee provides risk-protection to institutional investors

Implementers & Investors: Sida & Danske Bank

Fund manager: responsAbility Investment AG

Contacts: Kalle Hellman, Sida, kalle.hellman@sida.se

Global Access Fund – USD 150M impact investment fund managed by WaterEquity that will provide debt capital to high-performing financial institutions in emerging markets to enable them to scale their water and sanitation microfinance portfolios

Blending approach: blended capital structure & guarantee

Implementer: WaterEquity - <https://waterequity.org/wp-content/uploads/2019/11/Global-Access-Fund-Press-Release-2019-11-13.pdf>

Investors: DFC, others tbc

Contact: Sridhar Sampath, WaterEquity, ssampath@waterequity.org

InfraCredit - InfraCredit provides local currency guarantees to enhance the credit quality of debt instruments issued to finance creditworthy infrastructure assets in Nigeria. This is necessary because long-term capital required by infrastructure entities/projects to be commercially successful is not available from the domestic banking market. InfraCredit's guarantees act as a catalyst to attract the investment interest from pension funds, insurance firms and other investors, thereby deepening the local capital market. Relevant sectors include Urban/Rural fresh water production and treatment, supply and distribution, bulk water supply (water reservoirs, transfer schemes, dams and pipelines) sanitation, solid waste disposal/collection and waste treatment. InfraCredit may support a variety of

entities for the provision of infrastructure services including: SPV/corporate established to securitise a pool of assets; Operating Infrastructure Company; Privatised Company; Parastatal or Public Corporation; State and Local Government.

Blending approach: Credit enhancements

Implementer: InfraCredit

Investors: Nigeria Sovereign Investment Authority (NSIA), GuarantCo

More info: <https://infracredit.ng/>

Jamaica Credit Enhancement Facility

A blended finance facility capitalized by a \$3M grant from the Global Environment Facility Caribbean Regional Fund for Wastewater Management (CReW), placed in a reserve account at the National Commercial Bank of Jamaica (NCB). The facility enabled NWC to secure a \$12M loan (in local currency) from the NCB, by providing secondary collateral on the K-Factor revenue used to service loan payments and by reducing overall default risk. These loans were used to rebuild several wastewater treatment plants, rehabilitate three treatment plants, and train wastewater operators.

Blending approach: Credit enhancement using concessional capital as reserve

Manager: Caribbean Regional Fund for Wastewater Management (CReW).

Investors: GEF, National Commercial Bank of Jamaica

More info: <https://www.gefcrew.org/index.php/enhancing-jamaica-s-creditworthiness-to-ensure-effective-wastewater-management>

Karnataka Water and Sanitation Pooled Fund

The KWSPP issued a pooled bond to raise capital for domestic capital markets for small and medium urban local bodies (ULBs). The fund specifically raises capital for a water supply and sewerage infrastructure development project in 8 ULBs within the Bangalore Metropolitan area in Karnataka, India. A USAID partial credit guarantee for 50 percent of the principal was an important feature of the transaction.

Blending approach: Credit enhancement through guarantees

Manager: Karnataka Water and Sanitation Pooled Fund Trust

Investors: USAID, Government of India, private investors

KIFFWA (Kenya Innovative Finance Facility for Water) - Co-developer of water initiatives in Kenya. It provides finance expertise and early stage capital to support the creation of viable water investment opportunities and attract (private) providers of finance. Ideally, KIFFWA will co-develop projects with an investment need between EUR 5 - 200 million. By assigning finance expertise KIFFWA may support up to 50% of the project development budget. KIFFWA will require compensation at financial close either as a one-off fee, equity stake in the project or loan to the project.

Blending approach: Project preparation & Technical Assistance

Implementer: Netherlands Water Partnership - <https://kiffwa.com/>

Fund manager: KIFFWA Limited

Investors: Embassy of the Kingdom of the Netherlands in Nairobi, KIFFWA Foundation

Contact: info@kiffwa.com

Municipal Investment Fund (IMIF) and Technical Assistance Facility (IMIF-TAF) - Fund to support cities and local governments in developing countries in accessing capital markets to finance investment projects and programmes (sector agnostic). The Fund is managed by Meridiam, a private asset manager, with a target capitalisation of € 350 million at first closing. The Technical Assistance Facility (IMIF-TAF), will help cities to finalise the preparation of their projects and provide the necessary support to ensure that the city meets the requirements for accessing financial markets. The TA is for projects below \$25 million; no apparent lower (minimum size) threshold. The IMIF facility will prepare projects over \$25 million.

Blending approach: Project Preparation and Investment Fund

Implementer: UNCDF, UCLG, FMDV

Investors: Meridiam (Asset Manager)

Contact: <https://www.uncdf.org/article/6060/international-municipal-investment-fund--technical-assistance-facility>

Nepal Town Development Fund - Autonomous financing institution (FI) established by the Government of Nepal in 1989 with a long term institutional objective of becoming a self-sustaining and complementary part of intergovernmental fiscal transfer system. The only financial autonomous FI providing debt financing to local governments. Development partner support has included GiZ, the KfW, the ADB, and the World Bank. Local governments and water utilities in Nepal, in fast growing emerging towns, are its main clients accessing long-term urban infrastructure finance through its loan and grant funding. ADB funds small town water and sanitation programs providing T/A and capital through TDF as an intermediary. Local service providers have utilized TDF for numerous water supply and sewerage systems, and TDF has expressed interest in municipal FSM/FSTP projects.

Blending approach: Government grant (70%), concessionary debt (25%), local equity contribution (5%)

Implementer: Town Development Fund

Investors: Government, DFIs

More info: <https://www.tdf.org.np/>

Impact Water Social Success Note – pay-for-performance financing solution to crowd-in return-seeking capital to results-focused social enterprises – in this case to enable Impact Water to sell, install and maintain water filtration systems in schools in Uganda

Blending approach: Results-based financing

Implementer: Yunus Social Business - <https://www.yunusfb.com/blog/launched-innovative-new-financing-solution-social-success-note>

Investors: UBS Optimus Foundation, Rockefeller Foundation

Tamil Nadu Water and Sanitation Pooled Fund

Set up by the Government of Tamil Nadu in August 2002 as a Trust, WSPF was designed as a credit pooling mechanism of the Indian state of Tamil Nadu Urban Development Fund (TNUDF) to support smaller urban local bodies (ULB) in Tamil Nadu to access capital markets through bond issuances. WSPF has utilized a multi-layered credit enhancement structure to extend maturities and position the bond to appeal to investors. This included an escrow account for each ULB to service debt from own source tariffs and taxes, a debt service reserve fund capitalized by state government, a local debt service reserve fund, a state government intercept, and a partial credit guarantee from USAID. The enhancements proved critical and increased investor assurance on repayment of debt, improved the credit rating of the pooled bond and reduced the cost of borrowing.

Blending approach: Credit enhancement through escrow account and partial credit guarantee

Implementer: TNUDF through Tamil Nadu Urban Infrastructure Financial Services Ltd (TNUIFSL)

Investors: Institutional Investors such as Tata Group and Karnataka Bank, Government of Tamil Nadu, USAID (DCA)

More info: <http://www.tnuifsl.com/wspf.asp>; World Bank Case Study [here](#).

WASH Impact Note - *postponed* - \$75-100M in financing for inclusive financial institutions for on-lending to water & sanitation activities, and/or operating companies providing a WASH-related product or service

Blending approach: blended capital structure & guarantee

Implementer: Developing World Markets (DWM)

Investors: DFC, Sida, [U.S. Pension Fund]

Contacts: Courtland Walker, DWM, courtland@dwmarkets.com

Water Access Acceleration Fund – *in preparation* - will invest in innovative water businesses that provide affordable and safe drinking water to underserved populations.

Blending approach: blended capital structure

Initial sponsor: Danone, via Danone Communities

Fund manager: Incofin IM - <http://www.incofin.com/danone-selects-incofin-im-as-its-partner-to-jointly-invest-in-businesses-providing-access-to-clean-water/>

Investors: Danone, others tbc

Contact: Elise van de Vyver, elise.vandevyver@incofin.com

WaterCredit Investment Fund 3 - provides debt financing to financial institutions and enterprises serving the water and sanitation needs of families living in poverty in Asia

Blending approach: blended capital structure & guarantee

Implementer: WaterEquity - <https://www.convergence.finance/resource/4VLkTKyP0lzPzDhp6loqF0/view>

Investors: DFC (formerly OPIC), IKEA Foundation, Niagara Cares, Skoll Foundation, Bank of America, Ceniarth, Osprey Foundation, Vitol Foundation, Johnson & Johnson

Contact: Sridhar Sampath, WaterEquity, ssampath@waterequity.org

Appendix 4: Key Publications on Blended Finance for Water Infrastructure Maintenance & Fecal Sludge Management

sorted by relevance to Working Group

N.	Publisher/Author	Year	Title & Link	Abstract, emphasis on blended finance-related content
Relevant for Water Infrastructure Maintenance				
1	Oxfam & Social Finance,	2019	The Water Outcomes Finance Facility – An Outcomes-based Approach to Addressing the Human Impact of Climate Change in Kenya	This outline introduces an outcomes-based funding model for sustainable water service delivery which relies on a contractual framework between the outcome funder, the service provider, and the provider of up-front working capital.
2	UPTIME Consortium,	2019	Working Paper 1 : Performance-based Funding for Reliable Rural Water Services in Africa	This paper assesses the financial and operational performance of five maintenance providers serving over one million rural people across four African countries.
3	UPTIME Consortium,	2020	Working Paper 2 : Results-based Contracts for Rural Water Services	This paper explores how concessionary funding through results-based contracts for waterpoint reliability, volumetric use, and local revenue generation might enable sustainable rural water services for 100 million people by 2030.
4	UNICEF, University of Oxford	2016	The FundiFix Model : Maintaining rural water services	The FundiFix model is one response to Africa’s rural water challenge. Led by local entrepreneurs and powered by Africa’s mobile network, the FundiFix model offers a performance-based approach working with government, communities and investors to keep water flowing. The business rationale is ‘scale reduces risk’. If all rural waterpoints are networked in one system economies of scale can improve service delivery and lower costs. Essentially, it’s insurance logic applied to rural water infrastructure.
5	University of Colorado Boulder, Whave	2019	Sustainable WASH Systems Learning Partnership : Emerging Lessons on Sustaining Rural Water Services in Uganda: A Case Study of Whave’s Preventive Maintenance Model	This case study summarizes Whave’s model of results-based payments for avoiding breakdowns, rather than payment for repairs. By incentivizing performance, Whave’s goal is to establish a system that reduces water source downtime and therefore improves the reliability of water supply systems. The case study concludes that while Whave has been successful in designing and implementing a maintenance service model that addresses many key barriers, government ownership and leadership in mobilizing public sector resources, combined with community tariff payments, is necessary to sustain the functionality assurance demonstrated.
6	Stone Family Foundation	2020	Scaling for impact : Lessons learnt from funding water and sanitation enterprises	In this brief paper, the Stone Family Foundation shares its latest thinking and the lessons learnt from the last five years of funding in WASH, its largest portfolio. The lessons cover everything from how we have evolved our funding approach, to our hypotheses on how WASH enterprises will scale, to how SDG6 will be financed.

7	Stone Family Foundation	2019	Piped Water Sector in Cambodia: An Innovative Finance Model	After extensive market research, the Stone Family Foundation partnered with GRET/iSEA and the Bank for Investment and Development of Cambodia (BIDC) to develop a new lending facility, the Cambodia Revenue Finance Facility. It provides wrap-around support, tailored specifically to the needs of operators. The facility provides patient, flexible capital through 'revenue finance' – i.e. linking repayments to revenues (and therefore performance) rather than a fixed interest rate. The loan is repaid monthly by receiving a percentage of water sales and so repayments adjust to seasonal variations. This paper describes the approach.
8	World Bank	2017 2019 2020	https://openknowledge.worldbank.org/handle/10986/33729 https://openknowledge.worldbank.org/handle/10986/32607 https://openknowledge.worldbank.org/handle/10986/27950	These World Bank reports underscore the importance of metrics and data for rural water to help funders and investors understand risks and opportunities
9	Rob Hope, Patrick Thomson, Johanna Koehler, Tim Foster	2020	Rethinking the economics of rural water in Africa Oxford Review of Economic Policy, Volume 36, Issue 1, Spring 2020, Pages 171–190, https://doi.org/10.1093/oxrep/grz036	We explore why rural water is different for communities, schools, and healthcare facilities across characteristics of scale, institutions, demand, and finance. The findings conclude with policy recommendations to (i) network rural services at scale, (ii) unlock rural payments by creating value, and (iii) design and test performance-based funding models at national and regional scales, with an ambition to eliminate the need for future, sustainable development goals.
10	Rochelle Holm, Wales Singini & Simeon Gwayi	2016	Comparative evaluation of the cost of water in northern Malawi: from rural water wells to science education. Applied Economics, DOI: 10.1080/00036846.2016.1161719 https://rural-water-supply.net/en/resources/details/888	This research has shown that when looking at water resource economics in northern Malawi, it is not a monopoly and options are available at a range of costs. The data challenge policy-makers to reach the last 10% of the population still lacking improved drinking water. This will require a combination of expansion of urban piped water infrastructure, new boreholes in rural areas, increased handpump functionality rates, scale-up of household drinking water point-of-use treatment and growth of local universities to train local experts within the sector.
11	Deal, P. T. and Furey S. G.	2019	The 2019 RWSN directory of rural water supply services, tariffs, management models and lifecycle costs https://rural-water-supply.net/en/resources/details/861	The rural water supply sector is undergoing a period of change. In response to the challenges of achieving universal access to safe, affordable drinking water and sustaining those services, there has been increasing innovation in different types of rural water service models. This Directory is intended to show the growing range of management options. Some are novel interventions that are still being piloted, others have been established for a decade or more. Also includes: Handpump Statistics 2019 (from WPDx data from Sub-Saharan Africa and Asia-Pacific)

12	A. Armstrong, J. Mahan & J. Zapor	2017	Solar pumping for rural water supply: life-cycle costs from eight countries. 40th WEDC International Conference , Water Mission, WEDC Conference 2017, Loughborough, UK https://rural-water-supply.net/en/resources/details/822	The primary barrier to wide scale adoption of solar water pumping in remote settings is that policy makers and practitioners lack valid and transparent information on performance in a broad range of contexts and of the full life-cycle costs. To fill this information gap, this paper presents upfront and recurring costs from 85 rural solar water pumping schemes of various sizes that have been designed, constructed and supported by Water Mission in eight countries. The average life-cycle costs associated with the reviewed schemes were within and on the lower end of IRC WASHCost benchmark ranges for both piped water schemes and boreholes fitted with handpumps. These findings indicate solar pumping is a viable and cost-effective intervention for rural water supply.
13	Armstrong A.	2015	Managing Cash Reserves for Capital Maintenance Expenses Synthesis and presentations from 40th WEDC International Conference , Water Mission , WEDC Conference 2017 , Loughborough, UK https://rural-water-supply.net/en/resources/details/694	When service providers succeed in raising considerable sums or even recovering full life-cycle costs associated with ongoing water service delivery through tariffs and user fees they are often faced with a different sort of challenge: managing sizeable cash reserves that are intended to be used for future capital maintenance expenses. Questionable long-term reliability of local financial institutions can lead to investment in diversified assets (e.g. insurance systems, real estate, spare parts, and even livestock). In addition, pressure to use portions of cash reserves in ways that are thought to be more productive, such as in system upgrades or expansion, can lead to funds being used sooner than originally intended.
14	Federal Department of Foreign Affairs (FDFA) , Bern, Switzerland	2016	How to Establish a full cost recovery water supply system? What are the key factors for success and replication? ISW/SDC (2016) SDC Briefing Note https://rural-water-supply.net/en/resources/details/770	This Briefing Note outlines the results from more than 15 years of experience in both Tajikistan and Uzbekistan by the International Secretariat for Water (ISW) funded by the Swiss Agency for Development & Cooperation (SDC). The note outlines the ways in which cost recovery has been achieved and social tariffs set locally. However when it comes to scaling up there are certainly many hindering factors, not the least being the centralised structure of the States apparatus and deciding power. It is essential to overcome political tariff challenges as there is resistance that can emerge from a heavy centralised past and the belief that at local level things cannot work properly without keeping them under central control
15	Furey S.G. (Rural Water Supply Network)	2014	“What is the current wisdom on the best way to manage cash reserves and to manage the risk of big CapManEx costs in the future?” https://rural-water-supply.net/en/resources/details/607	This document is a synthesis of an online discussion in June 2014 on Dgroups (Management & Support Community) and on the "WSP-RWSN Webinar Discussions" LinkedIn group in response to the following question: “In Tajikistan a multi-village piped water scheme is successfully collecting user fees from households. This has created a new problem: a sizable reserve. This raises a challenge: there is increasing pressure to use those reserves in a more productive way sooner. There is also the risk that inflation will mean that a good amount of money today will not be worth the same in 10-20 years when it is needed for a big capital expenditure. What is the current wisdom on the best way to manage reserves and to manage the risk of big CapManEx costs in the future?”
16	Menzies I. WSP / World Bank	2016	Delivering Universal and Sustainable Water Services. Partnering with the Private Sector https://rural-water-supply.net/en/resources/details/785	The objective of this Guidance Note is to offer practical, experience-based guidance to those considering or currently engaging in PPP in the water sector, and to provide a basic understanding of water PPPs and the PPP cycle to better inform dialogue with governments that are considering PPP arrangements.

17	World Bank / Aguaconsult	2017	Sustainability Assessment of Rural Water Service Delivery Models : Findings of a Multi-Country Review. https://openknowledge.worldbank.org/handle/10986/27988	This assessment uses a multi-country case study approach to identify good practices and challenges toward building sector capacity and strengthening sustainable service delivery models for rural areas.
18	Kleemeier, E.L. World Bank	2010	Private Operators and Rural Water Supplies. A Desk Review of Experience https://rural-water-supply.net/en/resources/details/770	This study examines experiences with using the private sector to manage domestic water supplies serving dispersed populations or very small settlements in rural areas. It explores whether private operators are an option for more remote rural areas with low population density. This review focused on operations that: (1) Serve dispersed populations or settlements with fewer than 5,000 inhabitants in rural areas; (2) Have been undertaken on a significant scale, and (3) Engage individuals or for-profit organizations to manage water supplies.
19	Kleemeier, E. and H. Lockwood, Triple-S , IRC International Water and Sanitation Centre	2012	Public Private Partnerships for Rural Water Services. Briefing Note No. 4 https://www.ircwash.org/resources/public-private-partnerships-rural-water-services-0	Community management, the dominant model for rural domestic water service, works in many contexts but faces several critical challenges, particularly in regard to more complex water supplies. An alternative is to delegate operations and maintenance, or maintenance only, to the private sector through formal contracts and performance agreements. These public-private partnerships (PPPs) potentially harness market incentives to improve service delivery and leverage private capital for investment costs.
20	R. Hope	2015	Is community water management the community's choice? Implications for water and development policy in Africa Water Policy (2015) 17 (4): 664–678. https://doi.org/10.2166/wp.2014.170 https://iwaponline.com/wp/article-abstract/17/4/664/20448	In rural Africa, community management of handpumps, is the prevailing but increasingly embattled policy choice. A choice experiment is designed to test alternative maintenance models. A sample of 3,540 observations is modeled from 118 handpump users in rural Kenya. Results identify community management of maintenance services as the least preferred option with water user payments contingent on an order of magnitude improvement in handpump repair times. Water use behaviors indicating uneven adoption profiles within communities compounded by no acceptable payment mode. Policy responses to community choices need to address these institutional challenges through new monitoring platforms and acceptable payment systems.
21	World Bank resource page	2019	Structuring PSP Contracts for Small Scale Water Projects (Rural and Peri-Urban)	The Water and Sanitation Program (WSP) has been involved in a number of the initiatives highlighted on this page. WSP has also developed a survey of 7 African countries to see how they have approached involvement of the private sector, the contractual frameworks for a number of which are featured on this resource page (available in French and English).
22	Anna Libey, Marieke Adank, Evan Thomas IRC, Uni. Boulder	2020	Who pays for water? Comparing life cycle costs of water services among several low, medium and high-income utilities https://www.sciencedirect.com/science/article/pii/S0305750X20302825?via%3Dihub https://youtu.be/NZtqHVqRGzI	Water utilities in Kenya, Ethiopia, Cambodia, and the United States are compared. The gap between the full costs of service delivery and budgets was \$7–\$43 per capita. All utilities have budget gaps from 2.6% to 10,000%. Tariffs comprise 41% of revenue in Boulder and 82–100% in the lower-income cases. Support from national government and donors for full life cycle costs is appropriate.

23	Social Finance, Oxfam	2018	Funding Mechanisms to incentivize sustainable and inclusive water provision in Kenya's arid and semi-arid lands https://www.socialfinance.org.uk/sites/default/files/publications/rr-funding-mechanisms-solar-water-kenya-300818-en.pdf	This report is a concept-stage exploration of optimal funding mechanisms to accelerate and incentivize the adoption of SVPPs in the Kenyan ASALs, alongside accompanying management systems to ensure financial viability, inclusion and accountability. It compares several mechanisms (Results-based financing (RBF), a development impact bond (DIB) model, an Outcomes Fund, and Upfront investment).
24			Rural Water Supply Network Webinars	
	Chrystelle Kwizera, Water Access Rwanda	2019	Focus on incentives to LNOB, economic incentives Rwanda	https://www.youtube.com/watch?v=XFZqtoPZkvo
	Brenda Achiro Muthemba, Water for People	2019	District investment planning for WASH in Uganda	https://www.youtube.com/watch?v=I9jcn3cvug
	John Ikeda, Senior Financial Specialist, World Bank,	2017	"Grown Up" finance for rural water? A World Bank perspective	https://www.youtube.com/watch?v=iiLFxPMb_AE
	Dr Catarina Fonseca, IRC WASH	2017	"Grown up" finance for rural water?	https://www.youtube.com/watch?v=b-0icDQjwB0
	Dr Johanna Koehler, University of Oxford	2017	Are the rural water poor a bankable prospect?	https://www.youtube.com/watch?v=omtMPvrf0u0
	Jeske Verhoeven, IRC WASH	2017	Direct Support Costs - an overview	https://www.youtube.com/watch?v=WdHUKV32ND8
	Bruce Uwonkunda, Senior Program Officer, Water for People	2018	Moving beyond community to utilities - Rwanda	https://www.youtube.com/watch?v=cI6vwnwqnyM
	Corina AndronicTask manager, Swiss Water and Sanitation Project	2018	How to expand water services to rural areas? Regional Utilities in Moldova	https://www.youtube.com/watch?v=GaMqWaDBloc
	Jane Bevan, Water & Sanitation Specialist, UNICEF	2018	MoWIE Strategy to roll out Rural Public Utility Management Model in Ethiopia	https://www.youtube.com/watch?v=c6UWzVI_hVI
Relevant for Fecal Sludge Management				

1	OECD	2019	Making Blended Finance Work for Water and Sanitation - <i>Unlocking Commercial Finance for SDG 6</i>	This publication takes a commercial investment perspective and provides insights into three subsectors: (1) water and sanitation utilities, (2) small-scale off-grid sanitation and (3) multi-purpose water infrastructure and landscape-based approaches. It draws out recommendations for policy makers and practitioners to apply and scale blended finance approaches where most appropriate.
2	Rachel Cooper & John H. Matthews,	2020	Water Finance and Nature-based Solutions	This rapid review synthesises how innovations in water finance such as Blended finance approaches, Green bonds and climate bonds, Water Funds, and Climate Finance, could be applied to mainstream and expand Nature-based Solutions (NbS) in developing countries.
3	Social Finance, 2019	2019	Scaling up sanitation enterprises - the role of outcomes-based funding	What if donors used grant funding to pay for positive social results achieved by social enterprises, but which the enterprises themselves cannot capture in the market? Outcomes-based funding could generate a revenue stream for a social enterprise (and its investors!) that monetizes the broader social impact of an enterprise's activities. This would be a novel (and non-distortionary) source of financing for enterprise scale-up, as well as a highly efficient aid mechanism.
4	Meera Mehta, Dinesh Mehta; Upasana Yadav, Center for Water and Sanitation, CEPT University,	2019	Citywide Inclusive Sanitation Through Scheduled Desludging Services: Emerging Experience From India	This paper reviews the need for regular desludging of septic tanks. It then outlines the emerging experience of design and implementation of scheduled desludging for sustainable sanitation in two Indian cities - Wai and Sinnar. In these cities, a performance-linked annuity payment framework is used to engage a private desludging enterprise. Payment is met through a sanitation tax and transfer from the general property taxes. It outlines the benefits of scheduled desludging in Indian cities and argues that it is critical to achieve improved sanitation.
5	Asian Development Bank	2016	Financing Mechanisms for Wastewater and Sanitation https://www.adb.org/sites/default/files/publication/215956/mechanisms-wastewater-sanitation.pdf	This compilation of financing mechanisms is intended to serve as a guide for government and/or city planners and utility managers in developing their own wastewater and sanitation projects. The financing mechanisms include subsidies and/or grants, public-private partnerships (PPP), OBA, carbon credits, microfinancing and/or revolving funds, and partnerships. The financing flowcharts should help them visualize the flow of funds and identify possible sources of funding, including grants and loans. It is also envisioned that the examples of financing mechanisms can help cities identify the business models that they can adopt given their specific circumstances.
6	India Sanitation Coalition, 2020	2020	Perspectives on the Role of Blended Financing in WASH	This publication offers reflections from interviews with representatives from NABARD, SwiftIndia, Water.org, Intelicap, HSBC, Grameen Capital, Social Alpha, and The Toilet Board Coalition.
7	CGIAR & IWMI Resource Recovery & Reuse Series 6	2017	Business Models for Fecal Sludge Management https://www.researchgate.net/publication/310799154_Business_models_for_fecal_sludge_management	Based on the analysis of 44 FSM cases from Asia, Africa and Latin America, this report shows opportunities as well as bottlenecks that FSM is facing from an institutional and entrepreneurial perspective. The business cases cover either parts (or all) of the FS sanitation service chain (Figure 1). Business cases targeting only access to private or public toilets have been excluded from this study as they have been well covered in other literature.

8	PRACTICA Foundation		Mobile Applications for Fecal Sludge Management (FSM)	Smartphone use is developing rapidly in the towns and cities of Africa and Asia. The widespread use of these devices and mobile internet in urban areas allows for creating new, accessible, and highly efficient tools for monitoring, optimizing, and controlling fecal sludge management services.
9	IWMI CGIAR Research Program on Water, Land and Ecosystems,	2020	Business Models for Fecal Sludge Management in India	Based on interviews with operators as well as municipalities and analysis of procurement tenders, this report identified 18 business models, several with energy or nutrient recovery components. The report provides evidence-based discussions on policies and recommendations for scaling and sustaining FSM.
10	Center for Water and Sanitation, CEPT University,	2019	Financing Fecal Sludge and Septage Management (FSSM) – A landscape study of four Indian states	This study identifies total financing need for FSSM in four Indian states and explores potential sources of funds for both capital investments and operations and maintenance. It examines Performance linked Public-Private-Partnerships (PPPs) (e.g. performance-linked annuity model and hybrid annuity model), Municipal borrowing for sanitation infrastructure (e.g. pooled funds), and Development Impact Bonds.
11	Center for Water and Sanitation, CEPT University	2019	Business Models for Fecal Sludge and Septage Management (FSSM)- – A landscape study of four Indian states	This study explores FSSM business models and private sector engagement in FSSM in both conveyance and treatment parts of the FSSM service chain. It identifies relevant business models, which will help ensure that FSSM services are provided in a sustainable manner, and the related institutional and financing arrangements fit within the prevailing regulatory regimes.
12	AGUASAN Workshop	2012	"Financial sustainability of WASH services - about mindset change and an eye for the future" http://www.aguasan.ch/ws2012/AGUASAN28_briefing_note.pdf ; http://www.aguasan.ch/ws2012/AGUASAN28_slides.pdf	Summary of a 1 week workshop of the Swiss WASH community of practice + guests. Rather out of date, but a reminder that these discussions on WASH finance go in cycles and it is worth remembering how the issues were viewed the last time they were fashionable.
13	SWFF	2019	WASTE performance evaluation - circular economy model with black and grey water recycling in India. https://www.waste.nl/wp-content/uploads/2020/01/SWFF_WASTE_PerformanceEvaluationReport_final.pdf	WASTE, a Netherlands-based organization in partnership with the Rural Development Organization (RDO Trust), Nilgiris District, developed a model for producing high-quality co-compost from wastewater and fecal sludge for the cultivation of exotic vegetables by women farmers in the District.
14	WaterAid	2015	Business models of pit emptying entrepreneurs 2011-2015 https://washmatters.wateraid.org/publications/business-models-of-pit-emptying-entrepreneurs-2011-2015	In 2007, WaterAid Tanzania in collaboration with the London School of Hygiene and Tropical Medicine tested and piloted the use of appropriate low-cost technology for pit emptying and sludge transportation. This report documents the urban sanitation business model and captures the project's journey, key learning and challenges.

15	Sangeeta Chowdhry and Doulaye Kone, Publisher: Bill & Melinda Gates Foundation	2012	Business Analysis of Fecal Sludge Management: Emptying and Transportation Services in Africa and Asia https://www.ircwash.org/resources/business-analysis-fecal-sludge-management-emptying-and-transportation-services-africa-and	The report presents several recommendations to realise the potential of the US\$ 134 million market for emptying services, including: (1) supporting the scaling of the single truck operators to become mid to large sized operations; (2) better access to finance introducing transfer stations to save fuel costs and increasing truck efficiency; (3) regulating scheduled desludging; (4) local manufacture or assembly of trucks, especially in Africa a more effective supply chain for spare parts; (5) constructing safe dumping sites for sludge and sludge treatment plants; (6) enabling sludge reuse
16	Asian Development Bank	2016	Financing mechanisms for wastewater and sanitation. https://www.adb.org/sites/default/files/publication/215956/mechanisms-wastewater-sanitation.pdf	See specific examples from the Philippines of mechanised septage management (small scale non-networked FSM) in Dumaguete City and Baliwag Water District financed through the Philippines Water Revolving Fund. PWRF was a blended facility that mobilized concessionary and local bank debt and included USAID and local partial credit guarantees - see next link.
17	US Agency for International Development	2013	Philippines Water Revolving Fund Follow-on Program Final Report https://www.globalwaters.org/resources/assets/wash-fin/philippine-water-revolving-fund-pwrf-follow-program-final-report)	The Philippine Water Revolving Fund (PWRF) was an innovative lending program that blended public funds with private financing for water and sanitation projects. USAID brought to bear its technical assistance to design, assess feasibility of and structure the Fund; build capability among market players; and provide marketing and institutional support at operational stage. It also provided credit enhancements to private investors. The core objective of the program was to provide access to funds for water supply and sanitation projects to increase number of people with safe water supply or improved services. However, the development of the PWRF also provided an opportunity to be the lever of change in other key areas of concerns in the sector, such as utility governance or regulatory reforms. Thus USAID's PWRF Support Program (October 2006 to November 2011) and the PWRF Follow-on Program (December 2011 to June 2013) adopted a work plan that included initiatives to enable transformational reforms and empower water utilities for better and sustainable operations. See blended finance PWRF examples of mechanised septage management (small scale non-networked FSM) in Dumaguete City and Baliwag Water District in ADB report above.
18	Malloy et al, published in <i>Science of The Total Environment</i> Vol. 744, 140871	2020	Evaluating the circular economy for sanitation: Findings from a multi-case approach https://www.sciencedirect.com/science/article/pii/S0048969720344004	Summarizing qualitative analysis from five case studies across India, this research identifies the main barriers and enablers for circular sanitation business models. It concludes that shifting to circular economy models should not be seen as a panacea that can solve the global sanitation crisis. Delivering the public good of safe sanitation services for all, whether circular or not, will continue to be a difficult task. Some of the technical and social system changes required can be achieved with increased enforcement, policies and subsidies for fertilisers, and integration of sanitation with other waste streams to increase its viability. Major changes such as the cultural norms around re-use, demographic shifts and soil depletion would be outside the scope of a single project, policy or planning initiative.
19	Sandec Eawag	2017	Market driven approach for fecal sludge treatment products https://www.fsmttoolbox.com/assets/pdf/114.1_7.29_market_driven_approach.pdf	Inadequate management and treatment of fecal sludge continues to pose risks for public and environmental health. Given the variability of fecal sludge and location-specific nature of solutions, it is difficult to decide on treatment objectives and performance goals for treatment. The Market Driven Approach was developed as a quantitative methodology to determine which fecal sludge treatment products have the highest market potential in a

				defined location. This methodology provides a way to compare treatment products based on their real value for resource recovery. This paper discusses the results and lessons learned from field-testing in five cities across Africa and South-East Asia. Relevant for projects targeting resource recovery cash flows as part of blending.
20	World Water Council	2018	Increasing Financial Flows for Urban Sanitation - English, French, Spanish, Portugues versions and also includes case studies of various cities. https://www.worldwatercouncil.org/en/publications/increasing-financial-flows-urban-sanitation	High-level and targeted to decision makers; aimed at identifying the most appropriate financial mechanisms that could better support the development of the sanitation sector throughout the world. The goal is to raise awareness about innovative financing instruments to increase sanitation provisions in complement to traditional ones and to involve more actors in the national sanitation financing plans. Relevant blended finance actions include: re-allocating grant funds away from expensive sewerage and treatment plants towards much cheaper decentralized systems, fecal sludge management and the infrastructure for container-based sanitation; encouraging commercial banks and investors to enter the sector by mitigating the risks and costs for them, and; encouraging municipalities and commercial investors to collaborate and co-invest, in order to gain scale.
21	AFD via Journal of Water, Sanitation and Hygiene for Development]	2018	Review Paper - The cost of urban sanitation solutions: a literature review https://watermark.silverchair.com/washdev0080176.pdf	Review of literature on and comparison of lifecycle costs of full sanitation chain systems in developing cities of Africa and Asia. Overall, financial cost reporting methodologies have been inconsistent and many studies only focus on capital costs or do not report cost data on desludging, transport and treatment. This study compares the cost ratios between different sanitation systems analysed in a same study. It concludes that conventional sewer systems are in most cases the most expensive sanitation options. The cost of simplified sewer systems is found to be lower than both conventional sewer systems and septic tank-based systems. Relevant for blended finance in terms of understanding costs and economics for options analysis for planners. Many references to similar supporting studies/analysis.
22	USAID	2020	USAID Water and Development Technical Brief #5: Urban Sanitation Services https://www.globalwaters.org/sites/default/files/usa_id_urban_sanitation_technical_brief_5_5081.pdf	The purpose of this technical brief is to provide an overview of the important factors to consider in the USAID urban sanitation programming. In addition to the USAID Water and Development Plan under the U.S. Global Water Strategy, this technical brief is aligned with USAID's Sustainable Urban Services Policy, Private Sector Engagement Policy, and Environmental Natural Resource Management Framework.. Relevant Blended Finance takeaways include: Consideration of the whole sanitation service chain to ensure city-wide and inclusive safely managed sanitation technical solutions; apply commercial principles - management of sanitation services is as important as the technologies involved, and financial viability is a critical element of sustainable services; local governments and providers must understand what the costs are for safely managed sanitation and how costs will be covered.
23	USAID	2020	USAID Water and Development Technical Brief: WASH Financing - Forthcoming at https://www.globalwaters.org/water-and-development-technical-series	This technical brief provides guidance on factors to consider in USAID's WASH programs that aim to mobilize both public and private funds to expand and improve water and sanitation services. Relevant Blended Finance key takeaways include: Addressing policy, legal, regulatory framework bottlenecks and other enabling environment issues, including corporate governance, are fundamental to unlocking investment; Maximizing value from existing public funding and mobilizing additional funds from domestic public resources and user fees needs to be prioritized by policymakers, planners, and development

				practitioners; Private finance will continue to play a small but important role in the sector. While bridging the financing gap requires expanded utilization of private finance, successfully leveraging this finance requires creditworthy WASH service providers and a strong governance system; Government and development partner coordination crucial to align incentives and sequence interventions to maximize sector investment.
24	Environmental Science and Technology	2012	Capital and Operating Costs of Full-Scale Fecal Sludge Management and Wastewater Treatment Systems in Dakar, Senegal; https://pubs.acs.org/doi/10.1021/es2045234	A financial comparison of a parallel sewer based (SB) system with activated sludge, and a fecal sludge management (FSM) system with onsite septic tanks, collection and transport (C&T) trucks, and drying beds. The per capita annualized capital cost for SB was ten times higher than FSM, the annual operating cost for SB was 1.5 times higher than FSM, and the combined capital and operating cost for SB was five times higher than FSM. In Dakar, costs for SB are almost entirely borne by the sanitation utility, with only 6% of the annualized cost borne by users of the system. Because FSM operates with a different business model, with costs spread among households, private companies, and the utility, SB was 40 times more expensive to implement for the utility than FSM. However, the majority of FSM costs are borne at the household level and are inequitable. The study illustrates that in low-income countries, vast improvements in sanitation can be affordable when employing FSM. Analysis like this will be important for planners and practitioners when assessing the full gamut of blended finance sources and uses across the service chain and comparing between traditional and non-networked infrastructure.
25	Eastern and Southern Africa Water and Sanitation Regulators Association (ESAWAS)	2020	Guidelines for Sanitation Services Tariff Setting and Inputs for Tariff Models; https://www.esawas.org/index.php/publications/other-esawas-publications/send/8-other-esawas-publications/31-guidelines-for-sanitation-services-tariff-setting	ESAWAS developed a Regulatory Framework and Strategy for inclusive urban sanitation service provision incorporating non-sewered sanitation services that specifies regulatory touch points along the entire value chain of non-sewered sanitation. The tariff setting practice invariably affects the make-up of the sector in terms of sustainability, affordability and quality of service provision. Almost all the ESAWAS Members have well documented tariff setting procedures and model for water supply. However, in most cases, the tariff for those connected with sewer system is paid as a proportion of the water consumption while a regulated tariff for non-sewered sanitation services does not yet exist. These Guidelines, provide guidance to Regulators with a methodology for tariff setting specifically for the sanitation business and in establishing the cost of provision of sewered and non-sewered sanitation services. The Guidelines provide guidance on the procedure, information requirement, how to set tariffs and monitor the implementation of tariff decisions. HH cost coverage through tariffs and target subsidies is relevant for commercially viable, cost recovery blended finance models.
26	World Bank WSP	2012	Living without Sanitary Sewers in Latin America: The Business of Collecting Fecal Sludge in Four Latin American Cities, https://www.issuelab.org/resources/14582/14582.pdf	Report synthesizes the findings from four case studies that examined the current and potential market for the removal, collection, and disposal of fecal sludge in peri-urban areas. Relevant for Blended Finance in terms of analysis cash flows.

27	World Bank	2019	Doing More with Less Smart Subsidies for Water Supply and Sanitation, https://openknowledge.worldbank.org/handle/10986/32277	This report explores how scarce public resources can be used most effectively to achieve universal delivery of water supply and sanitation services. It analyzes the prevalence and performance of subsidies in the sector, then guides policymakers on improving subsidy design and implementation to improve their efficacy and efficiency in attaining their objectives. Includes discussions of capex and opex subsidies, amongst others.
28	Water and Sanitation for the Urban Poor	2018	Towards citywide sanitation in Lusaka: The next phase of non-sewered sanitation - https://www.wsup.com/content/uploads/2018/04/02-2018-Towards-citywide-sanitation-in-Lusaka_online.pdf	Lusaka has made huge strides in introducing fecal sludge management (FSM) services for low-income consumers, particularly thanks to the efforts of the city's utility, Lusaka Water and Sewerage Company (LWSC). Thanks to funding from Bill & Melinda Gates Foundation (among others), LWSC has been able to improve sanitation access in a number of PUAs with WSUP's support, using context-specific service delivery models, tools and guidelines that have contributed to the strengthening of the urban sanitation sector as a whole.
29	Water and Sanitation for the Urban Poor	2017	Sanitation surcharges collected through water bills: a way forward for financing pro-poor sanitation? https://www.wsup.com/content/uploads/2017/08/DP004-ENGLISH-Sanitation-Surcharges.pdf	This Discussion Paper is a situation review of sanitation surcharge systems in African cities. The review considers existing pro-poor surcharge systems in Lusaka and Ouagadougou; and systems in Dakar, Beira, Antananarivo and Maputo. Lusaka's model is of particular interest. Customers of Lusaka Water and Sewerage Company (LWSC) who have a sewer connection pay a sewerage charge but, on top of this, all LWSC customers also pay a sanitation levy that is ring-fenced for expenditure on sanitation improvements in low-income communities. HH cost coverage through tariffs and target subsidies is relevant for commercially viable, cost recovery blended finance models.
30	Sanitation Technology Platform (STeP)	2020	Preparing for Commercial Field Testing of the Janicki Omni Processor, https://www.stepsforsanitation.org/2020/04/preparing-for-commercial-field-testing-of-the-janicki-omni-processor/	This report captures lessons learned by DELVIC Sanitation Initiatives in preparing for the commercial field test of the Janicki Omni Processor, a fecal sludge waste-to-resource technology. While DELVIC is based in Senegal, the lessons they have learned may be useful to others planning commercial evaluations of fecal sludge waste-to-resource technologies in other contexts. Key topics include (1) Treating fecal sludge as feedstock, not waste; (2) Navigating the permitting process; (3) Selecting and developing by-product sales channels; (4) Preparing for the capital raise; (5) Executing the capital raise.
31	Sanitation Technology Platform (STeP)	2018	Sanitation Technology Funder Landscape: Exploring potential resources to validate and prepare markets for novel sanitation solutions, https://www.stepsforsanitation.org/2018/10/sanitation-technology-funder-landscape/	Resources to validate new sanitation technologies and prepare for market entry – prerequisites for achieving sustainable, scaled solutions – tend to be quite scarce compared to those available to scale proven solutions. As such, a problematic 'Pioneer Gap' exists. This funder landscape seeks to both clarify the 'Pioneer Gap' and point readers to potential funding and other resources poised to help fill this problematic gap. Two promising forms of funding are explored in detail: catalytic philanthropy and blended finance leveraging impact investment. A corresponding database highlights potential 'Pioneer Gap' funders operating at a global level and in three key geographies – Bangladesh, India, and South Africa.
32	World Bank	2019	Evaluating the Potential of Container-Based Sanitation https://openknowledge.worldbank.org/handle/10986/31292	This report builds on four case studies (SOIL – Haiti, x-runner – Peru, Clean Team – Ghana, Sanergy – Kenya) to assess the role container-based sanitation can play in a portfolio of solutions for citywide inclusive sanitation (CWIS) services. While the proportion of total CBS service costs covered by revenues is still small, CBS services are considered to be priced similarly to the main sanitation alternatives in their service areas. Recommendations include

				adopting a conducive policy and regulatory environment and exploring ways to ensure that CBS services are sustainably financed.
33	Asian Development Bank Institute	2020	Decentralized Wastewater and Fecal Sludge Management: Case Studies from India https://www.adb.org/sites/default/files/publication/634586/adb-cs2020-2.pdf	This case study presents stories of decentralized sewage treatment plants (STPs) and fecal sludge management (FSM) in India. The case studies illustrate that decentralized, small-scale sewage treatment plants are effective in treating and reusing sewage in buildings, campuses, and residential neighborhoods. Treatment technologies are evolving continuously and operating costs are also decreasing rapidly, making these systems affordable— they typically cost less than 0.5% of a real estate project’s budget—and less problematic to operate.
34	Sanitation Technology Platform (STeP)	2019	Techno-Economic Analysis (TEA) of Model Fecal-Sludge Management and Sewer-Based Systems in India,	The value proposition of a given technology is in part, driven by whether it can compete on cost with incumbent technologies. This analysis explores the levelized cost of treatment of fecal sludge management (FSM) and sewer-based systems currently in use in India to determine where OP technologies can best compete and what cost targets must likely be achieved to compete in those markets. For the analysis, a cost framework tool was created that generates capital, operating, and all-in cost curves on a per-population-equivalent basis for modelled incumbent systems.
35	Ivan Katongole	2007	Equipment Leasing as a Financing Mechanism for Sustainable Solid Waste and Sanitation Services in Kampala https://www.waste.nl/wp-content/uploads/2020/11/UMD3_Thesis_Ivan_Katongole_leasing_equipment.pdf	The researcher conducted field work in Kampala. The findings of the study show that equipment leasing has the potential as a financing mechanism for sustainable solid waste and sanitation services. The findings also show that leasing is not used by service providers because the solid waste and sanitation market is not developed due to failure of KCC to play the role of regulator. There is potential for commercial viability which can be unblocked through proper regulation of service provision so that service providers and leasing companies find reason to invest in solid waste and sanitation equipment.
Relevant for both Working Groups				
	Publisher/Author	Y.	Title & Link	Abstract, emphasis on blended finance-related content
A	IRC WASH, water.org, World Bank Group, 2019	2019	Mobilizing finance for WASH – getting the foundations right	This working paper unpacks what is meant by the enabling environment for finance in WASH and presents real examples of how these bottlenecks are being overcome by innovators in the sector.
B	Louis Boorstin (Osprey Foundation)	2018	A framework for expanding WASH finance	This note presents a framework for expanding finance for the WASH sector. It aims to foster a common understanding of what different options offer and where they fit into the overall picture. It explains the basics of finance and lays out options to increase the creditworthiness of service providers, support innovative models, take more risk, and use financing mechanisms to expand the availability of financing.

C	Convergence	2019	WaterCredit Investment Fund 3 Case Study	WaterCredit Investment Fund 3 (WCIF3) is a blended fund that provides debt financing to financial institutions and enterprises serving the water and sanitation needs of families living in poverty in Asia. Launched by WaterEquity, WCIF3 is comprised of tiers of equity, catalytic debt facilities including multiple zero- and low-interest loans, and a first-loss guarantee.
D	USAID	2018	Financing Facility Landscape Assessment Report	Assessment conducted to better understand the prevailing landscape of WASH financing facilities. The report's objective is to assess and consolidate a range of facilities and showcase the relevant information. The report collates available information on experiences of various facilities, noting individual features, advantages, and challenges as they relate to financing WASH providers and other subsectors at the global, regional, and national levels.
E	International Institute for Sustainable Development (IISD)	2018	Credit Enhancement for Sustainable Infrastructure	This paper lists credit enhancement instruments, including partial credit risk guarantees, political risk guarantees, currency risk mitigation instruments, first-loss provisions, viability gap funds, liquidity facilities, grants, and subordinated debt, and provides examples of credit enhancement providers. It further identifies the demand and supply-side barriers for upscaling credit enhancement solutions for infrastructure.
F	World Bank Group,	2018	Easing the Transition to Commercial Finance for Sustainable Water and Sanitation	This report quantifies the investment gap and proposes a financing framework toward more effective use of existing funds to enable the mobilization of new sources of finance, and explains the benefits and costs of commercial finance.
G	Leigland, James; Tremolet, Sophie; Ikeda, John. World Bank	2016	Achieving Universal Access to Water and Sanitation by 2030 : The Role of Blended Finance. https://openknowledge.worldbank.org/handle/10986/25111	Recent estimates by the World Bank's Water and Sanitation Program (WSP) indicate that the present value of the additional investment in WSS alone needed through 2030 will exceed US\$1.7 trillion (Hutton & Varughese 2016). Existing funding falls far short of this amount; countries may have to increase their investment in the water and sanitation sectors by up to four times in order to meet the SDGs. Where is Financing for the Water SDG Going to Come From?
H	Hutton G; Gosling L.; Adank, M.; Boulouvar J.; Naughton M.; S. Fürst and Furey S. G.	2019	Cost effective ways to leave no-one behind in rural water and sanitation. Summary of RWSN E-discussion https://rural-water-supply.net/en/resources/details/856	This e-discussion planned to cover the following questions: 1. What are the cost components of rural water supply and sanitation, and which ones tend to be forgotten and thus threaten service quality or sustainability? 2. How are these costs financed? What are the main current funding sources and which ones have greater potential in the future? 3. How can we ensure affordability and make maximum use of limited public subsidies to reach the most vulnerable populations?
I	WASTE/Finish SocietyACTIAM	2015	The essence of public and private funding for sanitation	Based on practical examples, the role of public and private financing in sanitation is outlined.
J	WASTE/Finish Society ACTIAM	2015	An overview of financial instruments that are used in the financial inclusion improves sanitation and health programme in India and Kenya	The close to 30 financial instruments that are used in the financial inclusion improves sanitation and health programme in India and Kenya are outlined. These include revolving funds, guarantee funds, microcredits, carbon financing, bond financing, and others.

K	OECD	2018	OECD DAC BLENDED FINANCE PRINCIPLES for Unlocking Commercial Finance for the Sustainable Development Goals	The OECD DAC Blended Finance Principles for Unlocking Commercial Finance for the Sustainable Development Goals are a policy tool for all providers of development finance - donor governments, development co-operation agencies, philanthropies and other concerned stakeholders. They build upon already established commitments on ODA targets, leaving no-one behind, development effectiveness, and aid untying
L	PPP Labs, Dutch Ministry of Foreign Affairs	2018	PPP Finance Strategy Tool https://ppplab.org/2018/07/3552/ https://ppplab.org/topic/finance/	This tool is developed by PPPLab to assist in developing, reviewing or sharpening a finance strategy for a Public- Private Partnership. As such, it could be of interest to persons/ organisations that want to develop/ improve a PPP or that are considering to invest in a PPP. The tool will assist in analysing financing needs and bottlenecks and in reviewing a range of financing options. It aims at broadening the view of the users, helping to be more creative and to open opportunities for smart combinations of financing streams. There are others in this series at www.ppplab.org . Note the PPPLab's publications and tools will stay available until the end of 2020.
M	USAID	2018	WASH-FIN Kenya Project Brief – Access to Commercial Finance for WASH in Kenya, https://www.globalwaters.org/sites/default/files/WASH-FIN-Kenya-Project-Brief.pdf	This WASH-FIN Brief looks back at the experience of the USAID Sustainable Water and Sanitation in Africa (SUWASA) program in promoting access to commercial financing for water and sanitation in Kenya. SUWASA ran from 2010 to 2015, building on accomplishments of the Kenyan government in advancing sector reforms in the context of devolution and decentralization. This brief highlights the process, successes, and challenges of commercial financing for WASH and identifies lessons for moving forward with continued commercial financing under the new USAID WASH-FIN program.
N	UN Transboundary Water Convention and Partners (CH,NL, WB, AfDB, ADB, UNCDF, EIB, GEF, etc.)	2020 2021	Background Study on Financing Transboundary Water Cooperation and Basin Development	This report analyzes the key opportunities and challenges related to the financing of transboundary water cooperation and basin development. It contrasts financial needs against potential sources of funding and financing, from both public and private entities. It includes a section on blended finance, which gives the examples of two hydropower projects.
O	Kerstin Danert; Guy Hutton,	2020	Shining the spotlight on household investments for water, sanitation and hygiene (WASH): let us talk about HI and the three 'T's	This editorial argues that in order to properly understand financial flows in WASH and develop appropriate policies there is a need to explicitly add household investments (HIs) to the vocabulary of the three 'T's (taxes, tariffs and transfers). National surveys of household expenditure and WASH use need to collect more nuanced data. Research that enables a better understanding of HIs on WASH is also needed. The inclusion of HI would help to bring the small private enterprises out of the policy darkness and paint a better picture of what people are actually spending, improving our understanding of affordability.
P	DESPRO - Swiss-Ukrainian Decentralisation Project	2020	“Brief on Municipal Bonds” https://despro.org.ua/en/library/publication/?ELEMENT_ID=2183	According to this research, the main sources of financing for the development of communal infrastructure are usually local budgets, and rarely regional or state budgets. External borrowings in the form of loans from domestic banks and international financial institutions, although present in the financing system, are accessible to larger cities only. The emission of municipal bonds has only happened periodically and in a non-systemic manner, and has not played a role in borrowing for the development of local community infrastructure.